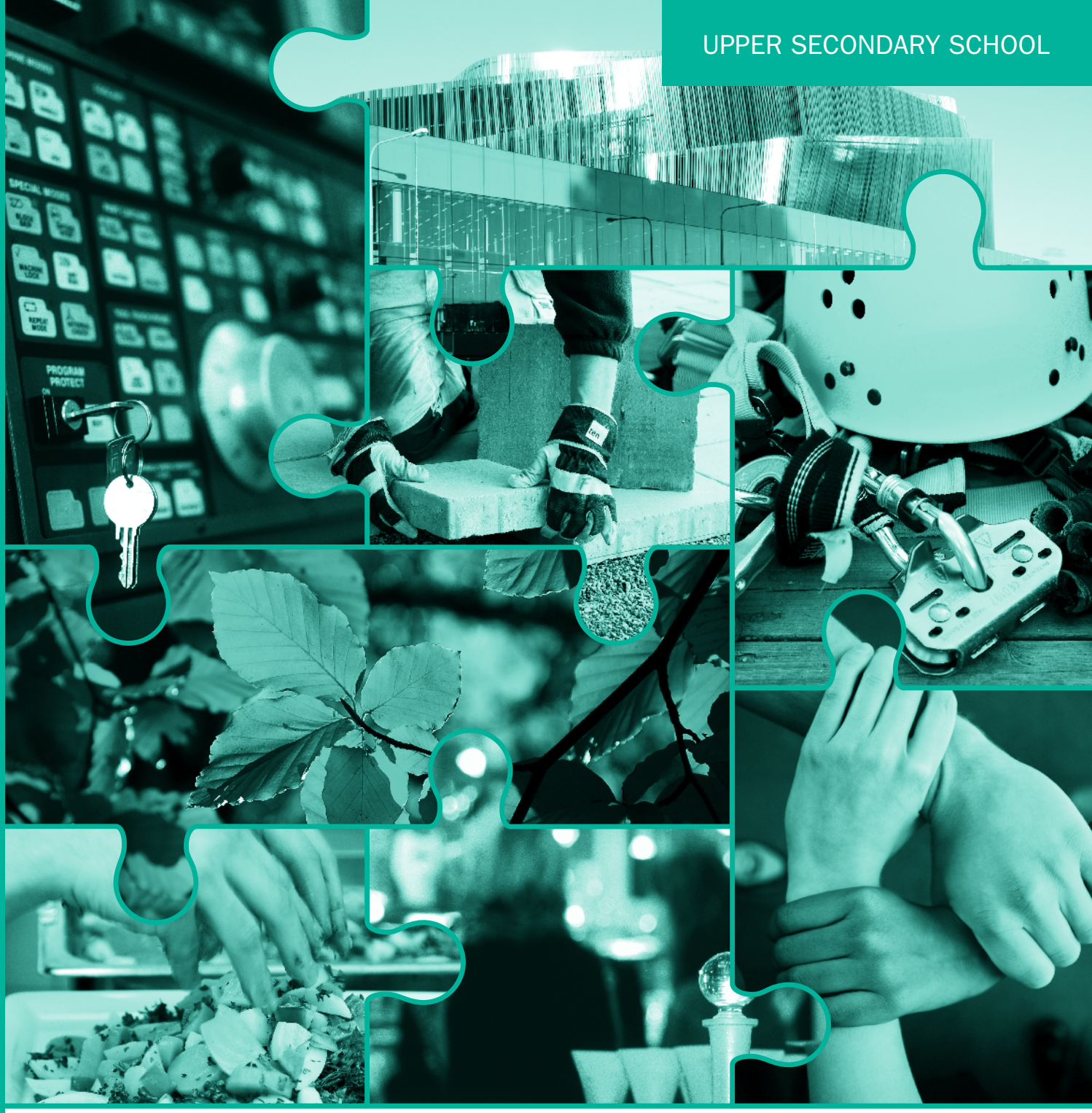

Upper Secondary School 2011

Skolverket

Upper Secondary School 2011

Upper Secondary School 2012
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Preface

This book presents the upper secondary school 2011 (Gy 2011). In the first instance, it is intended for teachers, but study and vocational guidance counsellors and headteachers may also find the book useful. The aim is to provide a good understanding of the upper secondary school 2011 and of the thinking underlying the reform.

The first part of the material provides an overall commentary on the upper secondary school 2011.

The second part contains the diploma goals and programme structures for each of the 18 national programmes as well as commentaries on these. The programme structures are incomplete since the programme specialisations can be changed. The current content of the programme specialisations is thus only published on the web site of the National Agency for Education.

Commentaries on the different subject syllabuses are also published on the National Agency for Education's web site.

Content

Overall commentaries on the upper secondary school 2011

The upper secondary school has a broad aim

The upper secondary school has a broader aim than merely preparing students for working life immediately after education or for further studies in higher education. It should also give them a good foundation for personal development and active participation in society. The aim is expressed as follows in the Education Act:

The upper secondary school should provide a good foundation for work and further studies and also for personal development and active participation in the life of society. The education should be organised so that it promotes a sense of social community and develops students' ability to independently and jointly with others acquire, deepen and apply knowledge.[1]

This is nothing new. Corresponding formulations of the aims of the upper secondary school have existed in earlier curricula. In principle, the aim has been the same over a long period. The view of the relationship between the three parts (preparations for vocational activities and further studies, personal development and active participation in society) have, however, varied over time. The subjects which mainly contribute to providing a good foundation for personal development and active participation in the life of society are the upper secondary foundation subjects, earlier referred to as core subjects or general subjects, whilst the main aim of subjects typical of a programme has been specialisation for a particular profession or as preparatory for higher education.

[1] Chapter 15, Section 2, paragraphs 1 and 2, Education Act (2010:800).

A brief look backwards

Here a brief review of the development of the upper secondary school and the background to the reform of 2011 is provided.[2]

UNIFORM SCHOOL SYSTEM FOR THEORETICAL EDUCATION

At the end of the 1920s a uniform school system was created for the more theoretical education programmes, where upper secondary education was built on the lower secondary school (realskola) or the school for girls (flickskolan). There were only two lines, Latin and what could be called a science line. In 1953 a third line was established, the general line, consisting of two branches, a language (without Latin) and a social branch. Parallel with the more theoretical education programmes, specialist upper secondary schools were developed during the first half of the 20th century in the form of technical upper secondary schools and commercial upper secondary schools.

The reform of 1964 brought together the various strands of theoretical education into a uniform upper secondary school with a common first year, followed thereafter by five different lines – economic, humanistic, natural science, social science and technical. The foundations for the theoretical part of today's upper secondary school were thus established. The reform also abolished the matriculation certificate.

VOCATIONAL EDUCATION IN WORKING LIFE NOT SUFFICIENTLY GENERAL

Vocational education after the elementary school took place mainly at workplaces, but as early as 1918 the need for "practical youth schools" was recognised. The reason was that it was difficult to provide vocational education at workplaces due to the specialised requirements of vocational life and the development of industrial work processes. A system of apprenticeship schools, vocational schools and vocational training schools was established. It was only the emergence of industrialisation that imposed new requirements on vocational education. The scope of vocational education remained fairly limited, and the education still took place mainly at workplaces.

In the 1930s vocational education was subjected to criticism since it was thought that it did not match the requirements of the time. At the same time as vocational work became more specialised, demands were imposed on a broader approach to vocational areas and more general competence. In the 1950s the view was that vocational education located at the workplace had become increasingly difficult due to the increasing tempo of work combined with complex technological development with specialisation, complicated equipment and expensive materials, as well as greater risk of accidents. During the 1960s criticism of vocational education resurfaced on the grounds that it was not relevant, it was too narrow and did not emphasise general skills covering cooperation, planning and problem solving. The idea was that business life should have greater influence over vocational education.

[2] The look back is based on the description in Path to the future – a reformed upper secondary school, SOU 2008:27.

AN INTEGRATED UPPER SECONDARY SCHOOL

In 1970 an integrated upper secondary school was introduced, Lgy 70, with both two and three year lines. At that time the traditional upper secondary school with its five different lines, which were extended to three years, was merged with different educational routes that became two years in duration. The other educational routes were the two-year vocational training school programmes in economic, social and technical lines. They were more practically oriented than traditional upper secondary education but more theoretical than the vocational schools. The other educational routes were also different types of school-based vocational education.

In terms of vocational education, Lgy 70 led to a situation where the time allocated to vocational subjects was decreased compared with the former vocational schools since about a third of the time in the first school year was devoted to general subjects, such as Swedish, mathematics, English or social sciences. Vocational education in the upper secondary school was intended to be introductory and was completed when the students became employees.

VOCATIONAL EDUCATION AND THEORETICAL EDUCATION BECAME MORE SIMILAR

In 1994 a course based upper secondary school was introduced. The line system in Lgy 70 was not considered to be sufficiently flexible since working life required better and broader basic knowledge for vocational students to be able to meet the rapidly changing demands of working life. For this reason, all study paths became three years in duration and the number of compulsory subjects for all students was increased to eight, and these were referred to as core subjects that accounted for one third of total education hours. These subjects also provided basic eligibility to higher education in order to broaden its recruitment base.

What was also new was that the supply of education would be determined by students' wishes. Some years earlier the conditions for the school system were changed as a result of two reforms. Steering of the Swedish school was decentralised and deregulated in the direction of goal and results oriented steering. The conditions for independent schools were also changed when they received funding, in principle, on the same conditions as public schools.

TWO DEVELOPMENT LINES

The development of working life during the 20th century as mentioned above led to increased demands on general competences. An increasingly complex society with greater requirements on participating in democratic processes has also led to an increased demand for a shared civic frame of reference.

The reforms during the 20th century thus aimed at meeting the increasingly complex requirements of vocational life and society by strengthening the general content of all vocational education. The culmination of this development was attained in the reform of 1994 when all upper secondary education became three years in duration and core subjects covered a third of the education. This would guarantee that all students could develop the general competences required not just for vocational life, but also as citizens in an increasingly complex society. The reform of 1994 also introduced the notion of civic competence, which all students should acquire in the upper secondary school, and this became equivalent to basic higher education competence. This also meant that all students in vocational programmes could automatically achieve basic eligibility for higher education.

Another intention of the reforms at the end of the 20th century was to create a more flexible school, not only to meet the requirements of a society undergoing increasingly rapid change, but also to satisfy the individual wishes of students. Scope for specific preparation for future working life or further studies was gradually de-emphasised in favour of greater elements of common subjects and increased individual freedom of choice.

THE PROBLEMS OF THE SCHOOL AT THE BEGINNING OF 2000

Sweden has a lengthy tradition of general education, and Swedish upper secondary education from a number of perspectives is unique. Nearly all students progress from the compulsory school to the upper secondary school, and nearly 50 per cent of a cohort go on to studies in higher education after upper secondary school. Schools in Sweden are in many respects good and Swedish students enjoy their schooling.

Since the beginning of the current century, international studies Sweden has participated in have shown that the knowledge students leave school with is not as good as before. Many students drop out of their upper secondary studies. And Sweden has a high level of youth unemployment compared to other countries. These trends led to the reform of the upper secondary school and the compulsory school in 2011.

REFORMS OF 2011

The reform of the upper secondary school was introduced in Autumn 2011. The aims of the government can be summarised under the following four points:

- *Students should be well prepared.* Each student through upper secondary education should be well prepared for working life immediately after upper secondary school or for further studies at higher education level. The degree of specialisation must increase without any reduction in the requirement for general competences. Vocational education should provide good preparation for working life so that students can start working immediately after upper secondary school. Students should on completing their studies be virtually ready for a specific profession. Time allocated to subjects typical of a programme should be extended.

  The higher education preparatory programmes should effectively equip students for studies in higher education. Part of this preparation involves the high demands imposed on basic eligibility for higher education.

  Coordination between school and working life must be strengthened to ensure high quality of education and strong involvement from industry and the public sphere.

- *Everyone should reach the goals.* The throughput should be high and students should complete their upper secondary diploma within three years. As few students as possible should drop out of their upper secondary education.

  Entry requirements to the upper secondary school should be high so that students are better prepared for upper secondary level studies. For students that do not fulfil the entry requirements, there are five introductory programmes.

- *Education should be equivalent.* During the beginning of the 2000s the upper secondary school became more varied and difficult to get a clear view of. The number of specially designed programmes increased substantially as did the supply of local orientations and local courses. The wide range of educational programmes made it difficult for students, parents and stakeholders[3] to have an overview and understand what the different education paths could lead to. It was also difficult to assess what students were capable of after completing their education. For students to feel confident that there would be a demand for the knowledge they had acquired from their education, upper secondary education including vocational programmes should be quality assured nation-wide by the National Agency for Education with the help of the national programme councils.

- *Study paths and steering documents should be clear.* Students, parents, stakeholders[4] should know what an upper secondary education contains and what they can expect to achieve during the education. The steering documents should provide clear support to teachers in their teaching.

  An upper secondary school diploma was needed to clarify upper secondary school qualifications, and to facilitate youth mobility internationally in terms of studies, work placement and work.

[3] The aims come from *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199.

[4] Stakeholders are those receiving students from the upper secondary school, such as companies, universities and university colleges.

VIEW OF GENERAL COMPETENCES HAS CHANGED

Developments in working life and society during the 20th century have led to increased demands for general competences and a shared civic reference framework. In the earlier upper secondary school reforms, scope for specific preparation for future working life or further studies, amongst other things, was gradually de-emphasised in favour of greater elements of common subjects and increased individual freedom of choice.

The upper secondary school 2011 emphasises that education must provide good specific preparation for working life or the higher education studies students will continue to.

Requirements for general competences have, however, not been reduced but indeed strengthened in recent decades, amongst other things in the EU's recommendation on key competences. But general competences can be developed in specific contexts. Emphasis on specific preparation thus does not imply any reduction in the ambitions concerning general competences.

In the upper secondary school 2011, foundation subjects in the upper secondary school should interact with subjects typical of a programme, and it is through specialisation in the latter that students develop, both as citizens and as individuals.

Documents steering the upper secondary school

EDUCATION ACT

The Education Act contains the general provisions for all school forms and the basic provisions for the different school forms. What specifically relates to the upper secondary school is set out in Chapters 15–17. The Swedish Riksdag (Parliament) decides on the Education Act.

UPPER SECONDARY SCHOOL ORDINANCE

The upper secondary school ordinance contains regulations on the upper secondary school and makes the provisions of the Education Act more specific. The government decides on the upper secondary school ordinance.

CURRICULUM

The curriculum for the non-compulsory school forms describes the fundamental values, tasks, as well as goals and guidelines of the school. The government decides on the curriculum.

DIPLOMA GOALS

Each programme has its diploma goals. The diploma goals provide the foundation for planning education and teaching from the student's very first day in the programme. These should steer the education and the organisation of upper secondary work and its contents. The diploma goals set out the goals of the programme, the orientations in the programme, as well as the goals of the diploma project.

All the diploma goals emphasise entrepreneurship in some form based on the nature of the specific programme. Entrepreneurship may cover starting and running a company, being creative, taking initiatives, seeing opportunities and solving problems.[5]

Development of knowledge and language goes hand-in-hand. For this reason all diploma goals emphasise language development in the respective programmes.

The government decides on the diploma goals for the national programmes on the basis of proposals from the National Agency for Education.

SUBJECT SYLLABUS

Each subject has a syllabus that describes the courses included in the subject. The government decides on the subject syllabuses for the foundation subjects for the upper secondary school on the basis of proposals from the National Agency for Education. The National Agency for Education decides on the subject syllabuses for the other subjects.[6]

DOCUMENTS ARE INTER-RELATED

All the documents above are intended to create a meaningful whole. They each fulfil an important function but also express together a common view of schooling. The Education Act takes priority over the other documents. The upper secondary school ordinance, the curriculum and diploma goals are ordinances which in different ways make the provisions of the Education Act more specific. The subject syllabuses are regulations steering teaching in a given subject.

Teachers, headteachers or other school staff need to use all the documents. For a teacher, it is not sufficient to plan teaching based on the subject syllabus, he or she must take as the starting point the diploma goals and the curriculum. In addition, teachers need to be aware of the regulations in the Education Act and the upper secondary ordinance that affect their work.

An important reason for why all the documents need to be used is that overlapping duplication has been avoided as far as possible: for instance the provisions of the Education Act are not repeated in the ordinance on the upper secondary school. Thus the diploma goals only state what is specific for the programmes, and the subject syllabuses only what is specific for the subjects. Neither of these documents repeat the general formulations in the curriculum, such as students developing an insight into their own learning, and the ability to assess their own learning. For this reason, diploma goals and subject syllabuses may feel as if they have been "stripped down" and leave out important goals of the teaching. Activities in the classroom, however, should be determined by the overarching goals in the Education Act, the ordinance on the upper secondary school and the curricula since the documents are to be interpreted as a whole.

[5] *Strategy for entrepreneurship in the education area,* Government Offices, 2009.

[6] The National Agency for Education's regulations are published in the National Agency for Education's Code of Statutes (SKOLFS).

The national programmmes

There are 18 national programmes: 12 vocational programmes and 6 higher education preparatory programmes. The 12 vocational programmes provide a foundation for working life and further vocational education. The 6 higher education preparatory programmes provide a foundation for further education in the higher education sector. There are also 5 introductory programmes which are covered on page 30. In addition, there are education programmes with their own diploma goals, such as those for dancing, aeronautics, and shipping. These are not specifically dealt with in this book, but are presented on the web site of the National Agency for Education.

Vocational programmes

Child and Recreation Programme (BF)
Building and Construction Programme (BA)
Electricity and Energy Programme (EE)
Vehicle and Transport Programme (FT)
Business and Administration Programme (HA)
Handicraft Programme (HV)
Hotel and Tourism Programme (HT)
Industrial Technology Programme (IN)
Natural Resource Use Programme (NB)
Restaurant Management and Food Programme (RL)
HVAC and Property Maintenance Programme (VF)
Health and Social Care Programme (VO)

Higher education preparatory programmes

Business Management and Economics Programme (EK)
Arts Programme (ES)
Humanities Programme (HU)
Natural Science Programme (NA)
Social Science Programme (SA)
Technology Programme (TE)

Vocational programmes

- *The Child and Recreation Programme (BF)* aims to develop students' knowledge in educational methodology and their skills in carrying out tasks in areas for which the programme provides instruction. With a diploma from the programme, students should have the knowledge needed to work with children, youth or adults in pedagogical and social vocational areas, or in the recreational or healthcare sectors, such as child minders, bathing or sports facilities personnel, care taking, or as personal assistants.
- *The Building and Construction Programme (BA)* aims to develop students' knowledge about and skills in building and construction of new buildings, conversions and renovation. With a diploma from the programme, students should have the knowledge needed to work in building and construction areas, such as construction worker, construction machine operator, building worker, house painter or sheet metal worker.
- *The Electricity and Energy Programme (EE)* aims to develop students' knowledge of supplying and assisting basic societal functions such as the production, installation and distribution of electricity, energy and water systems. With a diploma from the programme, students should have the knowledge needed to work with automated production systems, systems for energy- environmental- and water technologies, or computers and communication systems, or as electricians in the distribution or installation of electricity.

- *The Vehicle and Transport Programme (FT)* aims to develop students' knowledge about technology in different vehicles or the ability to manage transport. With a diploma from the programme, students should have the knowledge needed to work, for instance as mechanics, drivers, or in stores or terminals.
- *The Business and Administration Programme (HA)* aims to develop students' knowledge about retailing and administration, where service and communication are crucial. With a diploma from the programme, students should have the knowledge needed to work in commerce, such as sales persons, purchasers and shop managers, or in administrative areas such as personnel, business or IT administrators.
- *The Handicraft Programme (HV)* aims to develop students' skills in carrying out recurring tasks from idea to finished product, i.e. identifying needs, planning with sketches or drawings, choosing and handling tools, materials and techniques, carrying out and reporting work, and also analysing and assessing results. With a diploma from the programme, students should have the knowledge needed to work in floristry, hairdressing, carpentry, textiles or handicrafts.
- *The Hotel and Tourism Programme (HT)* aims to develop students' knowledge about service and customer reception, which is crucial within the industry. With a diploma from the programme, students should have the knowledge needed to work in the hotel, conference or tourist industries.
- *The Industrial Technology Programme (IN)* aims to develop students' knowledge in industrial technology and production. With a diploma from the programme, students should have the knowledge needed to work in areas such as process-oriented or automated material handling and production planning, operations and maintenance, or welding and other forms of metal assembly.
- *The Natural Resource Use Programme (NB)* aims to develop students' knowledge about and skills in harnessing nature and managing natural resources. With a diploma from the programme, students should have the knowledge needed to work in the natural resource use sector, with plants, animals, land, water or forests, such as the production of foodstuffs or wood products, with horses or in park and horticultural environments.
- *The Restaurant Management and Food Programme (RL)* aims to develop students' knowledge in those parts of the restaurant and food industry where work involves close contact with customers, in the first instance using handicraft methods, both traditional and modern. With a diploma from the programme, students should have the knowledge needed to work in the restaurant and food sector, in e.g. restaurants, bakeries or chacuteries.
- *HVAC and Property Maintenance Programme (VF)* aims to develop students' knowledge in installation, error detection, repairs, operations and maintenance, and management of property, technical facilities and systems such as those for heating, ventilation and refrigeration. With a diploma from the programme, students should have the knowledge needed to work in the sectors of property, refrigeration and heat pumps, ventilation or in heating, ventilation and sanitation.
- *The Health and Social Care Programme (VO)* aims to develop students' knowledge about and skills in health and social care, as well as provide knowledge about health, ill-health and functional impairment. With a diploma from the programme, students should have the knowledge needed to work in health and social care or in the social services.

Higher education preparatory programmes

- *The Business Management and Economics Programme (EK)* aims to develop students' knowledge of economic relationships, the role of companies and their responsibility, and starting and running companies as well as about the Swedish legal system. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in economics, law and other social science areas.
- *The Arts programme (ES)* aims to develop students' knowledge in and about artistic forms of expression and about people in contemporary society, in history and in the world based on artistic, cultural and communicative perspectives. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in artistic, humanistic and social science areas.
- *The Humanities Programme (HU)* aims to develop students' knowledge about people in contemporary society and history based on cultural and language perspectives, locally and globally, nationally and internationally. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in the humanities and social sciences.
- *The Natural Science Programme (NA)* aims to develop students' knowledge about contexts in nature, conditions of life, about the phenomena and processes of physics, and about chemical processes. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in the natural sciences, mathematics and technology, and in other areas.
- *The Social Science Programme (SA)* aims to develop students' knowledge about conditions in society in Sweden and the rest of the world, about the interaction between the individual and society, and about how people's living conditions vary over time and space. With a diploma from the programme, students should have the knowledge needed for higher education studies in a broad area of the social sciences.
- *The Technology Programme (TE)* aims to develop students' knowledge about and skills in technology and technological development. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in technology and the natural sciences, as well as other areas.

SIMILARITIES AND DIFFERENCES BETWEEN VOCATIONAL PROGRAMMES AND PROGRAMMES PREPARATORY FOR HIGHER EDUCATION

Eligibility requirements for admission to the upper secondary school differ between vocational programmes and those preparatory for higher education.[7]

Admission requirements to vocational programmes

Students should have passing grades in:

- Swedish or Swedish as a second language
- English
- Mathematics
- Five other compulsory school subjects

Admission requirements to programmes preparatory for higher education

Students should have passing grades in:

- Swedish or Swedish as a second language
- English
- Mathematics
- 9 other compulsory school subjects

– Of the 9 subjects, geography, history, religion and social studies are required for eligibility to the Business Management and Economics Programme, the Humanities Programme and the Social Science Programme.

– Of the 9 subjects, biology, physics and chemistry are required for eligibility to the natural science and technology programmes.

– For the Arts Programme, there are no requirements stipulating which of the 9 subjects must be included, however, in the selection process amongst eligible students a skills test can also be taken into account.

A student who has not been able to participate in English classes and thus lacks a passing grade from the compulsory school in English can nevertheless be admitted to a national programme if she or he fulfils the other eligibility requirements. The student is then considered to fulfil the conditions for managing studies in the programme.[8] The exemption from the requirement for a passing grade in compulsory school English is mainly intended for students who have recently arrived in Sweden and have not studied English in their earlier schooling. The exemption only applies for admission to the upper secondary school. In order to obtain an upper secondary diploma, students must have passed upper secondary English in accordance with the requirements applicable to the programme.

Education in the upper secondary school should lead to an upper secondary school diploma. Students in vocational programmes can attend a school-based education or an apprenticeship education. Both routes lead to a vocational diploma. Higher education preparatory programmes lead to a diploma providing eligibility for higher education.

[7] Chapter 16, Sections 30–31 of Education Act and Chapter 7, Sections 1 and 5, Upper Secondary School Ordinance (2010:2039).

[8] Chapter 16, Section 32, Education Act.

Requirements to obtain a vocational diploma *

Students should have grades for the education covering 2 500 credits, of which passing grades provide 2 250 credits.

In the passing grades, the following courses are required:

- Swedish or Swedish as a second language 1
- English 5
- Mathematics 1a
- Foundation courses of 400 credits

In addition, a pass in the diploma project is required.

Requirements to obtain a diploma for admission to higher education **

Students should have grades for the education covering 2 500 credits, of which passing grades provide 2 250 credits.

In the passing grades, the following courses are required:

- Swedish or Swedish as a second language 1, 2 and 3
- English 5 and 6
- Mathematics 1b or 1c

In addition, a pass in the diploma project is required.

* Chapter 16, Sections 26–27 of the Education Act and Chapter 8, Sections 5–6 Upper Secondary School Ordinance.

** Chapter 16, Sections 26 and 28, Education Act, and also Chapter 8, Section 7, Upper Secondary School Ordinance.

The higher education preparatory diploma corresponds to the requirements for basic eligibility to higher education. For a student in a vocational programme to achieve basic eligibility for higher education, a vocational diploma is required together with passing grades in courses for Swedish, or Swedish as a second language 2 and 3, and also English 6.

A diploma from the upper secondary school certifies and strengthens the quality of Swedish upper secondary education. An upper secondary diploma also states that students have completed their upper secondary education and achieved specific defined results. In addition, the upper secondary diploma provides good conditions for assessing how successful the upper secondary school has been in its task and making the contents of the education clearer in other countries.[9]

[9] *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199.

VOCATIONAL PROGRAMMES

The vocational programmes provide a foundation for future occupations and further vocational education.[10] They lead to a situation where students have good employment prospects and can equip students to run their own businesses. In addition, vocational programmes provide a foundation for further studies in vocational higher education. One option is also to study a vocational programme through an apprenticeship education.

All students in vocational programmes have the opportunity of obtaining basic eligibility for higher education by choosing courses within the framework of individual options, and for certain programmes, from the subjects specific to the programmes, or the programme specialisations. Sometimes students must also study an expanded programme if they wish to achieve basic eligibility for higher education. In some of the vocational programmes, students can obtain basic eligibility for higher education without studying an expanded programme. This applies to programmes where Swedish or Swedish as a second language 2 or English 6 are included in the subjects specific to a programme or in the programme specialisations as these courses to some extent determine the nature of the programme. See the National Agency for Education's web site for information on which programmes this applies to.

Workplace-based learning (APL)

Workplace-based learning (APL) means that students carry out parts of their education in one or more workplaces outside the school.[11] Vocational education involves more than just vocational knowledge. It also involves students understanding the vocational culture and becoming part of the vocational community at a workplace as part of developing a vocational identity. This is the reason that APL is a central element in all vocational education. APL means that learning in courses or parts of courses takes place in one or several workplaces. APL is steered by the subject syllabuses.

APL should be included in all vocational programmes for a minimum period of 15 weeks. On the other hand, a student attending an upper secondary apprenticeship education should carry out more than half of this as APL. Each week at a workplace

[10] Chapter 16, Section 3, Education Act.

[11] Chapter 1, Section 3, Upper Secondary School Ordinance.

corresponds to 23 hours of guaranteed teaching time. The organiser[12] is responsible for providing places in work-based learning (APL) and ensuring that these places fulfil the requirements set up for the education. The headteacher decides if the whole or parts of courses should be located at workplaces, and also how distribution of workplace-based learning during the school year should be done.[13]

The requirements placed on the organiser are high when it comes to ensuring that students receive a minimum of 15 weeks APL. The organiser must be able to demonstrate that there are planned APL places available before the education starts. It is only if planned APL places disappear during the education due to circumstances outside the control of the organiser, such as bankruptcy or a downturn in the economy, that APL can be located at the school. There may also be occasions where APL needs to be carried out at the school for safety reasons, such as flying training. The organiser should then change workplace-based learning to corresponding education in the school. Before the organiser makes a decision on this, there must be consultation with the local programme council. If the education is provided at the school and not at a workplace, the organiser should ensure that as soon as possible it is relocated to a workplace.[14]

A student taking part in workplace-based learning should have a supervisor at the workplace. Only those who have the necessary knowledge and experience and who are also considered to be appropriate can be supervisors.[15]

School-based education and apprenticeship education

A student can study a school-based vocational programme or apprenticeship education.

A school-based vocational programme should, as mentioned, consist of at least 15 weeks APL, and for upper secondary apprenticeship education at least half of the education must be in the form of APL. This means that a vocational programme where more than half of the education is workplace-based is defined as apprenticeship education.

Apprenticeship education can begin in the first, second or third school year.[16] If apprenticeship education were to begin in the third school year, before this the students must have had sufficient APL so that half of the total education will have been workplace-based when students have completed upper secondary schooling. This sets certain limits for when an individual student can start an apprenticeship education.

In school-based vocational education, only three vocational programmes begin their orientations in year 1: the Handicraft Programme, the Industrial Technology Programme, and the Natural Resource Use Programme (in addition, the Arts Programme, preparatory for higher education, can also begin its orientations in the first year).[17] Upper secondary apprenticeship education, however, always starts in the very first school year for all vocational programmes.[18]

Upper secondary apprenticeship education contributes, amongst other things, to a more flexible vocational education programme. Through consultation between the school and local working life, there are good opportunities to design upper secondary apprenticeship education based on local conditions. Upper secondary apprenticeship education

[12] The organiser is legally responsible for the education, and could be a municipality or a limited company running an independent school.

[13] Chapter 4, Section 12, Upper Secondary School Ordinance.

[14] Chapter 4, Section 13, Upper Secondary School Ordinance.

[15] Chapter 4, Section 14, Upper Secondary School Ordinance.

[16] Chapter 16, Section 11, Education Act.

[17] Chapter 4, Section 2, Upper Secondary School Ordinance.

[18] Chapter 4, Section 3, Upper Secondary School Ordinance.

can be an advantage for both students and stakeholders. Students have different ways of learning. Some students prefer that their learning in working life is closer to production and reality. Upper secondary apprenticeship education also leads to a situation where students get better insight into the conditions under which businesses operate. From the stakeholder's perspective, this can make it easier to recruit competent staff.[19]

Both industry and other stakeholders emphasise that upper secondary apprenticeship education imposes high demands on students' study motivation and the ability to take personal responsibility. Apprenticeship education is built up from the same subjects and courses, and imposes the same requirements for a diploma as school-based education.

National and local programme councils

For each of the vocational programmes, there is a national programme council. The programme councils are permanent fora for a dialogue between the National Agency for Education and stakeholders concerning the quality, content and organisation of vocational education. The programme councils are not decision-making bodies, but fulfil a consultative function with respect to the National Agency for Education. Their work aims at making the education system more flexible and sensitive to the needs of stakeholders and more responsive to initiatives from the school organiser to improve the correspondence between the contents of vocational education and demand on the labour market.

One of the tasks of the national programme councils is to give the National Agency for Education advice and support regarding adaptation, development and modernisation of the supply of education and content in vocational education so that it aligns with the competence required on the labour market. Another task is to support the National Agency for Education in its work of developing diploma goals and providing examples of tasks and the assessment of diploma projects. The national programme councils also give the National Agency for Education advice and support in assessing applications for special variants in national programmes and nationwide recruitment programmes (see section National programmes are the main principle on page 28) so that they correspond to demand on the labour market, and provide the qualifications the education

[19] *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199

should lead to. In addition, the national programme councils contribute to the information material provided to students.

The councils are composed of a broad cross-section of industry representatives, and representatives of employer and employee organisations within the vocational area for which the programme provides education and training. Some national programme councils also include representatives from the public authorities. The national programme councils should also consult the views of students in their work.[20]

For vocational programmes, there should also be one or more local programme councils to coordinate between school and working life.[21] How local programme councils are organised and what tasks they should have is not regulated. On the other hand, the Upper Secondary School Ordinance states that the principal organiser should consult the local programme council before a decision is made on transferring workplace-based learning to the school.[22] Possible tasks for the local programme councils are, for instance, to assist the organiser in arranging places for workplace-based learning and to participate in organising and assessing diploma projects.[23]

The local programme councils should contribute to organised and close cooperation between organisers and stakeholders. It is vital to develop the quality of vocational education, not only school-based education but also upper secondary apprenticeship education. The local programme councils should also consult and obtain the views of the students in their work. They can build further on already established methods of cooperating locally.[24]

[20] *The assignment to the National Agency for Education concerning national councils for vocational programmes*, U2009/5399/G.

[21] Chapter 1, Section 8, Upper Secondary School Ordinance.

[22] Chapter 4, Section 13, Upper Secondary School Ordinance.

[23] *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199.

[24] *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199.

HIGHER EDUCATION PREPARATORY PROGRAMMES

The higher education preparatory programmes should provide the foundation for further studies in higher education, primarily within the area of the current programme.[25] In programmes preparatory for higher education, students should be prepared for further studies at universities and university colleges. To achieve eligibility for higher education, all students study more English or Swedish, or Swedish as a second language, in higher education preparatory programmes than students in vocational programmes, and the diploma goals emphasise the scientific aspect.

There are no requirements that workplace-based learning (APL) should be part of higher education preparatory programmes. On the other hand, the organiser may decide that APL should be included in higher education preparatory programmes and in this case can also decide its scope.[26]

What does preparatory for higher education mean?

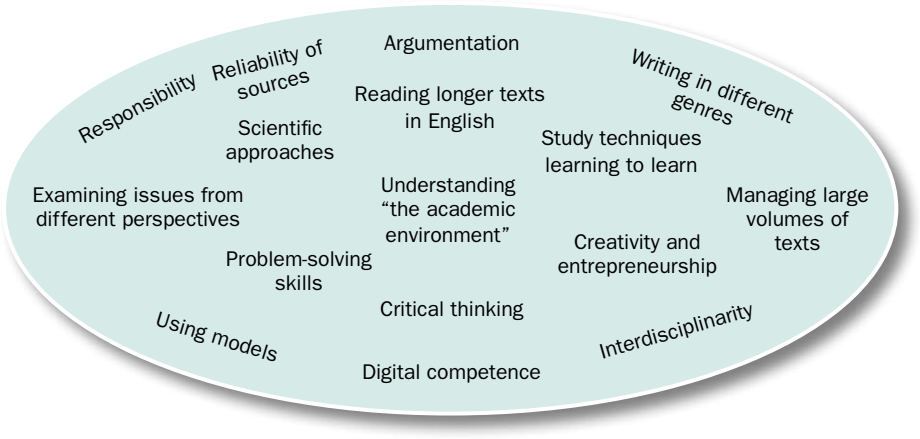
In the report *Initial knowledge and requirements in higher education* [27] the National Agency for Higher Education gives its views on what university colleges and universities consider as preparatory for higher education. According to the report, the majority of the teachers interviewed stated that students' initial knowledge has changed, often for the worse. Teachers consider that students experience difficulties in expressing themselves in writing, and that often their knowledge of mathematics is weak, and their knowledge of English is superficial. In addition, teachers also consider that students require excessive help and service, do not take responsibility for their studies, and that their motivation and level of ambition is lacking. The change that teachers most emphasise, however, is not the narrow negative development. Above all, they maintain that heterogeneity has increased. Many students still have sufficient knowledge and some are both highly motivated and high performing. At the same time, groups of students with insufficient knowledge have become larger and differences in knowledge between high and low performers have increased. Positive changes include students in general becoming better at speaking in front of others, cooperating and managing computers.

The National Agency for Education has consulted university colleges and universities in its work on preparing the Upper Secondary School 2011. One question discussed was what university colleges and universities considered to be covered by the term "preparatory for higher education". The National Agency for Education took as its starting point the views of higher education when developing its proposals for the diploma goals for the higher education preparatory programmes.

[25] Chapter 16, Section 4, Education Act.

[26] Chapter 4, Section 12, Upper Secondary School Ordinance.

[27] National Agency for Higher Education, Report 2009:16 R.



Some of the key ideas from the university colleges and universities are presented below concerning "preparatory" for higher education, and what prospective students need to have on completion of upper secondary school. Within these areas, students in higher education preparatory programmes need to have developed specialist knowledge. These keywords correlate closely with the report from the National Agency for Higher Education *Initial knowledge and requirements in higher education.*

Students in the vocational programmes obtain basic higher education eligibility if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The fact that a vocational diploma with passing grades in certain courses is sufficient for basic eligibility to higher education depends on students being able to develop some of the above-mentioned general skills also within the framework of subjects typical of vocational programmes.

NATIONAL PROGRAMMES ARE THE MAIN PRINCIPLE

The main principle is that in the upper secondary school there are only national programmes and national orientations, and that both municipal and independent schools should provide these. This main principle makes the education equivalent. The system is also transparent, and students, parents and stakeholders are clear about what the different education programmes lead to. Within the framework of the national programmes, however, there is scope for flexibility and local adaptation, amongst other things in the programme specialisations.[28]

Sometimes, however, it is important to be able to deviate from the national programmes. This may involve identifying new education needs and developing new programmes.[29] That is why there are special variants and opportunities to deviate within the framework of education based on national admission. The National Agency for Education should quality assure and approve all deviations from the national system. An organiser can apply to the National Agency for Education in order to provide a specific variant or deviation within the framework of education based on national admission. Only in these cases can a school provide an education which is not a national programme.

[28] *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199.
[29] *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199.

What can the education be called? A student should always know what national programmes and orientations a school provides. This presupposes that the information and the marketing of upper secondary education takes place in a balanced, objective and correct way. A diploma can only be issued from a national programme (in certain cases from a programme based on nation-wide admission with its own diploma goals). An organiser or school wishing to create a specific profile can do this, for instance, by providing a national programme and highlighting a specific orientation and profile.
The organiser can determine which of the courses should be offered from the programme specialisations and from the individual options.

INDIVIDUALLY ADAPTED PROGRAMMES

A school can draw up an individually adapted programme tailored to the needs of a student. In such a case, the student's education may deviate from the national programme by changes in some courses. The students' education must, however, be related to a national programme and the requirements for a diploma must be satisfied. This limits the scope for individual adaptation. In addition, the headteacher must make decisions on individually adapted programmes before the end of the second school year, and cannot after a student has already started a course subsequently change it.[30]

[30] Chapter 9, Section 4, Upper Secondary School Ordinance.

REDUCED AND EXPANDED PROGRAMMES

A *reduced programme* means that students may be exempted from the teaching in one or more courses or the diploma project if the student so wishes, and also has obvious studying difficulties that cannot be solved in any other way.[31] This involves the totality of a student's study situation and not whether a student is experiencing difficulties in a particular course or courses they wish to have reduced. There is no limit to how many credits can be reduced for the student, nor any limit on which courses can be reduced. A reduced programme, however, means that the student will not obtain an upper secondary diploma.[32]

An *expanded programme* means that a student chooses to take part in one or more courses that lie outside their complete programme providing the student can be expected to manage satisfactorily both the complete programme and the expanded courses. It is the headteacher who makes such decisions. A student in a vocational programme without any special permission from the headteacher has the right to study the courses required for basic higher education eligibility through an expanded programme. Students, however, must notify their intentions before the end of the second school year. A student in an expanded programme always has the right to an increase in the number of guaranteed teaching hours corresponding to such a programme.[33]

[31] Chapter 9, Section 6, Upper Secondary School Ordinance.
[32] Chapter 8, Section 4, Upper Secondary School Ordinance.
[33] Chapter 4, Section 23, Upper Secondary School Ordinance.

Introductory programmes

For students who are not eligible for a national programme, there are five introductory programmes:

- preparatory education
- programme oriented individual options
- vocational introduction
- individual alternative
- language introduction.

The introductory programmes should give students who are not eligible for a national programme an individually adapted education, which satisfies students' different educational needs and provides clear educational routes. The introductory programmes should lead to establishment on the labour market and provide as good a foundation as possible for further education.[34]

The main rule is that students eligible for other programmes should not attend an introductory programme. The school should make it easier for eligible students to continue studies in the national programme they started instead of changing to an introductory programme. Only if there are special reasons can a student who is eligible for a national programme be accepted in an introductory vocational programme or individual alternative. "Special reasons" refers to a situation where a student despite adaptation and vigorous measures from the school, is thinking about dropping out from studies in the upper secondary school. In such cases, the vocational introduction or individual alternative may be relevant.[35] The organiser of the education should have considered all relevant support measures before examining whether special reasons are applicable.[36]

Education in the introductory programme should be provided in the form of full-time studies. It should as a result be equivalent to education in the national programmes.[37] However, its scope may be decreased at the request of a student and if the organiser considers that it is in line with the aims of the student's education.[38]

Education in an introductory programme should follow a plan for the education that is determined by the organiser.[39] The plan for the education should contain the aims of the education, its length and main contents. A student who has started in the introductory programme has the right to complete this in accordance with the plan that existed when the education was started.[40] The school should draw up an individual study plan for each student.[41] The individual study plan should contain information on the subjects and courses which students will study, and also, where relevant, other measures favourable to the student's development of knowledge. It should be based on students' needs and interests, and also be followed up, evaluated and revised where necessary, in consultation with the student and in certain cases with the student's guardian.

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[34] *Special programmes and eligibility to vocational programmes, Ministry Memorandum* U2009/5552/G, Utbildningsdepartementet, 2009-09-25.

[35] *The New Education Act – for knowledge, freedom of choice and security*, Bill 2009/10:165.

[36] Chapter 6, Section 2, Upper Secondary School Ordinance.

[37] *The New Education Act – for knowledge, freedom of choice and security*, Bill 2009/10:165.

[38] Chapter 17, Section 6, Education Act.

[39] Chapter 17, Section 7, Education Act.

[40] Chapter 17, Section 15, Education Act.

[41] Chapter 17, Section 7, Education Act.

The individual study plan fulfils a particularly important function for students in an introductory programme since these programmes lack national programme structures and diploma goals.

The home municipality is responsible for providing preparatory education, the vocational introduction, individual alternatives and the language introduction. Students from the compulsory school for learning disabilities are offered a vocational introduction or individual alternative if the student wishes to study in the programme and the municipality considers that the student fulfils the conditions for managing this.[42] If a student from the compulsory school for learning disabilities is admitted to either of these two introductory programmes, the student can not also be admitted to the upper secondary school for learning disabilities.

After an introductory programme has been completed, the headteacher issues an upper secondary school certificate specifying the education the student has received. All grades the student has received are stated in the certificate.[43]

[42] Chapter 17, Section 16, Education Act.

[43] Chapter 8, Section 21, Upper Secondary School Ordinance.

PREPARATORY EDUCATION

The aim of preparatory education is that students in the compulsory school who have not achieved eligibility for a specific national programme should be able to study to remedy this. This can apply not only to students who are not eligible for a vocational programme or a higher education preparatory programme, but also to students who are only eligible for a vocational programme but wish to apply for a higher education preparatory programme. Preparatory education should be designed for an individual student and may last a maximum of one year. Only if there are exceptional reasons can the preparatory education be extended to two years.

Preparatory education should cover the compulsory school subjects where the student did not achieve a passing grade and which are required for eligibility to a specific national programme. The education may also contain additional compulsory school subjects, however not those that the student has already received a passing grade in.

In addition, the education can contain courses from national programmes and to a lesser extent other measures which are favourable for students' development of knowledge.[44]

[44] Chapter 17, Sections 3–5, Education Act, and Chapter 6, Section 3, Upper Secondary School Ordinance.

PROGRAMME ORIENTED INDIVIDUAL OPTIONS

The aim of programme oriented individual options is that students should get an education that focuses on a national vocational programme and that they should as soon as possible be admitted to the programme. Programme oriented individual options should be designed for a group of students. Students who do not have all the passing grades required for a vocational programme are eligible for programme oriented individual options. Eligibility, however, requires passing grades in six subjects. One of these should always be Swedish, or Swedish as a second language. In addition, at least one of the subjects, English or mathematics should be included.

Programme oriented individual options should contain the compulsory school subjects where students have not achieved a passing grade and which are required for them to be eligible for a vocational programme and the courses included in a national vocational programme. In addition, the education should contain workplace-based learning (APL), but there are no requirements concerning its scope.[45]

Different organisers have different capabilities for providing students with places in programme oriented individual options. Decisions are made locally on which vocational programmes should be included in the education, and how many places are to be offered locally, but as far as possible this should be adapted to the wishes of students. When estimating the number of places needed for the education, the organiser should ensure that students eligible for the vocational programme should not be disadvantaged.[46]

VOCATIONAL INTRODUCTION

The aim of the vocational introduction is that students should receive a vocationally oriented education which makes it easier for them to establish themselves on the labour market or that leads to studies in a vocational programme. The vocational introduction can be designed either for a group of students or for an individual student. Students who do not have the passing grades required for a vocational programme are eligible for the vocational introduction. However, the vocational introduction is not open to those who will be offered the language introduction.

The vocational introduction should in principle contain vocationally oriented education. It should contain either the whole or parts of courses in subjects typical of a programme and in the upper secondary foundation subjects that are included in the upper secondary school's national vocational programmes or other vocationally oriented education. The education should contain workplace-based learning (APL) or work practice, but there are no requirements concerning its scope. The whole education could be provided at the school if the organiser considers that this is clearly the best solution for the student. The vocational introduction should also contain compulsory school subjects where students do not have passing grades. Other initiatives that are favourable for the student's knowledge development should also be included in the education.[47]

[45] Chapter 17, Sections 3–4, Education Act, and Chapter 6, Section 3, Upper Secondary School Ordinance.

[46] *The New Education Act – for knowledge, freedom of choice and security*, Bill 2009/10:165.

[47] Chapter 17, Sections 3–4 and 11, Education Act, and Chapter 6, Section 5, Upper Secondary School Ordinance.

INDIVIDUAL ALTERNATIVE

The aim of the individual alternative is that students should progress to the vocational introduction, to other forms of education or to the labour market. The individual alternative is designed for an individual student. Students who do not have the passing grades required for a vocational programme are eligible for the individual alternative. However, individual alternatives are not open to those who will be offered the language introduction.

Individual alternatives should be designed on the basis of student needs and their preconditions. The education should contain the compulsory school subjects for students who either do not have passing grades in whole courses or parts of courses in subjects typical of a programme and in foundation subjects. Other initiatives that are favourable for the student's knowledge development should also be included in the education.[48]

LANGUAGE INTRODUCTION

The aim of the language introduction is to provide immigrant youth who have recently arrived in Sweden with an education where the emphasis is on the Swedish language to make it possible for them to progress to the upper secondary school or to other forms of education. The language introduction should be designed for an individual student. Students who do not have the passing grades required for a vocational programme and who have recently come to Sweden and thus need an education with a strong focus on the Swedish language are eligible for the language introduction.

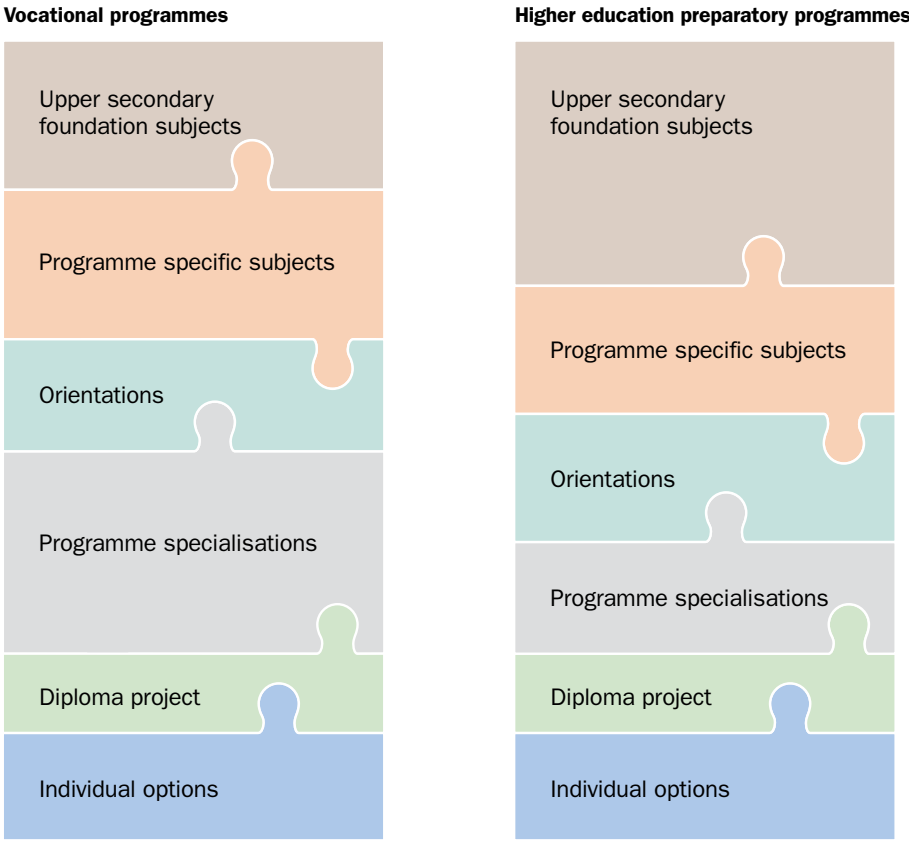
The language introduction should contain teaching in the compulsory school subject of Swedish or Swedish as a second language. Otherwise, the language introduction should be based on an assessment of the student's language knowledge made by the organiser in good time before the start and which contains the subjects and courses which a student needs for further education.[49] The education should contain the compulsory school subjects where the student does not have passing grades and courses in upper secondary school subjects. The organiser should regularly assess students' knowledge development in these subjects and courses so that students can progress further in their education as soon as possible.[50] The language introduction may be combined with Swedish tuition for immigrants. Other initiatives that are favourable for the student's knowledge development should also be included in the education.

[48] Chapter 17, Sections 3–4, Education Act, and Chapter 6, Section 11, Upper Secondary School Ordinance.

[49] Chapter 6, Sections 7–8, Upper Secondary School Ordinance.

[50] Chapter 17, Sections 3–4 and Section 10, Education Act, and also Chapter 6, Sections 7–8, Upper Secondary School Ordinance.

Programme structures



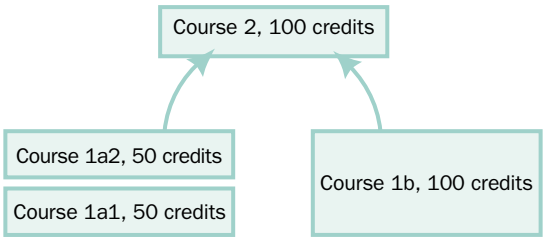
UPPER SECONDARY FOUNDATION SUBJECTS

There are nine subjects which are common to all programmes in the upper secondary school: English, history, physical education and health, mathematics, science studies, religion, social studies and Swedish or Swedish as a second language. In the Natural Science Programme, the subject of science studies is replaced by the subjects typical of the programme i.e. biology, physics and chemistry, and similarly in the Technology Programme with the subjects typical of the programme, i.e. physics and chemistry.[51] The upper secondary foundation subjects are included in all upper secondary education, but as illustrated in the diagram above they vary in scope between vocational programmes and higher education preparatory programmes. In history, social studies, science studies and mathematics, there are different courses for different programmes.

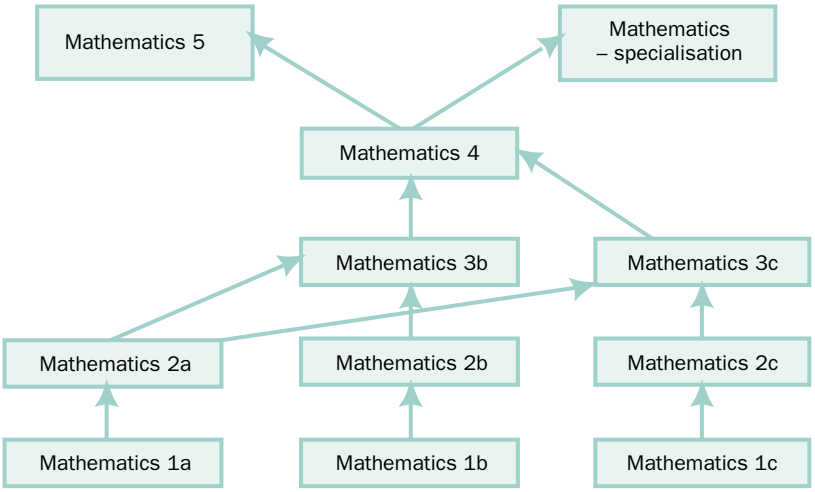
In the subjects of history, social studies and science studies, there are introductory 50 credit courses (course 1a1), as well as an introductory 100 credit course (course 1b). Students in the vocational programme study the introductory 50 credit course in each subject. Students in the higher education preparatory programmes study the introductory 100 credit course with the exception of the Technology programme where students study a 50 credit course in history.

[51] Appendix 3, Education Act.

For students who have studied the introductory 50 credit course, and wish to obtain up to 100 credits, there is a supplementary course of 50 credits (course 1a2). The two 50 credit courses together correspond to a 100 credit course. The illustration below shows the structure of the introductory courses in history, social studies and science studies.



In the subject of mathematics, there are different "tracks" for different programmes. For vocational programmes there is a track with an introductory course and a supplementary course, each with 100 credits respectively (A track). The Business Management and Economics Programme, the Arts Programme, the Humanities Programme, and the Social Science Programme all have a track with three courses each providing 100 credits (B track). For the Natural Science Programme and the Technology Programme, there is also a track with three courses, each with 100 credits (C track). Students in vocational programmes wishing to study more mathematics can transfer over to the B or C track for the third course. Thereafter there are levels 4 and 5, with courses that apply for all three tracks. The illustration below shows the structure for mathematics.



Why does the scope of the upper secondary school foundation subjects vary, and why are there different introductory courses for vocational programmes and programmes preparatory for higher education? The vocational programmes need more time for the subjects typical of the programme to enable students to be well prepared for vocational activities immediately on completion of upper secondary school. For this reason, the foundation subjects are more limited in scope, and subjects typical of programmes (the subjects specific to a programme, orientations and programme specialisations) have greater scope. In the higher education preparatory programmes, the foundation subjects are often a key part of the programme. Preparation for higher education is also largely general and developed, amongst other things, through specialist courses in the

foundation subjects. For this reason, the scope of the foundation subjects is greater in higher education preparatory programmes than in vocational programmes.

Since all students study the foundation subjects, these play a key role in fulfilling the aims of the upper secondary school: preparing students not only for working life and further studies, but also for personal development and active participation in the life of society. But it is not only in the foundation subjects that students are prepared for working life and further studies, but also through personal development and active participation in the life of society. This is also developed in interaction between all subjects included in a programme.

As laid down in the curriculum for the non-compulsory school forms, the headteacher has a special responsibility for ensuring that teachers in different courses coordinate their efforts so that students get an overall context for their studies. The diploma goals provide the foundation for planning the education and teaching, and thus they permeate all courses, including courses in the foundation subjects, which students study in a programme.

The Riksdag has decided which subjects are to be defined as foundation subjects in the upper secondary school and what their scope should be in each programme.

PROGRAMME SPECIFIC SUBJECTS

In each programme in the upper secondary school, there are subjects which are common to the programme and studied by all students in the programme. They define the nature of the programme. They provide the knowledge which all students in the programme should acquire, and serve as a foundation for further studies in the programme.

The government has decided which subjects are specific to the programmes and what their scope should be on the basis of proposals from the National Agency for Education. After this the National Agency for Education decides which courses should be included in the subjects specific to a programme.

ORIENTATIONS

All programmes, apart from the Health and Social Care Programme, have national orientations. The orientations provide a foundation for further in-depth studies, specialisation and extension within the framework of the programme.

The orientations can begin in the second or third school year apart from the Arts Programme, the Handicraft Programme, the Industrial Technology Programme and the Natural Resource Use Programme, where the orientations can begin in the very first school year.[52]

Why do some of the programme orientations begin earlier? The reasons for this differ between the four programmes.

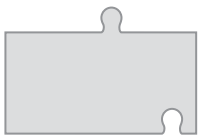
- In the Arts Programme, students' skills in the specific orientation need to be maintained and further developed throughout the programme.
- In the Handicrafts Programme a longer period is required for students to progress further in their handicraft skills. In addition, it is difficult to find a common meaningful core, for instance, for a hairdresser or a boat builder.

[52] Chapter 4, Section 2, Upper Secondary School Ordinance.

- In the Industrial Technology Programme, students often start work practice in their specialisation as early as year 1, as it is difficult to find a common meaningful core for both a CNC operator and a welder. In addition, the specialist courses have wide scope, and content in the education differs early between different specialist courses, and student specialisation must begin in the first year if they are to be ready for employment.
- For the Natural Resource Use programme, nature's cycle of resources must be repeated in different vocational areas for students to reach a satisfactory outcome level.

For the other 14 programmes, the orientations begin in year 2 or 3. The reason for delaying the start of the orientations is that specialisation at too early a stage can make it more difficult for students to make their upper secondary choices, whilst specialising too early can lead to more changes, and dropouts. In addition, this enables students to study the first years in the area where they live, and then apply for years 2 and 3 for an orientation that does not exist in their home area.

The orientations in the programmes have been decided on by the government on the basis of proposals from the National Agency for Education. After this the National Agency for Education has decided which subjects and courses are to be included in the orientations. The government has also decided which orientations can start in school year 1.



PROGRAMME SPECIALISATIONS

Programme specialisations cover subjects and courses that are within the framework of the diploma goals and the nature of the programme, and which complement and deepen the subjects specific to a programme. They should provide scope for specialisation within the limits of the programme.

In the vocational programmes, courses in programme specialisations embody the requirements of working life. The programme specialisations were decided on after consultation with the national programme councils. In the higher education preparatory programmes, the programme specialisation courses correspond to those courses which are of primary importance for further studies in higher education, particularly within the area for which the programme primarily provides education. Courses in entrepreneurship are included as programme specialisations in all programmes if these courses are not included in the subjects specific to a programme or within an orientation.

As is evident from the illustration on page 36, the scope of programme specialisations varies between vocational programmes and programmes preparatory for higher education. In vocational programmes there is generally greater scope for programme specialisations than in the higher education preparatory programmes, even though this varies between different vocational programmes. The reason is that students in vocational programmes need to specialise within a given vocational area to be ready for employment on completion of upper secondary school. Students in the higher education preparatory programmes do not need the same specialisation, since preparation for higher education is more general and to a large extent is developed through studies in the foundation subjects.

The National Agency for Education has determined which courses may be provided as programme specialisations in the different programmes. Thereafter it is the organiser who decides which of these courses will be provided.[53] In vocational programmes, this can be done in accordance with the nationally proposed programme specialisation modules (see section Vocational outcomes and the programme specialisation modules on page 41) or after consultation with the local programme council. The content of programme specialisations for the different programmes is published on the web site of the National Agency for Education.

When the National Agency for Education decides on the programme specialisations for the different programmes, the dominant principle applied is that these options should relate to the needs of the stakeholders. Within this framework, the National Agency for Education has permitted programme specialisations which provide the organiser with good opportunities to choose courses which can be adapted to local needs.

[53] Chapter 4, Sections 5–6, Upper Secondary School Ordinance.

VOCATIONAL OUTCOMES AND THE PROGRAMME SPECIALISATION MODULE

Vocational outcomes define the vocational competence which students should achieve through a given combination of courses within the programme specialisations.[54] The National Agency for Education has given examples of vocational outcomes and the programme specialisation modules for each of the vocational programmes. These examples are drawn up in consultation with the national programme councils. The programme specialisation modules show which courses industries consider the student should study to achieve a given vocational outcome. Given the rate of industrial development and changes in technology, examples of vocational outcomes and examples of programme specialisation modules will undoubtedly change.

It could also be the case that locally there may be different needs regarding vocational outcomes than those proposed by the National Agency for Education. The school can in consultation with the local programme council agree on providing other vocational outcomes. In these contexts, thinking in purely local terms would restrict students to working locally.

INDIVIDUAL OPTIONS

The individual option covers 200 credits in all programmes. It is the organiser who determines which courses will be provided as individual options. However, students within the framework of individual options can study a course in physical education and health, and a course in aesthetic subjects. Exemptions from this can only be made if there are special reasons. If a student is on a vocational programme, he or she also has the right to study courses required for basic eligibility to higher education. No exemptions to this may be made.[55] The government has decided which courses must be provided as individual options.

[54] Chapter 1, Section 3, Upper Secondary School Ordinance.
[55] Chapter 4, Section 7, Upper Secondary School Ordinance.

Diploma project

In all programmes students carry out a diploma project amounting to 100 credits.[56] The 100 credits show the scope of students' work. In the diploma project, students can demonstrate their capabilities based on what they have learnt earlier in the education. For this reason, it is appropriate for the diploma project to be carried out towards the end of the education. The diploma project can be carried out parallel with and also in conjunction with courses towards the end of the education. However, the project is independent work and not to be carried out within the framework of one or a number of different courses.

The goals of the diploma project are included as a part of the diploma goals in order to emphasise that students' work on this should be aligned with the nature of the programme. Based on the goals of the diploma project, the teacher determines whether the student's diploma project is approved or not. There is no specific syllabus for the diploma project.

There are no rules governing whether a diploma project should be carried out in a group or on an individual basis. However, each student should be assessed and graded individually. If some students carry out their diploma project in a group, the teacher must be able to monitor the work of individual students in order to be able to assess each individual student for grading purposes.

THE DIPLOMA PROJECT IN VOCATIONAL PROGRAMMES

The goals of the diploma project in vocational programmes state that the diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

In the vocational programmes, the goals of the diploma project are the same for all 12 programmes. As mentioned above, the diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The diploma project should thus be focused on the intended vocational outcome and not only on the programme or its orientation. For students to attain the intended vocational outcome, they should be able to carry out recurring tasks in a professional way. In this context, professional refers to the degree of professionalism adapted to the upper secondary level where, for instance, mastery of rational methods and the pace of work may not fully correspond with the performance of an experienced professional. It is also taken to mean that the student recognises and has carried out work in accordance with the laws and other regulations applicable to the vocational area.

The fact that the tasks should be recurring means that they can occur frequently or be part of an ordinary workday. In most cases this may involve tasks occurring in local companies and which students have come into contact through teaching either at the school or through workplace-based learning. The diploma project may mean that students carry out a more or less substantial part of a recurring task where emphasis is put on the student's vocational outcome. What are regarded as recurring tasks varies, of course, between different vocational outcomes, and here both the national and

[56] Chapter 1, Section 3, Upper Secondary School Ordinance.

local programme councils play an important role in providing examples of appropriate tasks in different vocational areas. The National Agency for Education in its programme specific commentaries gives some examples of what are recurring tasks in different vocational programmes.

The diploma project should be carried out in such a way that students plan, carry out and evaluate their work in accordance with the goals. Planning and evaluation of diploma projects requires in some contexts probably more than what a recurring task requires in working life. By means of their planning, such as identifying safety regulations and justifying choice of tools, equipment and approach, students can demonstrate their understanding of the overall situation concerning the task to be carried out. Planning also covers situations where account is taken of the consequences implementation may have on those who are affected by the work carried out, and what measures may be needed to facilitate and prevent undesired effects. This could involve work that has been planned and has certain environmental and financial consequences, and that students should be able to make an assessment of whether these consequences are desirable, or if they could be alleviated by approaching the task in a different way from what was originally planned. The evaluative and reflective parts of the diploma project can be linked to the planned part and how the choices made have affected the results. Quality aspects during the work and the results of the diploma project should be evaluated. Reflections over personal work and possible alternative methods should also be discussed. For students to be able to evaluate their work, implementation of the diploma project needs to be documented in some way. However, the documentation does not need to be written, but can be in the form of a product, audio, graphics based, or an illustration or film.

In vocational programmes, the diploma project can be organised so that students have the opportunity of showing their professional expertise in company-like settings. This may mean that students carry out either the whole or part of a diploma project at one or a number of different workplaces. It may also mean that students start and run a company within the framework of a diploma project. If students start and run a company, it is nevertheless important to emphasise that the diploma project should demonstrate that they can carry out recurring tasks in their vocational domain, as the primary purpose is not to demonstrate that they are capable of starting and running a company. Starting and running a company requires that students have obtained this knowledge in some other way, such as from a course in entrepreneurship. In individual cases tasks may coincide with starting and running a company, such as in the Business and Administration Programme.

THE DIPLOMA PROJECT IN PROGRAMMES PREPARATORY FOR HIGHER EDUCATION

The goals of the diploma project in higher education preparatory programmes state that the project should demonstrate that students are prepared for higher education studies, in the first instance in the area for which the education is being provided. It should be carried out in such a way that students formulate questions to be addressed[57] and also plan, carry out and assess a larger work component based on the core knowledge areas of the programme. The diploma project should be reported in a way that resembles the reporting forms used in similar higher education programmes with a short summary or description of the work in English. Students should present and discuss their work and also give responses to the diploma projects of others.

[57] The phrase ”formulate questions to be addressed” does not exist in the Arts Programme.

The goals of the diploma project thus emphasise the scientific method used in their respective higher education areas. The questions initially drawn up are assessed with respect to their feasibility, and aims and delimitations are defined. Students draw up a plan based on their questions and in the Arts Programme from questions or an idea formulated in the current diploma project. Thereafter the student carries out the work using relevant methods. Students in their implementation need to demonstrate that they can follow their plan and where necessary revise it. In addition, implementation also covers students discussing with their supervisors how they can develop their work and their results as part of a scientific-like process which also occurs in higher education. In order to be prepared for higher education studies, students must be able to take initiatives in and responsibility for planning and implementation, and this means that a diploma project requires a large measure of independence, at the same time as the work must take place in a dialogue with the teacher responsible. Evaluation involves students linking back to their original questions or their formulated idea, and also that the result is evaluated with respect to strengths, weaknesses, importance and limitations. This involves students in evaluating their sources critically.

The diploma project, in accordance with its goals, should base its starting point on the main knowledge areas in the programme. The diploma goals describe these areas of knowledge. The programme specific commentaries set out the knowledge areas for different higher education preparatory programmes. This means it is the diploma goals and the main knowledge areas that provide the framework for students' choice of a diploma project within a higher education preparatory programme. However, it is neither reasonable nor desirable that a diploma project should cover all the core knowledge areas covered within a programme. An important aspect of the diploma project is that students can delimit the project through the questions they start with.

The goals of the diploma project differ to some extent between the six higher education preparatory programmes as regards how the work is to be reported. The programme specific commentaries indicate the reporting forms to be used for different higher education preparatory programmes.

Students in all higher education preparatory programmes should always summarise or describe their diploma project in English.[58] This involves students in being able to communicate their subject knowledge in English; but this is not a language exercise to be assessed in linguistic terms. The English summary (abstract) should function as an independent text, and provide a brief summary of aims, methods, results and conclusions in running text.

In addition, students in all higher education preparatory programmes should present and discuss their diploma project and give responses to the work of others. Presentations, discussions and responses can take different forms. Responses, for instance, can be given through an oral opposition process and also in writing. In connection with discussions concerning the diploma project, students can demonstrate that they have acquired a critical approach to their chosen methods and results.

GRADES FOR THE DIPLOMA PROJECT

In assessing the diploma project, teachers should use the grades, E or F. A student who has achieved the goals of the diploma project should receive grade E. In other cases, grade F should be used.[59] The diploma project uses a 2 level grading scale instead of the 6 levels used for courses in the upper secondary school. Since a 2 level grading scale is

[58] In the Humanities Programme, students can choose a language other than English.

[59] Chapter 15, Section 25, Education Act.

used for the diploma project, this grade is not included in the calculation of total credits for higher education, which is based on 2 400 credits.

It is the teacher who decides on the grade for the diploma project.[60] Before the teacher awards a grade, a co-assessor with experience of the knowledge area in the domain of the diploma project should provide input. If the student has carried out the diploma project either completely or partially at a workplace, the supervisor at the workplace should be the co-assessor. For a student in a vocational programme, the co-assessor should have experience of the vocational area related to the diploma project.[61] This could be a co-assessor working in the industry or another teacher with experience from the area. The co-assessor of a diploma project carried out in a higher education preparatory programme may be another certified teacher, or a representative from higher education or industry with experience of the knowledge area covered in the diploma project.

Support for assessing diploma projects is also described in each of the programmes in the programme specific commentaries.

THE DIPLOMA PROJECT DEMONSTRATES THAT STUDENTS ARE WELL PREPARED

The diploma project should demonstrate that students are prepared for work or higher education studies. For this reason, it is natural that students carry out their diploma project towards the end of the education. The school should as far as possible provide information for the diploma project together with the stakeholders. Schools with vocational programmes can do this in conjunction with the local programme councils. The linkage between the diploma project and the goals of the diploma are intended to strengthen the overall view of the education; all subjects and courses included in the education should contribute to the knowledge specified in the diploma goals. It is the overall content of the education as a whole that determines if a student receives an upper secondary diploma.[62]

[60] How grades are to be assessed is specified in Chapter 3, Section 16, Education Act. Who is exempted from the authorisation requirements is stated in Chapter 2, Section 18, Education Act.

[61] Chapter 8, Section 1, Upper Secondary School Ordinance.

[62] *Higher requirements and quality in the new upper secondary school*, Bill 2008/09:199.

Structure of the subject syllabuses

Each subject has a subject syllabus. The structure is the same for all subjects in the upper secondary school. The subject syllabuses contain not only descriptions of the subject as a whole, but also descriptions of each course included in a subject. The aim for the subject as a whole is stated, as are the courses included in the subject (there may be one or more courses in a subject). Core contents and knowledge requirements are specified for each course.

Below follow commentaries on each part of the subject syllabuses.

NAME OF SUBJECT

The subject syllabuses start with a brief description of the subject or knowledge area the subject covers. For instance, the introduction describes the scientific roots of the subject, what the subject or knowledge area in overall terms deals with, and why the subject is taught in the upper secondary school.

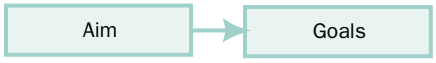
AIM OF THE SUBJECT

The text under the heading "Aim of the subject" consists of two parts, some text describing the aim of teaching in the subject and a number of goals.

Aim

The aim is subject specific and describes the knowledge students should have the opportunity of developing through teaching in the subject. It describes the scope of the subject and sets out the requirements for the teaching as a whole. The aim may also express what cannot be graded, such as questions concerning fundamental values and students' belief in their own abilities.

In some subject syllabuses, there are descriptions of important methods for fulfilling the aims of the subject. These could involve experimental or laboratory work in natural science subjects.



Goals

Goals are subject specific and describe the knowledge students should be given the opportunity of developing through teaching in the subject. They make specific which parts of the aim are to be graded.

Each subject contains a maximum of ten goals in a numbered list of points. The list is numbered as it should be easy to relate each course to the different goals.

The goals start with "the ability to", "knowledge about", "understanding of" and "skills in". The goals only contain four forms of knowledge. They reflect expertise with emphasis on one of the forms of knowledge – i.e. facts, understanding and skills as stated in the Curriculum for the Non-compulsory school forms or the broad knowledge concept of "ability" which is also set out in the curriculum. "Ability" covers the four knowledge forms set out in the Curriculum (facts, understanding, skills and familiarity).

"Knowledge about" describes factual knowledge and understanding. Students demonstrate this knowledge by reporting, describing or through their discussions. Some goals give prominence to understanding and then use the expression "understanding of" which deals with understanding something, understanding the meaning or content of a phenomenon. Students often demonstrate understanding in the same way as "knowledge about", namely by providing an account of, describing or through their discussions.

"Skills in" refers to how something can be done and being able to do it Students often demonstrate this, for instance, by doing, using or carrying out something.

"The ability to" covers as mentioned above all four knowledge forms, and is used to represent the Curriculum's broad view of knowledge. The view of knowledge set out in the Curriculum is in line with the broad view of knowledge that has been discussed historically by Aristotle, amongst others, and is today discussed in EU contexts in terms of the EU's key competences. EQF[63] also makes use of the concept of "competence", and both the OECD and the Bologna model are based on competence thinking. In the diploma goals and the subject syllabuses, the National Agency for Education has chosen not to use the concept of competence in order to be faithful to the concepts used in the curriculum.

[63] European Qualification Framework.

COURSES IN THE SUBJECT

Under this heading, the courses included in the subject are stated and also how they are related to each other. A course building on another course presupposes that the student has studied the earlier course. However, there are no formal requirements that students must have a passing grade from an earlier course to be able to go on to the next and receive a grade in that. The idea is that students can study two courses that build on each other in the sequence given, but some overlapping between the courses can occur. However, the intention is not that courses building on each other should run completely parallel and begin and end at the same time.

For courses that are not based on other courses, no rules are given. Students can thus study these independently of each other or in parallel.

Courses in the subject state whether the student should study a course a number of times with different contents (for instance, a specialisation course) as well as which courses overlap, and where grades from both courses cannot be included in the student's diploma.

If the courses are related to each other, they either have a digit added to their name, i.e. 1, 2, 3 etc. or they have different names. Courses which students have studied independently of each other are not named using different digits 1, 2, 3 etc. On the other hand, parallel courses may be called 1a, 1b etc. or have different names. A subject and a course may have the same name.

Course 1 in history, science studies and social studies are named as course 1a1 (50 credits), course 1a2 (50 credits) and course 1b (100 credits). Courses 1a1 and 1a2 together correspond to course 1b.

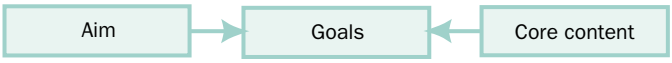
The courses in mathematics are named 1a/2a (for vocational programmes), 1b/2b/3b (for the Business Management and Economics Programme, the Arts Programme, the Humanities Programme and the Social Science Programme) and also 1c/2c/3c (for the Natural Science Programme and the Technology Programme).

The specialisation options in mathematics are also in the courses mathematics 4, mathematics 5, and mathematics – specialisation.

For the first courses in the subjects of Swedish, Swedish as a second language, Swedish for the hard of hearing (based on the special school), English, English for the hard of hearing (based on the special school), mathematics, history, religion, social studies, science studies, physical education and health, geography, biology, physics, chemistry and mother tongue tuition also state that the courses are based on knowledge acquired from the compulsory school or equivalent. In modern languages and sign language, level 2 builds on level 1 or on pupils' options from the compulsory school. Level 3 builds on level 2, or on the language option in the compulsory school.

NAME OF THE COURSE, SCOPE OF CREDITS

Under this heading, the goals covered by the current course are stated. Some courses also emphasise in particular one or a number of specific goals, or one or a number of subgoals. Here the level of the course may also be specified, for instance by the terms "basic" and "advanced" knowledge. If students can study some courses a number of times, then the parts that can vary are stated.



CORE CONTENT

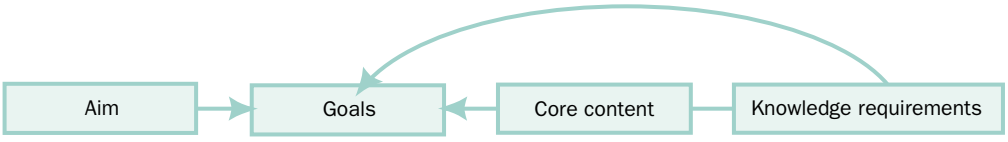
The core content states what the teaching should cover in each particular course. Apart from the core content, teachers can add additional content based on students' needs and interests, but teachers must cover the core content in their teaching. The core content does not state how much time should be spent on the different parts.

The core content in all courses starts with a sentence "*Teaching in the course should cover the following core content:*". After this, the core content is itemised in a list of points. This does not mean that these points should be given the same emphasis in teaching. Nor does it mean that the points should be taught in a given sequence.

Depending on the type of course, the core content is expressed in different ways. In some courses, the points in the core content consist of just a few words, whilst in others a number of sentences. Core content does not need to be factual material, but can cover methods, concepts, theories etc. There may be examples in the core content to clarify what content the course aims, or to make the level of the course more specific. In some cases there are subheadings for grouping the core content.

There is a clear relationship between goals and core content. The core content is determined by the goals. When studying a point in the core content, it should be clear why the content exists and how each content point should contribute to students' attainment of one or a number of goals. The goals can also be identified in the core content. For a course covering a certain number of goals, the core content should ensure that there is material, methods, concepts, theories etc. that will help students to develop their knowledge in alignment with these goals.

The degree of specificity and detail in the core content can vary between different courses depending on their nature and scope in terms of credits.



KNOWLEDGE REQUIREMENTS

Teachers should award grades for each course, and there are specific knowledge requirements for three of the passing grades – E, C and A. The knowledge requirements for these three levels are expressed in running text. The texts for each of the grading levels have the same layout. The knowledge requirements are based on goals, and the sequence of the knowledge requirements is also related to the goals.

If some of the knowledge requirements apply generally to all passing grades, such as the student working with certainty and following laws and other provisions, this formulation is then repeated identically for grades E, C and A. In the knowledge requirements, what is the same for each grade level is written identically and the formulations only vary when they signify a progression between grade levels. There is not always a progression between grading levels in all parts, and it is clearly apparent when this is the case and when it is not, since the differences between grades E, C and A are marked in bold.

For each of the grades E, C and A, in principle all forms of knowledge are described, and this means that the teacher should assess factual knowledge, understanding, skills, and familiarity and accumulated experience at three levels. It is not possible to state that factual knowledge in itself is sufficient for a student to get grade E, and that the higher grades require familiarity. Since different types of knowledge are developed in interac-

tion with each other, all forms of knowledge are reflected in all grade levels. The curriculum also expresses this for the non-compulsory school forms: *Knowledge is a complex concept. Knowledge is expressed in a variety of forms – as facts, understanding, skills, familiarity and accumulated experience – all of which presuppose and interact with each other. Teaching should not emphasise one aspect of knowledge at the cost of another.*

The progression between courses in a subject can be expressed not only in the core content, but also in the knowledge requirements. The basic principle in the subject syllabuses for the upper secondary school is that the core content primarily expresses the progression between courses. This means that knowledge requirements may be identical for different courses in a given subject. In some subjects, the core content does not express the progression to the same extent (e.g. languages) and then the knowledge requirements must also express the progression between courses.

Knowledge requirements are linked to the core content. How specific the linkages are differs from course to course. Often the linkages are overlapping. Some examples that can be mentioned are the course "social studies 1a1" where the term "societal questions" is used to reflect a number of points and areas specified in the core content. A large part of the course deals with students handling certain phenomena which the term "societal questions" can cover, and the knowledge requirements describe the quality aspects the student can attain in these questions at the end of the course. Sometimes these linkages are of a specific nature. The knowledge requirements for the course "social studies 1a1" state: *Students can give in* ***basic terms*** *an account of the rights and obligations of individuals in their roles as consumers, the relationship between household income and spending, assets and liabilities, and also the relationship between personal finances and the economy as a whole.* Here in the knowledge requirements a direct link is made to specific core content.

The progression matrix

The levels for grades E, C and A in the knowledge requirements are formulated using a progression matrix. The progression matrix is the starting point for the knowledge requirements in all courses so that the same knowledge expression is used as far as possible when referring to the same thing irrespective of the course it concerns. In this way the whole of the upper secondary school takes a coherent view of the progression between grades E, C and A. Sometimes the formulations differ from the progression matrix, and in some courses concepts other than those referred to in the matrix are used. This applies, for instance, to languages and arts subjects.

The progression matrix is presented on the next page. Following this, there is a short description of how the different expressions are used in the knowledge requirements. It may be difficult to draw absolute boundaries between the expressions at an overall level, so sometimes the boundaries only become clear in a given context and in the content the expression relates to in different courses.

The column furthest to the left states where the different expressions are used. For instance, the expression **in basic terms** for grade E is used, **in detail** for grade C and **in detail and balanced** for grade A when it deals with the student describing, reporting, explaining, discussing, reasoning and justifying.

What does it mean when a student, for example, *reports* **in basic terms**, **in detail** or **in detail and in a balanced way?** A basic report takes up the essential parts, but is slightly more approximate and not quite as precise. A detailed report is more precise, rounded and rich in content. There is also a quantitative dimension between basic (more concise) and more detailed (longer). The fact that the report is also balanced means that students report from a number of different perspectives. A balanced report can also refer to richer use of language and a stylistically sophisticated presentation, but in the knowledge

	Grade E	Grade C	Grade A
Describing, giving an account, explaining, discussing, reasoning, justifying	**In basic terms**	**In detail**	**In detail and balanced**
Assesses, evaluates	**Simple** assessment	Balanced **assessment**	**Balanced** assessment **and gives proposals on how the work can be improved**
Conclusions, arguments, motives, reasoning, reflections, assessments, comparisons, links, explanations, making proposals, examples	**Simple**	**Well grounded**	**Well grounded and balanced**
Situations	**Familiar**	**Familiar/New**	**New**
Complexity of the situation, task, problem, questions etc.	**Simple**	**–**	**Complex/Advanced**
Implementation	With **some** certainty	With **good** skills	With **very good** skills
Implementation	**With some certainty**	**With some certainty**	**With certainty**
Implementation	**In discussion** with the supervisor When students discuss with their supervisor, they assess **with some certainty** their own ability and the requirements of the situation.	**After discussion** with the supervisor When students discuss with their supervisor, they assess **with some certainty** their own ability and the requirements of the situation.	**After discussion** with the supervisor When students discuss with their supervisor, they assess **with certainty** their own ability and the requirements of the situation.
Results, quality	**Satisfactory**	**Satisfactory**	**Good**
Quantity	**Some**	**Some**	**Several**
Quantity	**Limited**	**–**	**Extensive**
Quantity	**Few**	**Few/Several**	**Several**
Documentation	**Simple**	**Precise**	**Precise and detailed**
Appropriate language	**Simple**	**–**	**Balanced**
Risk assessment	**Simple**	**–**	**Well grounded**
Analysis, interpretation	**Simple**	**–**	**Complex/Advanced**
Project plan, synopsis, campaign, planning, manuscript	**Simple**	**Simple/Thorough**	**Thorough**

requirements the term "balanced" is used mainly in the sense of covering a number of different perspectives.

When students *assess* or *evaluate* their work and the result for grade E requires that she or he makes a **simple** assessment, a **balanced** assessment for grade C, or a **balanced** assessment **and makes proposals on how the work can be improved** for grade A. Here, as in other places in the progression matrix, the term "balanced" recurs. Also in this respect, students make assessments from a number of different perspectives and link these to different preconditions, such as planning, use of resources and the final result. For a simple assessment, it is not sufficient that students show their approval, by simply stating "it was good" without relating this specifically to the work itself. On the other hand, the student may not link different conditions together and thus not view the issue from different perspectives. In order to achieve the highest grade, students should also be able to provide proposals on how the work can be improved, together with further reasoning on their work and results.

As regards *conclusions, reasoning, comparisons, examples* and similar, the term **simple** is used for grade E, and **well grounded** for grade C **and well grounded and balanced** for grade A. If a conclusion is well grounded, this means students are building on relevant facts and objective conditions and that this is based on reliable sources and possible theories. This also means that the logic applied to the conclusions or reasoning is well grounded. A student who draws simple conclusions does not have the same foundation in sources and possible theories, but the student's conclusions may nevertheless to some extent be informed by sources and possible theories. In addition, when conclusions are balanced, students are able to consider the issue from a number of different perspectives.

Another aspect of quality of students' knowledge is the situation in which they are in and how familiar they are with it. Grade E requires that students carry out work in **familiar** situations, such as those that they have experience of. "Situation" refers not just to a spatial concept, but also the type of problem the student should solve and the tools and methods or procedures to be used. For grade C the term **familiar** recurs in certain knowledge requirements, whilst in others C involves **new** situations. Here, the nature of the course and level are the determining factors. Some courses are too advanced for grade C to require that students be able to manage **new** situations, whilst in other courses this is entirely reasonable. Grade A applies to **new** situations.

The progression matrix also expresses *complexity* for instance in situations or tasks. For grade E, the term **simple** is used, for grade C, nothing is stated, and for grade A **complex** or **advanced** are the terms used. A simple situation can be both familiar and new, but what is common to simple situations is that they require basic measures or that they do not require difficult choices to be made.

In some contexts, in the column furthest to the left different expressions are used. As regards implementation the terms "skill", "certainty" or "discussion with the supervisor", are all used. The expression used depends on the context. In some courses it is natural to refer to a skill, whilst in others it is more natural to talk about the certainty with which the student carries out the work. The term "certainty" when it involves performance refers to how skilful the student is, and not whether a student is personally confident in himself or herself and in the surroundings. "Certainty" in the latter case exists in most vocational courses. Certainty is one of the fundamental requirements that is not treated progressively in the higher grade levels.

As regards *skill*, this requires that students carry out work with **some** skill for grade E, with **good** skill for grade C, and with **very good** skill for grade A. This also applies to the way in which students use tools and materials.

Certainty in implementation is specified as with some certainty for grade E, **with some certainty** for grade C, and **with certainty** for grade A. Certainty in implementation emphasises a slightly broader aspect of implementation. This involves not just skill, but also the certainty with which students choose, for instance, materials or procedures. The progression matrix expresses certainty in implementation in the same way for grades E and C. Some individual expressions can be used to specify progression at two levels, since in the knowledge requirements as a whole it is possible to see a clear progression through all three levels.

The term "supervision" is used to cover various degrees of self-autonomy. Grade E requires that students carry out work **in discussion** with supervisors. This means that students synchronise their work regularly with the supervisor, but do not need to have a supervisor present the whole time. Grades C and A require that students carry out work **after discussions** with supervisors. This means that students take their own initiatives and know when they need to review the status with the supervisor before completing the work. In order to obtain a progression across all three grading levels, there is another variable concerning "supervision". In E and C grades, there is a sentence: "When students discuss with their supervisor, they assess **with some certainty** their own ability and the requirements of the situation." At the A level, the sentence: "When students discuss with their supervisor, they assess **with certainty** their own ability and the requirements of the situation." By means of this additional variable, the student's actions can also be assessed when consulting the supervisor. This involves students in discussion situations being able to reflect over their own skills in relation to the complexity of the task before them, and the best means they have of solving a task. It also involves whether students in general are able to assess the requirements of the situation, such as how laws and other regulations affect how a given task should be solved. Grades E and C require that students assess **with some certainty** and grade A **with certainty**. The term supervisor covers both a teacher or supervisor at the school, and a supervisor at the workplace.

For *results* and *quality*, the same expression is used for both grade E and grade C, namely **satisfactory,** whilst for grade A, this is raised to **good**. Satisfactory results or quality refers to a result that specifically fulfils the specified quality requirements or norms, or that the quality specifically fulfils functional requirements, or in some cases requirements concerning appearance.

The knowledge requirements can also refer to *quantitative differences* between the grading levels. Above, the quantitative dimension is referred to by "in basic terms" and "in detail". Other quantitative expressions in the progression matrix are some/several, **limited/extensive** and **few/several**. Generally, assessment focuses on qualitative differences in students' expertise. The quantitative aspect also embodies a qualitative aspect, such as students using different methods to demonstrate a higher level of knowledge than just using a single method.

Documentation is **simple** for grade E, **precise** for grade C and **precise and detailed** for grade A. Simple documentation is typified by often only identifying parts of e.g. a work process, or is so basic that it may be difficult to understand subsequently. Precise documentation identifies not only parts but also wholes, and to a greater extent it is thus possible for others to subsequently share and understand. The two highest grade levels differ quantitatively from each other in the sense that "in detail" is added as a requirement for grade A.

As regards *language appropriate to the area* and *risk assessment*, the terms simple, balanced and well grounded recur. For *analysis* and *interpretation*, the terms **simple** and **complex/ advanced** recur.

When students develop a *project plan*, a *plan*, a *campaign* or similar, the requirement for grade E is **simple**, for grade C **simple** in some courses or **thorough** in others, and for grade A **thorough**. In a simple project plan, students undoubtedly take up the essential parts, such as the initial conditions for the project, implementation and evaluation, but are either a little too superficial or get submerged in individual details. A thorough project plan, on the other hand, takes up the essential parts and is well balanced both as a whole and in its details. It also anticipates to some extent the difficulties that can occur and safeguards against them. Here the level for grade C can vary, as was the case for familiar or new situations, and it is the nature of the course and its level that are the determining factors. Some courses are too advanced for grade C to require that students draw up a thorough project plan, whilst in other courses this is entirely reasonable.

Grading scale

The grading scale has five pass levels E, D, C, B and A and a fail grade F. If the teacher does not have sufficient material for assessing the student's knowledge due to absenteeism, a grade should not be awarded and this should be recorded as a dash.[64] Knowledge requirements are specified for three of the grades E, C and A. The grading scale does not specify knowledge requirements for grades D and B.

Grade levels D and B

Grade D means that the knowledge requirements for grade E and most of C are satisfied. Grade B means that the knowledge requirements for grade C and most of A are satisfied.

Grade levels D and B are based on what is specified in the knowledge requirements for the adjacent grades above and below. The basis for grades D and B can be different for different students. One student fulfils some specific parts of the knowledge requirements for most of the grade, whilst another student fulfils other parts. However, both students can be assessed as satisfying most of the requirements for the higher grade. Since "most of" is an assessment which can be interpreted differently for students, these knowledge requirements are not specified either at the national or local level.

When assessing "most of", the teacher makes an overall assessment of the knowledge students demonstrate compared with the knowledge requirements for the adjacent grade. In comparisons, teachers identify which parts of the knowledge requirements students fulfil, and assess this in relation to the aim of the subject, and the core content of the course to determine if the student's knowledge as a whole fulfils "most of " the requirements".

When calculating the total number of credits, grades are given the following values: F = 0; E = 10; D = 12.5; C = 15; B = 17.5; A = 20.

National tests and support for assessment

To support teachers' assessment and grading, there are national tests and support for assessment in certain subjects.

The aim of the national tests is primarily to

- support an equivalent and fair assessment and award of grades
- provide a basis for an analysis of the extent to which knowledge requirements are fulfilled at the school level, at the level of the organiser, and at the national level.

[64] Chapter 15, Section 27, Education Act.

The national tests also contribute to

- making the syllabuses specific
- increasing student goal attainment.

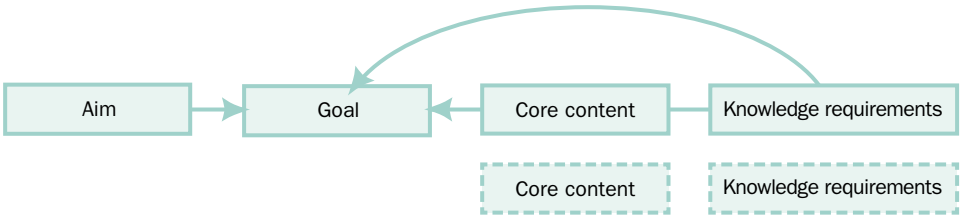
Support for assessment contributes to

- making the syllabuses specific
- supporting equivalent and fair assessment and award of grades
- increasing student goal attainment.

On the web site of the National Agency for Education, further information is available to see which subjects have national tests and support for assessment.

RELATIONSHIP BETWEEN THE DIFFERENT PARTS OF THE SUBJECT SYLLABUS

The different parts of the subject syllabuses are linked together clearly. It is not possible to just study the core content or knowledge requirements, they have to be put into the context of the whole of the subject syllabus.



The aim and goals are formulated for the subject as a whole. The aim describes in running text the knowledge students should have the opportunity of developing through teaching in the subject. It also describes what cannot be graded. The goals are expressed as a series of points, and clarify what teachers should grade.

The goals describe what knowledge students should be given the opportunities of developing through teaching in the subject. The core content states what should be covered in the teaching in each course for students to be able to develop the knowledge described in the goals. The goals and the core contents are thus very different in nature. Despite this, the goals themselves may also contain content as well, but in these cases the goals are more overarching and not as specific as the core content.

There is a clear link between goals and knowledge requirements. The knowledge requirements express the quality level students should demonstrate in terms of their expertise in relation to the goals. The sequence in the knowledge requirements is the same as in the goals. If the goals, for instance, begin with the skill of reading texts, then the knowledge requirements will also begin with this. On the other hand, it is not the case that each goal always has a corresponding counterpart in the knowledge requirements. A single paragraph in the knowledge requirements may cover one or more goals.

Programme specific commentaries

DIPLOMA GOALS FOR THE CHILD AND RECREATION PROGRAMME

The Child and Recreation Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work with children, youth or adults in pedagogical and social vocational areas, or in the recreational or healthcare sectors. In the programme students should also be given opportunities to study courses preparatory for higher education in these areas.

The education should develop students' knowledge in pedagogy and their skills in carrying out tasks that occur in areas for which the programme provides instruction. The education should lead to students, depending on their orientation, being able to meet, assist and support children, youth or adults in their development.

Knowledge of human health and living conditions and about different ways of promoting health are also crucial in the programme. Questions concerning the working environment and organisation of work should be covered in the education to prevent occupational injuries and promote good health.

Typical of the activities for which the programme provides an education are collaboration, cooperation and communication. Working with people requires, amongst other things, the ability to be sensitive, creative and use judgement to create optimal conditions for the participation and learning of all people. The education should thus give students the opportunity to develop these skills in particular.

The emphasis on working with people means that an ethical approach should be central to the education. Knowledge of basic democratic values and international agreements concerning human rights are important in the activities for which the education provides preparation. Through the emphasis in the education on the interaction between people, students should be given the opportunity to reflect on and discuss social and cultural questions.

Several of the activities in the programme involve working with people's health. For this reason, the education should lead to students developing an approach that promotes health. Students should also on the basis of knowledge of people's learning and their living environments be able to analyse and reflect on the different living conditions of people and their opportunities to develop. The education should give students the opportunity to develop scientific and critical approaches.

The education should focus on solving problems and encouraging a preparedness to take action. Students should thus carry out tasks and solve practical problems, both independently and in cooperation with others. They should also develop knowledge of planning, carrying out, documenting and assessing their work, at both activity and individual levels.

The education should give students the opportunity to develop their ability to take initiatives, and be creative in order to work in a development oriented manner. The participation of students in choosing working forms and content in their studies thus has a particular pedagogical significance. The education can also prepare students to run their own business in the area.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Child and Recreation Programme has three orientations.

The orientation, recreation and health, provides knowledge about people's recreation and different recreational and healthcare activities, and also about people's health and measures for promoting health. It should prepare students for work in the recreational and healthcare sectors.

The orientation, pedagogical work, should provide knowledge about the development of children and young people, their learning, needs and rights, and about different pedagogical activities. It should prepare students for working in areas such as child minders in preschool, or as a pupil assistant in school.

The orientation, social work, should provide knowledge about social processes and conditions, and about social policy areas. It should prepare students for working e.g. in the functional impairment or observation areas.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Child and Recreation Programme is a vocational programme. It is a broad programme where students can choose between getting an education in pedagogical work, social work or in the recreational and healthcare sectors. Some of the programme's vocational outcomes lead to working with children, but most aim at working with youth and adults. The common parts thus lay the foundations for working with people of all ages.

The diploma goals state that students should be given the opportunity of studying courses preparatory for higher education in the areas that the programme focuses on. In the different vocational outcomes of the programme, there are a number of professional development programs in higher education. During the education, students need to decide if they wish to study further at higher education level, and in which case be able to make choices that lead to general and specific eligibility for higher education. In the Child and Recreation Programme, it is possible to achieve general eligibility for higher education within the framework of the programme's 2 500 credits.

The diploma goals emphasise pedagogical knowledge and skills in carrying out pedagogical work. This knowledge is required today in increasing numbers of vocational areas and is particularly important to be able to meet, support and develop people's learning, their development, health and well-being. This requires pedagogical skills in planning, carrying out, documenting and assessing activities.

The diploma goals also emphasise that students should develop their communicative skills, which are of vital importance for dealing with other people. Working methods during the education should promote in different ways the communicative skills of the students. In addition, communicative skills are the foundation for developing pedagogical leadership.

Working with people requires an ethical approach. It involves treating people with respect, where the equal value of all people is the starting point, and always acting on the basis of statutory democratic values and the human rights laid down in international agreements.

As stated in the diploma goals, students should be given the opportunity of developing a scientific and critical approach. This involves developing skills in examining and assessing information from different sources, and being critical to information.

Entrepreneurship is included in all education programmes. In the diploma goals for the Child and Recreation Programme, this can be seen in the formulations on the ability to take initiatives, creativity, problem-solving, and being prepared to take action. Students should thus during the education be given opportunities to solve problems, both independently and in cooperation with others.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Child and Recreation Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Child and Recreation Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcomes *child minder* and *pupil assistant*, recurring tasks can be organising an assembly for children. The task involves planning, carrying out, documenting and assessing the assembly. Planning of the assembly should be based on knowledge of the learning and growth of children, the child's experience of the world, their interests and motivation, and also the goals and intentions of the curriculum. Organising an assembly should encourage and guide children so that they increase their competence, develop new knowledge and insights, and strengthen their belief in their own ability. The documentation and assessment should show how the assembly has contributed to satisfying the child's opportunities for learning and developing in accordance with the goals and intentions of the curriculum, and how this can be developed and improved. In addition, the assessment should show how they can develop their own leadership roles.

In the vocational outcome *support* and *service in the functional impairment area*, recurring tasks can be organising a recreational activity such as going out and bowling together with a person with a functional impairment. The task involves planning, carrying out, documenting and assessing the activity. Planning of activities should be based on knowledge of the individual's functional impairment and relevant implementation plans. Organising the activity should create optimal conditions for the individual's development by encouraging and guiding the individual towards participation and accessibility in society, and also through strengthening the individual's belief in their own ability. Appropriate working methods and aids are used to achieve this. The documentation and assessment should show how the activity has contributed to creating optimal conditions for the individual's development, and how it can be further developed and improved.

In the vocational outcome *swimming/sports hall personnel*, recurring tasks could be leading a group training session in some form of training in water for a group of adult participants. The task involves planning, carrying out, documenting and assessing the activity in accordance with its aims. Planning of the activity should be based on knowledge of water training and working methods for promoting health. In addition, it involves planning and preparing the premises and equipment needed, and also taking into account relevant safety aspects. Organising the water training session should take place in accordance with ideas of hosting and service, and be adapted to the conditions of participants to encourage and motivate them to take part in physical activities. Activities should be carried out in ways that prevent injury. The documentation and assessment should show how the training session has been carried out, how it can be developed and improved, and also how their own role as leader can be developed.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to the chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of the social or pedagogical context the task involves,
- knowledge of laws, ordinances and other provisions in the area in which the task is carried out, and
- knowledge of concepts, theories and practices relevant for the task.

Skills

In the diploma project, students should demonstrate

- skills in communicating and cooperating with others in a professional manner,
- skills in planning, implementing, documenting and assessing work in a professional manner, and
- skills in using information technology relevant for the task.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take initiatives, solve problems, take responsibility and see the consequences of various courses of action within the framework of the task,
- the ability to assess, analyse, discuss and problematise social or pedagogical situations in a professional manner, and
- the ability to meet, assist or pedagogically lead people based on a professional ethical and democratic approach.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 700 credits

Health
Health pedagogy — 100

Science studies
Science studies 1a2 — 50

Pedagogy
Communication — 100
Learning and development — 100
Human environments — 100
Pedagogical leadership — 100

Social studies
Social studies 1a2 — 50

Swedish
Swedish 2 — 100
or

Swedish as a second language
Swedish as a second language 2 — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300 credits

Recreation and health — **300**
Recreation and healthcare activities
Recreation and healthcare activities — 200
Recreation and sports
Recreation and sports — 100

Pedagogical work — **300**
Pedagogy
Children's learning and growth — 100

Pedagogical work
Pedagogical work — 200

Social work — **300**
Social work
Social work — 200

Sociology
Sociology — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Child and Recreation Programme should thus permeate the upper secondary foundation courses, and the other courses studied in the programme.

The subjects *Swedish* or *Swedish as a second language, social studies* and *science studies* are included both as foundation subjects and programme specific subjects in the Child and Recreation Programme. These three subjects are commented on under the heading Subjects specific to the programme.

The subject *history* examines changes in society and conditions for individuals, which is emphasised in the diploma goals of the Child and Recreation Programme.

The subject *religion* covers both knowledge of people's outlooks on life, as well as ethical approaches, which are crucial in working with people.

In the subject of *mathematics*, the area "probability and statistics" is particularly important in the Child and Recreation Programme. Students in different subjects typical of the programme develop the ability to examine and assess different statistical information concerning people's lives and living conditions, which is supported in the subject of mathematics. In addition, students who have chosen the vocational outcome of child minder will in their professional roles be responsible for children in the preschool developing their understanding of mathematical concepts.

In the subject *physical education and health*, students develop knowledge of what promotes good health. This knowledge is important for all the professions which the Child and Recreation Programme leads to.

Subjects specific to the programme

The subjects which are common to the Child and Recreation Programme are *pedagogy, health, Swedish* or *Swedish as a second language, social studies* and *science studies*. These subjects define the nature of the programme and give students the knowledge needed for the different professions the programme leads to.

The subject *pedagogy* is the core of the Child and Recreation Programme. In the programme specific subjects, four courses of 100 credits are included in the subject, namely the courses communication, learning and development, human environments and pedagogical leadership. The courses should develop students' knowledge of how people learn, develop and are socialised in different contexts, and about people's interaction and communication, and also about pedagogical leadership. This knowledge is also required by the industries. In their future profession, students should, amongst other things, be able to meet, assist and pedagogically lead people, and create good conditions for people's learning and growth.

The subject *health* contain seven courses, of which one, health pedagogy, is a programme specific subject in the Child and Recreation Programme. The course, health pedagogy, is common for all students since activities in the different professional areas of the programme have the aim of promoting health. Students should develop the ability to support people's health and well-being and the ability to work in ways that promote health.

The subject *Swedish* or *Swedish as a second language* strengthens communicative language skills (listening, talking, reading and writing) which is crucial in working with people. Most of the professions which the programme leads to deal with being able to communicate and interact with people. Examples that can be mentioned are child minders, who amongst other things have the task of supporting and strengthening the language development of children. Reading literature supports students' language development, and can also contribute to their developing empathy and greater knowledge about themselves, about the surrounding world, and the different living conditions of people, all of which are important for the professions the programme leads to.

In the subject *social studies*, students develop knowledge of society's political institutions and about human rights, and also ethical and democratic approaches. The subjects typical of the Child and Recreation programme further develop knowledge about peoples' living conditions. In addition, the programme provides an education for activities which are often politically regulated. The subject of social studies also deals with welfare theories that play a special role in the Child and Recreation Programme since a number of the professions the programme leads to deal with what society can or should be responsible for. In addition, the economy, growth, business and use of resources are important for the different professions. Business and entrepreneurship are increasingly common in pedagogical and social activities and in the recreational sector. For instance, it is becoming more important that municipalities can provide their residents with different types of recreational activities. In recent years, it has become increasingly common to start independent pedagogical and social activities.

The subject *science studies* deals with sustainable development, and also the consequences this has on how people live, and its impact on health. Several of the professions the programme leads to have the task of working for sustainable development and better public health. In the subject of science studies, emphasis is put on scientific understanding, which is necessary in such areas as health, theories on training and keeping fit, and also in the area of functional impairment.

Orientations

The orientations in the Child and Recreation Programme are recreation and health, pedagogical work and social work. The programme's orientations are all based on an introductory course in theory to provide a scientific foundation. In addition, a broader course is included covering activities in the different areas.

The orientation recreation and health

The orientation aims at developing students' knowledge of people's recreation and about different recreational and health care activities, and deepening knowledge about people's health and the promotion of health. This prepares students for working in recreational and healthcare sectors, such as staff in swimming or sports halls, and within sports and recreational facilities, and also as personal trainers.

Recreation, healthcare and health are expanding areas in society, and can lead to an expanding labour market. This is made clear in the orientation, as it takes its starting point in the importance of recreation, both for the individual and for society. Health

promotion is central in the professional area, and thus healthcare activities are given prominence in the orientation. How these are carried out in the sector vary today. Publicly run activities where the municipality both owns the facility and runs it is a declining form. More private entrepreneurs are responsible for operations and a large proportion of facilities are owned and run by associations.

The orientation's pedagogical foundations are in demand by the industry. In the area, the requirements that customers and cooperation partners impose on staff are increasing, in terms of their leadership, and that they should also have good pedagogical skills when dealing with people of all ages, planning and carrying out activities and events. There is also a requirement for skills in documenting tasks.

There are two courses in the orientation. The course recreation and sports, deals with recreation and the importance of sports for individuals and society. The course recreation and healthcare activities, provides a foundation for how these are organised, which policy documents are the starting point for tasks, and also approaches in professional roles in the different vocational outcomes.

The orientation pedagogical work

The orientation aims at developing students' knowledge of the learning and growth of children, and about the rights of children and different pedagogical activities. It prepares students for working as child minders in preschool and as pupil assistants in school.

The orientation covers the courses children's learning and growth, and pedagogical work. The course children's learning and growth, is included in the subject of pedagogy and is an advanced variant of the courses learning and development, and human environments, but with a focus on how children learn, develop and are socialised in society. The course pedagogical work deals with work in the preschool, school and leisure-time centre, professional roles and the responsibility of the work team, and the role of these institutions in society.

In the preschool, emphasis is put on knowledge of the child's language and communicative development, the child's mathematical development, and science and technology. The curriculum for the preschool describes both the responsibility of the preschool teacher and the work team. The latter group includes child minders, and there are differences between what a child minder and a preschool teacher are responsible for, even though they work together in a team. Based on this reasoning, the content and courses in the orientation have been designed together with the industry.

The orientation social work

The orientation aims at developing students' knowledge about social processes and conditions, and also about social policy areas. It also aims at students developing the ability to meet people in different social activities. The orientation prepares students to work, for instance in the functional impairment and observation area, and involves working with people of all ages and thus permeates the orientation.

The orientation covers the courses sociology and social work. The course sociology deals with different social structures in society, norms and categorisation of people, and also how these affect people's conditions and how people affect society. Other important areas in the course are discrimination, gender equality and equality of treatment, and current social issues. The course social work deals with different social activities and what regulates them. There is a wide range of public, non-profit and commercial social activities. The areas given prominence in the course are society's handling of social questions and problems, and also social authorities and ombudsmen, and their role in society.

Programme specialisations

Programme specialisations contain courses within the framework of the diploma goals of the Child and Recreation Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Child and Recreation Programme is published on the National Agency for Education's web site.

In addition to the courses typical of the programme taken up in the section below, the programme specialisations include the courses Swedish or Swedish as a second language 3, mathematics 2a and physical education and health 2. The course Swedish, or, Swedish as a second language 3, are included as programme specialisations to further strengthen the communicative skills of students with regard to the different vocational outcomes of the programme. Similarly the subjects of mathematics, and physical education and health are important for many vocational outcomes in the Child and Recreation Programme.

The subject psychology is also included as a programme specialisation since it provides a supplementary theoretical foundation for some of the other subjects typical of the Child and Recreation Programme.

Vocational outcomes and the programme specialisation modules

The Agency's proposals for vocational outcomes and the programme specialisation modules for the Child and Recreation Programme are developed in conjunction with the national programme council. They can be found on the Agency's web site. The programme specialisation modules gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation modules can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation modules, on page 41.

Some of the vocational outcomes in the Child and Recreation Programme are *swimming/sports hall staff, child minders, pupil assistants* and *caretakers.*

The programme specialisations cover a total of 600 credits, and the programme specialisation modules contains the 300–400 credits required for the student to be ready for employment. The remaining credits can be used by students to broaden or deepen their professional expertise, or to choose courses which provide general and specific eligibility to higher education. It is also possible to use the remaining credits to develop a sports profile, such as in the courses physical education and health 2, and training theories 1 and 2.

The vocational outcomes and the programme specialisation modules for the Child and Recreation Programme are described below for the different orientations.

Vocational outcomes *swimming/sports hall staff* in the orientation recreation and health, aim at work in swimming and sports facilities. A requirement from the industry is that students to be ready for employment should have a certain breadth in their competence. Students must have knowledge about the activity and skills in operations and maintenance, but must also be able to deal with people using the facilities. In addition, students need to be able to lead different activities, and for this reason the course activity leadership is included in the programme specialisation modules. The course can be studied several times with different contents, focusing on leadership for swimming instructors, and another time focusing on leadership for water training.

Courses in the programme specialisation module for the vocational outcome swimming/sports hall staff	Courses which can broaden or deepen the programme specialisation module
Swimming and recreational facilities, 100 credits Operation and maintenance of recreational facilities, 100 credits Activity leadership, 100 credits Activity leadership, 100 credits	Activity leadership, 100 credits Marketing and sales, 100 credits Recreational environments and arenas, 100 credits Training theory 1, 100 credits Massage 1, 100 credits Nature guide 1, 100 credits Ethnicity and cultural encounters, 100 credits Youth cultures, 100 credits Entrepreneurship, 100 credits Physical education and health 2, 100 credits Swedish or Swedish as a second language 3, 100 credits

The vocational outcomes *child minder* and *pupil assistant* in the orientation pedagogical work aim at work as a child minder in preschool, but students can also choose to focus on work as a pupil assistant in school. The programme specialisation module includes the course diet and health, since it is a knowledge area in demand from the industry. The course pedagogical theory and practice, aims at deepening knowledge in one or more pedagogical theories to broaden students' competence and increase their readiness for employment.

Courses in the programme specialisation module for the vocational outcomes child minder, pupil assistant	Courses which can broaden or deepen the programme specialisation module
Creative activity, 100 credits Special pedagogy 1, 100 credits Pedagogical theory and practice, 100 credits Diet and health, 100 credits	Drama pedagogy, 100 credits Digital creativity 1, 100 credits User games and accompaniment, 100 credits Nature guide 1, 100 credits Nature guide 2, 200 credits Activity leadership, 100 credits Ethnicity and cultural encounters, 100 credits Dance orientation, 100 credits Aesthetic communication 1, 100 credits Text communication, 100 credits Rhythm, 100 credits Entrepreneurship, 100 credits Swedish or Swedish as a second language 3, 100 credits Mathematics 2a, 100 credits

The vocational outcome *security guard* in the orientation social work aims at work in the security and surveillance area.

Courses in the programme specialisation module for the vocational outcome security guard	Courses which can broaden or deepen the programme specialisation module
Surveillance and security, 300 credits	Alarm, surveillance and security systems, 100 credits Law and society, 100 credits Ethnicity and cultural encounters, 100 credits Youth cultures, 100 credits Entrepreneurship, 100 credits Swedish or Swedish as a second language 3, 100 credits Physical education and health 2, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Child and Recreation Programme that can give specific eligibility to higher education can be seen on the Agency's web site.

Building and Construction Programme (BA)

DIPLOMA GOALS FOR THE BUILDING AND CONSTRUCTION PROGRAMME

The Building and Construction Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in a building and construction area, such as construction worker, construction machine operator, building worker, house painter or sheet metal worker.

The education should develop students' knowledge about and skills in building and construction in, for example, new production, conversions and renovation. Since work in building and construction affects society's infrastructure and environments which people frequent, the education should provide knowledge about rational, safe and environmentally sustainable construction. The education should also give knowledge about different professions and work processes in the industry, and also about entrepreneurship and business, which provides a good foundation for cooperating at the workplace and with customers.

Construction sites are always changing and work takes place both indoors and outdoors. In addition, working methods, materials and aids change and develop. This imposes requirements on flexible approaches and continuous learning in working life. The education should as a result develop students' creativity and ability to take initiatives. They should be able to work independently and together with others. Work should be carried out in an ergonomic, healthy and safe way to prevent physical and occupational injuries. The education should give knowledge about environmental rules and safety provisions at work.

The building and construction industry deals with large amounts of capital. Work is carried out in accordance with customer orders and applicable laws, provisions and other regulations. The education should thus provide students with knowledge about and skills in planning, carrying out, documenting and quality assuring work in accordance with modern methods and aids. Students should be able to choose, use and maintain materials, tools and machines with regard to safety, the environment, quality and finance, both as regards production and life-cycle costs. The education should also develops students' ability to solve problems in daily work and take advantage of experiences from earlier building projects.

The education should develop students' understanding, both of their own and the profession's importance in working and societal life. In cooperation at the workplace and in customer relations, demands are imposed on communicative skills and understanding of other people and other groups of professionals. Students should thus in all subjects work on developing their language skills and get opportunities of meeting and discussing different perspectives on people's living conditions in society.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Building and Construction Programme has five orientations.

The orientation plant vehicles should give knowledge of ground work, such as excavation and moving materials in work on roads and cables, ballast, and transport knowledge.

The orientation house construction should give knowledge of new construction, renovation and reconstruction of houses and premises, and also bridges and other civil engineering constructions.

The orientation land and construction should give knowledge of preparing ground for roads, railways, house foundations, cables, green areas, and asphalt, tile and stone surfacing.

The orientation painting should give knowledge of painting and repainting internal and external surfaces, setting up different wall coverings, and knowledge about the aesthetic and protective properties of paint.

The orientation sheet metal should give knowledge of building and ventilation metal working to provide buildings with protection against the climate and a functioning indoor climate, combining design and technical functions.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Building and Construction Programme is a vocational programme. When students complete the programme, they should be ready to work in one of the occupations in the building and construction industry. In addition, students should have comprehensive knowledge of the building process from planning to operations, and about new building, conversion and renovation. The education should give students knowledge about working methods, materials, tools and machines that are commonly used in the occupation. This means that students should obtain sufficient knowledge to plan and carry out simple tasks independently, and more advanced tasks under supervision, and document and quality assure their work.

On a building and construction site, there is the risk of accidents and physical injury. The education must be planned and carried out so that students develop an understanding of using protective equipment, working ergonomically and creating a healthy working environment, and learn to identify and assess risks in different work phases and situations. The diploma goals emphasise safety, health, communication and the working environment.

The diploma goals state that the education should give students knowledge of environmentally sustainable construction, since the choice of methods and materials has consequences on society's infrastructure and environment. This means that the education should develop students' ability to make informed choices for sustainable development. It also means that the education should develop students' skills in searching for information about different methods using the Internet and other ways, about materials, instructions and regulations for building and construction work.

Entrepreneurship is included in all education programmes. The diploma goals for the Building and Construction Programme highlight in their descriptions students' creativity, and the ability to take initiatives and solve problems, and to work independently and together with others. Construction sites are always changing, and in building and construction work development of materials and working methods takes place continuously, and legislation also changes. The education should thus give students the opportunity of developing good reading skills, and the ability to search for information independently using different methods, and to reflect on and take responsibility for their own knowledge development.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Building and Construction programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Building and Construction Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcome *construction machine operator*, recurring tasks may be excavation and loading, and maintenance of machines and tools. In the vocational outcome *surfacing worker* recurring tasks may be building, maintaining and repairing roads, bridges and tunnels. In the vocational outcome *house painter*, recurring tasks may be internal and external painting, setting up protective wall coverings and choosing colour schemes. In the vocational outcome *building sheet metal worker*, recurring tasks may be producing and mounting sheets for roofs and facades. In the vocational outcome *woodworking*, recurring tasks may cover everything from producing moulds to interior carpentry.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of the materials, methods, tools and machines used in the task,
- understanding of factors affecting health and safety in vocational life, and
- knowledge of laws, other regulations and performance requirements relevant for the task.

Skills

In the diploma project, students should demonstrate

- skills in planning the task, and choosing relevant working methods, materials and equipment,
- skills in carrying out the task using recurring working methods, materials, tools and machines, and also maintaining materials and equipment,
- skills in searching for and interpreting information, work descriptions and drawings to carry out tasks,
- skills in making risk assessments for the task,
- skills in solving problems in connection with tasks, and
- skills in documenting their own work.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take responsibility in connection with implementation of the task,
- the ability to carry out tasks with regard to use of resources and working environment risks,
- the ability to assess quality of their own work in relation to relevant performance requirements, and
- the ability to assess and reflect on how the work process has affected results.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Building and construction
Building and construction 1 — 200
Building and construction 2 — 200

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 400–900 credits

Plant vehicles 900
Construction driver
Construction driver – process — 100
Construction driver 1 — 200
Construction driver 2 — 200
Construction driver 3 — 200
Construction driver 4 — 200

House building — **700**
House building
House building process — 200
House building 1 — 100
House building 2 — 200
House building 3 – conversion — 200

Land and construction — **500**
Construction
Construction process — 200
Construction 1 — 100
Construction 2 — 200

Painting — **400**
Painting
Painting process — 200
Painting 1 — 200

Sheet metal — **400**
Sheet metal
Sheet metal process — 200
Sheet metal – foundation — 100

Ventilation sheet metal
Ventilation sheet metal 1 — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Building and Construction Programme should thus permeate the foundation courses, and the other courses studied in the programme.

Mathematical knowledge is needed in building and construction professions. The work requires a knowledge of e.g. geometry, and calculating volumes occurs in all vocational outcomes in the Building and Construction Programme. The subject *mathematics* should give students the opportunity of developing methods for making calculations and practical problem-solving. The subjects typical of a programme provide opportunities for practical application.

The diploma goals emphasise language and communication. In the subjects *Swedish* or *Swedish as a second language* and *English*, students establish a language foundation. Good reading and communicative skills are of importance when students search for and assess information, and cooperate with different professional groups and customers at the workplace. By studying subjects typical of the programme, students are given the opportunity to develop their professional language and ability to communicate when carrying out their profession.

Cooperation at the workplace and customer relations impose requirements on students' understanding of other people. In the subjects *history* and *religion*, students are given the opportunity to discuss people's different living conditions in society.

The diploma goals emphasise that the education should give knowledge of environmentally sustainable building. The subject *science studies* contributes to an understanding of sustainable development and the use of scientific knowledge in professional life. The subject science studies can together with the subjects typical of the programme give students the knowledge to make conscious choices when carrying out their profession.

During the education students meet laws and other regulations which they will work with in their profession. The interaction between the subject *social studies* and subjects typical of the programme makes it possible for students to get an understanding of how the labour market is organised, and how laws and other regulations impact daily work.

The diploma goals emphasise ergonomy and health. In the interaction between the subject *physical education and health* and the subjects typical of the programme, students can develop an understanding of the importance of lifestyle for their health, safety and performance in the profession.

Subjects specific to the programme

The subject which is common to the Building and Construction Programme is *building and construction.*

The subject *building and construction* has two courses of 200 credits each. An overall aim of the subject is to show students the different professions that exist in the building and construction industry. Through this broad entry point, students should be given the opportunity to orient themselves both theoretically and practically in simple and routine tasks, and obtain an understanding of recurring work processes so that they can make informed choices, regarding orientation and vocation, before starting year 2. The subject covers safety and environmentally sustainable construction, taking responsibility, attitudes and assessment at the workplace so that students early in their education can develop a knowledge of these aspects.

Orientations

The orientations in the Building and Construction Programme are *plant vehicles, house construction, land and construction, painting* and *sheet metal work.*

All orientations in the programme have a process course which provides the theoretical basis for the more practical courses in the orientations. The process course can run parallel with other courses typical of the programme so that the linkage between theory and practice becomes clear. The process course covers, for example, laws and other regulations in different vocational areas, and also the qualifications needed in the profession. There is also scope for discussing and reflecting on such matters as taking responsibility, working conditions, professional roles and customer relations.

The orientation plant vehicles

The orientation gives skills in manoeuvring and controlling mobile machines in construction work based on requirements concerning function and safety. It covers 900 credits in order to provide students the opportunity to develop knowledge in traffic safety, vehicle maintenance and use of navigation equipment, and basic construction knowledge such as excavation and related processes, insulation and drainage.

The orientation house building

The orientation gives basic knowledge of the different types of building and renovation, conversion and extensions to houses, premises and other constructions. The orientation covers 700 credits to provide a broad knowledge platform to facilitate cooperation between closely related professions involving concrete, floors and wood. In addition, the orientation provides a basis for specialisation through working with glass, tiling, drilling holes, scaffolding and roof assembly.

The orientation land and construction

The orientation gives basic knowledge of ground work and road construction, such as the properties of ground and rock, function and handling, and also measuring and levelling techniques. The orientation covers 500 credits to give a broad foundation for different vocational outcomes, such as rock working, railway technicians, and road and construction work.

The orientation painting

The orientation gives basic skills in planning and carrying out different types of painting, and setting up of different wall covering protective materials. It covers 400 credits.

The orientation sheet metal

The orientation gives basic skills in planning and carrying out sheet metalwork. It covers 400 credits and leads to two vocational outcomes, building sheet metal worker, and ventilation sheet metal worker.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals of the Building and Construction Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Building and Construction Programme is published on the Agency's web site. It covers courses in the area such as construction, house construction, painting and sheet metal.

The programme specialisations include the subject *house building – specialisation*. The subject provides the conditions for meeting the industry's needs in specialist occupations. It also provides conditions for meeting the need for possible new occupations and broadening competence in traditional occupations in the orientation house construction.

The professions for which the Building and Construction Programme provides education requires flexibility and the ability to solve problems, such as rational choice of working methods, materials, and even sometimes developing new methods and materials. As a result subjects such as *CAD, design* and *entrepreneurship* are included in the programme specialisations.

Knowledge of environmentally sustainable construction is emphasised in the diploma goals of the Building and Construction Programme, since this provides financial advantages for both companies and society. For this reason the subject *sustainable society* is included as a programme specialisation.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Building and Construction programme are developed in consultation with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section, Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the Building and Construction Programme are *construction machine operator, road and construction worker, bricklayer, building painter* and *ventilation sheet metal worker.*

The vocational outcome *construction machine operator* has its foundation in the orientation plant vehicles.

Courses in the programme specialisation module for the vocational outcome construction machine operator
Construction – pipeline construction, 200 credits
Construction – road construction, 100 credits

The vocational outcome *road and construction worker* has its foundation in the orientation land and construction. There are two variants, one concerning street areas and parks, and the other roads and infrastructure. Below follow some examples of the variant road and construction worker in street areas and parks.

Courses in the programme specialisation module for the vocational outcome road and construction worker (street areas and parks)
Construction – green areas, 200 credits
Construction – pipeline construction, 200 credits
Construction – stone paving, 100 credits

The vocational outcome *bricklayer* has its foundation in the orientation house building.

Courses in the programme specialisation module for the vocational outcome bricklayer
Walls and plastering 1 – foundation walls, 100 credits
Walls and plastering 2 – brickwork, 100 credits
Wall and plastering 3 – plaster, 100 credits

The vocational outcome *painter* has its foundation in the orientation painting.

Courses in the programme specialisation module for the vocational outcome painter
Painting 2, 200 credits
Painting 3, 200 credits
Painting 4, 200 credits

The vocational outcome *ventilation sheet metal worker* has its foundation in the orientation sheet metal.

Courses in the programme specialisation module for the vocational outcome ventilation sheet metal worker
Ventilation assembly 1, 100 credits
Ventilation assembly 2, 200 credits
Ventilation sheet metal 2, 200 credits
Ventilation service, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Building and Construction Programme that can give specific eligibility for higher education can be seen on the Agency's web site.


SPECIAL MODES
REPEAT MODE
PROGRAM PROTECT
ON

Electricity and Energy Programme (EE)

DIPLOMA GOALS FOR THE ELECTRICITY AND ENERGY PROGRAMME

The Electricity and Energy Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work with automated production systems, systems for energy-, environmental- and water technologies, or computers and communication systems, or as electricians in the distribution or installation of electricity.

The education should develop students' knowledge for supporting and assisting basic important functions in society such as the production, installation and distribution of electricity, energy and water systems. It should thus provide knowledge about electricity, energy technology and automation, and skills in carrying out tasks in these working areas. Computers and ICT, and society's IT infrastructure should also be central in the education.

Safety questions are of the utmost importance for working in the different vocational areas. The education should thus lead to students becoming familiar with national and international agreements concerning technology, security of information, standards, work safety and the working environment.

The education should train students to make conscious choices, such as being able to use the right materials and tools, and be able to plan and assess a work process. The education should also lead to students understanding the importance of being able to document and systematically solve problems. All electricity, energy, automation and computer expertise is based on scientific principles. The ability to carry out correct calculations is a prerequisite for professional practice. The education should thus develops students' mathematical knowledge.

The education should give knowledge of how students can contribute to the development of the profession, company and society, both nationally and locally. Internationalisation in the electricity, energy, automation and computing industries requires the ability to use languages. The education should give students the opportunity for advanced studies in English.

In professional life, students will meet different people and be responsible for carrying out work professionally, often in cooperation with other professional groups. The education should thus develops students' ability to cooperate with others, meet customers, give service and carry out work with skill, both in companies and in private homes. Both large companies and one man businesses are common in these industries. The education should thus give knowledge of business conditions, finance and also direct and indirect impact on the environment.

Working environment issues should have a central place in the education for the prevention of occupational injuries and the promotion of good health.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Electricity and Energy Programme has four orientations.

The orientation automation should give system oriented knowledge in the intersection between electrotechnology, computer technology, and operations and maintenance. This means that the orientation should develop students' ability to plan, install and put into operation automated production systems. The orientation should also develop students' ability to work professionally with maintenance and troubleshooting in industrial plants. The orientation can lead to work such as automation technicians, process technicians, industrial electricians and mechatronic engineers.

The orientation computers and ICT should give knowledge of professionally installing, administering, maintaining and repairing computers and communication systems, and knowledge about information security. The orientation should also develop students' ability to work with systems for presenting data, graphics, sound and interactive technologies. The orientation can lead to work as network technicians, technical sales, support technicians and service technicians.

The orientation electrical technology should give knowledge of installing, maintaining and repairing electrical facilities, electrical distribution networks, alarm systems, and TV and computer networks. The orientation can lead to occupation such as electricians working with the installation or distribution of electricity. Other possible occupations are as lift and alarm technicians.

The orientation energy technology should give knowledge of carrying out operations, maintenance and service functions in the energy, environment and water technology industries, and process based industries. The orientation should lead to students developing the ability to work with specialist functions in many different occupations within the energy and process industries. Possible occupations are technicians in operations and maintenance, machine operators, water environment technicians and laboratory technicians.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Electricity and Energy Programme is a vocational programme. This is a broad programme providing education in many of the vocational areas that supply and support important basic functions of society. Supporting the basic functions of society refers to the production and distribution of energy, heat, electricity and water. It also covers communication networks and computer systems that monitor and regulate automated functions in the production and use of energy.

The knowledge areas of the Electricity and Energy Programme overlap to some extent knowledge areas in other programs, mainly the HVAC and Property Maintenance Programme, and the Industrial Technology Programme. The HVAC and Property Maintenance Programme provides education for work within the distribution of waterborne

thermal energy. This distribution is steered and regulated by electrical components and systems, which are important knowledge areas in the Electricity and Energy Programme. The Industrial Technology Programme and the Electricity and Energy Programme provide education for occupations in maintenance and automated production. Apart from these two programs, there are linkages between the Technology Programme and the Electricity and Energy Programme in terms of information and production technologies.

The diploma goals emphasise safety, in terms of personal safety and the safety of property and animals. This may involve safety of electricity and machines as specified in laws, ordinances and directives, safety in environments where there is a risk of explosion or electrostatic discharge. It may also involve working in a safe way, with ongoing risk analysis in each stage and situation, or analysing the safety of automatic functions under normal operations, and also when signals may not be responding correctly. Safety also refers to information security and security against theft, covering such areas as system security and logging in with different user access rights.

Documentation is important in the electricity and energy area. The diploma goals state that students should understand the importance of being able to document and take a systematic approach to solving problems. Students should be given the opportunity of interpreting existing descriptions, drawings, flowcharts, information sheets and manuals to gather important facts that can be used to solve a specific task or problem. Students should also be given the opportunity to develop the ability to clearly and systematically document their own work. Written documentation and oral reporting of the whole work process is a part of developing professional expertise and communication.

The diploma goals state that electricity, energy, automation and computer expertise are based on scientific principles. For students to acquire the professional knowledge needed for the programme's vocational outcomes, an understanding of theories in areas such as electricity, energy and the environment is required. These theories have their foundations in biology, physics, chemistry and mathematics.

The production of electricity and energy has an impact on the environment, both directly and indirectly. Direct impact on the environment refers to the handling of different materials and components, such as electronics, fluorescent lamps and refrigerants in order to minimise environmental impact. Indirect impact on the environment refers to the impact of the production of electricity and energy on e.g. ecocycles, recycling and sustainable development.

The fact that working environment issues have a central place in the education means that work with electricity and energy should always be planned and carried out with regard to the working environment. This may involve injury prevention by using correct protective equipment, avoiding non-optimal work positions, or keeping the workplace organised and clean.

Entrepreneurship is included in all education programmes. The diploma goals for the Electricity and Energy Programme state that students should obtain knowledge of how they can contribute to the development of the profession, company and society, both nationally and locally. For this reason, students are encouraged to think and act creatively. The education should give knowledge of business conditions and finance. This means that students should get an insight into running a business, and an understanding that this can be a point of entry into working life.

The diploma goals state that students should cooperate with others, meet customers, give service and carry out work with skill, both in companies and in private homes. The profession involves meeting and working with both customers and colleagues in an open and service-oriented manner. Good language skills are a prerequisite for acting

professionally. To be able to cooperate with others and meet customers requires that students are able to view issues from different perspectives and develop knowledge of their vocational culture.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Electricity and Energy Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Electricity and Energy Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcome *automation technician*, recurring tasks may be planning, preparing, carrying out and documenting preventive and support maintenance in instrumentation and control equipment, and also starting and troubleshooting automatic processes in a safe and environmentally friendly way. In the vocational outcome *installation electrician*, recurring tasks may involve installing electrical equipment in homes, offices, shops and industries, and also in new buildings drawing cables embedded in concrete constructions, and then setting up switches, wall plugs and assembling lighting systems.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of systems engineering, documentation, measuring technologies, safety and methods for troubleshooting and repair methods of relevance for the task,
- knowledge of laws, ordinances and other regulations and performance requirements relevant for the task,
- knowledge of theories, concepts and methods relevant for the task, and
- knowledge of recycling systems and how resource and energy usage impact planning and implementation of the task.

Skills

In the diploma project, students should demonstrate

- skills in handling materials, equipment and tools in a professional way,
- skills in working in accordance with the laws, ordinances, other regulations and performance requirements applicable in their vocational area,
- skills in professionally documenting work, and
- skills in solving mathematical problems relevant to the task.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to provide service, quality awareness and ethical awareness in implementation of the task,
- the ability to take initiatives, solve problems and anticipate the consequences of various alternatives,
- the ability to identify possible safety and working environment risks in connection with implementation of tasks,
- the ability to carry out work with due regard to resource usage and recycling, and
- the ability to critically examine and assess their own work based on professional praxis, standards and laws.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Computers and ICT
Computer technology 1a — 100

Electrotechnology
Electromechanics — 100

Energy technology
Energy technology 1 — 100

Mechatronics
Mechatronics 1 — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 400–500 credits

Automation — **400**
Practical electricity
Practical electricity — 100

Instrumentation, process and control technology
Instrumentation and process technology — 100
Instrumentation and control technology — 100
Programmable control systems — 100

Computers and ICT — **400**
Computers and ICT
Computer and network technology — 100

Electronics
Electronics and microcomputer technology — 100

Installations
Communication networks 1 — 100

Network technology
Network technology — 100

Electrical technology — **500**
Electrotechnology
Electric power engineering — 100

Practical electricity
Practical electricity — 100

Installations
Electrical installation — 200
Communication networks 1 — 100

Energy technology — **400**
Operations and maintenance
Support maintenance 1 — 100

Practical electricity
Practical electricity — 100

Energy technology
Energy technology 2 — 100
Renewable energy — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Electricity and Energy Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The diploma goals emphasise the connection between the electricity and energy area and scientific principles, and also the importance of being able to carry out correct calculations and use the English language. The subjects science studies, mathematics and English contribute to this together with the subjects typical of the programme. Cooperation can take place from two directions, for example the concepts and formulae of mathematics can be used in calculations in the subjects typical of the programme, and these subjects can also contribute to supplying data for mathematics from the vocational area.

Subjects specific to the programme

The subjects which are common to the Electricity and Energy Programme are *computers and ICT, electrotechnology, energy technology* and *mechatronics*. The first courses in these subjects are of a clear practical nature. In the courses there are many stages where students work with tools, both traditional and modern. Together the courses provide an overview of the programme and an introduction to the orientations.

The subject *computers and ICT* covers computers as tools for serial units and units in networks, and security questions. In addition, the subject provides a foundation for terminology in English. The course computer technology 1 in the subject covers basic user and maintenance knowledge about computers and network equipment, and introduces common ways of using computers in the programme.

The subject *electrotechnology* covers methods and skills of working in secure ways in common situations and with recurring material. The course electromechanics covers basic electricity and workshop practice, and basic knowledge of the working environment and safety.

The subject *energy technology* covers the operation, maintenance and service of facilities in the area. It also covers scientific principles, the working environment and safety. The course energy technology 1 covers the practical handling of some types of energy technology facilities, such as a ventilation facility for the distribution of heat or air conditioning.

The subject mechatronics covers mechanical constructions regulated by electronic control systems. The course mechatronics 1 covers basic practical electricity, instrumentation, control and digital technology, and scientific principles.

Orientations

The orientations in the Electricity and Energy Programme are *automation, computers and ICT, electrical technology* and *energy technology.*

The orientation – automation

The orientation provides a common basis for vocational outcomes in the sectors of property automation, industry automation and process automation. The orientation covers instrumentation, process and control technology, and practical electricity. In the subject instrumentation, process and control technology, the importance of instrumentation technologies in the orientation is emphasised. The course practical electricity, included in the orientation, is a part of the theoretical requirement for limited eligibility 1 (BB1).

The orientation computers and ICT

The orientation covers computers and computer systems, electronic components and electronic units with microcomputers, and network technologies and network units. This provides a foundation for professions in computer technology and electronics, and particularly in network and communications technologies.

The orientation electrical technology

The orientation covers electrical installations, practical electricity and installations of communication networks. It covers 500 credits in contrast to the other orientations in the programme that cover 400 credits. The larger number of credits provides students with an education that corresponds to the theoretical requirement for limited eligibility 1 (BB1). The courses practical electricity and electrical power technology, correspond to this requirement. In the orientation, a foundation can be established for railway education in electricity and signals technology.

The orientation energy technology

The orientation covers operations and maintenance in energy facilities, practical electricity and water and environmental technologies. It also covers renewable sources of energy and energy plants. The orientation includes the course practical electricity, which is a part of the theoretical requirements for limited eligibility 1 (BB1).

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals of the Electricity and Energy Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Electricity and Energy Programme is published on the Agency's web site. There are courses in electricity and energy, and also courses in natural science and technology subjects, such as the subjects *mathematics, chemistry, natural sciences, CAD, construction* and *manufacturing basis*. The subjects CAD, construction and manufacturing basis, contribute to students developing the ability to document, a skill which is emphasised in the Electricity and Energy Programme.

The subject *English* is included in the programme specialisations for a number of reasons. Manuals and fact sheets are usually written in English. In addition, it is common in the vocational area to work abroad or in international projects and then the language is nearly always English.

The Electricity and Energy Programme provides education for occupations that supply and support important basic functions in society. For this reason, the subjects *sustainable society* and *medical technology* are included in the programme specialisations.

Many of the occupations for which the programme provides an education involve direct contact with customers. For this reason, the subjects *support and service* and *sales and customer service* are included in the programme specialisations.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Electricity and Energy Programme are developed in consultation with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section, Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes from the Electricity and Energy Programme are *machine operator* and *home service technicians.*

The vocational outcome *machine operator* in the orientation, energy technology, can occur in different variants, such as power and heating technology, and water and environmental technology. There is also the variant of general machine operator. The different variants have a common foundation in the course water and process chemistry, and thereafter different specialisations are possible. An example of the variant machine operator – general, is provided below.

Courses in the programme specialisation module for the vocational outcome machine operator – general
Water and process chemistry, 100 credits
Power and heating technology 1, 200 credits
Instrumentation and control technology, 100 credits
Water and environmental technology, 200 credits

The vocational outcome *home service technician* has its foundation in the orientation computers and ICT.

Courses in the programme specialisation module for the vocational outcome home service technician
Digital communication technology, 100 credits
Multimedia systems, 100 credits
Telephony and Internet services, 100 credits
Mathematics 2a, 100 credits
Service and repairs, 100 credits
Support and home service, 100 credits

The vocational outcomes *installation electrician* and *industrial electrician* in the orientation electrical technology have a common foundation, and thereafter different specialisations are possible.

Courses in the programme specialisation module for the vocational outcome installation electrician	Courses in the programme specialisation module for the vocational outcome industrial electrician
Common foundation: Alarm, surveillance and security systems, 100 credits Service knowledge, 100 credits CAD 1, 50 credits	*Common foundation:* Alarm, surveillance and security systems, 100 credits Service knowledge, 100 credits CAD 1, 50 credits
Specialisation: Property automation 1, 100 credits Computing and media networks, 100 credits Lighting technology, 100 credits Electric motor control, 100 credits	*Specialisation:* Support and preventative maintenance, 100 credits Industrial automation, 100 credits Electric motor control, 100 credits Instrumentation and automatic control, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Electricity and Energy Programme that can give specific eligibility for higher education can be seen on the Agency's web site.

Vehicle and Transport Programme (FT)

DIPLOMA GOALS IN THE VEHICLE AND TRANSPORT PROGRAMME

The Vehicle and Transport Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work, for instance as mechanics, drivers, or in warehouses or terminals.

The education should develop students' knowledge of technology used in different vehicles or managing transport. In the area vehicle technology, the function and design of vehicles is covered as well as diagnostics, repairs and service of vehicles. The area of transport is covered regarding the use of vehicles and the handling of goods in warehouses and terminals.

Rapid developments in technology are characteristic of the occupations the education leads to. Equipment is becoming increasingly complex, specialised and adapted to specific vehicles or vocational areas. Advanced technology and different ways of organising work require the ability to reflect on, assess and choose between different alternatives. The education should thus develop students' ability to participate in further learning in working life and take responsibility for their own development in the profession. Students should also develop knowledge about and skills in choosing the right equipment and methods for carrying out tasks with regard to the environment, quality, safety and finance.

Knowledge of different computer systems is needed in all the occupations the education leads to. The education should thus develops students' ability to use computers and computer systems as required in their work.

Development in the occupations the education leads to means that a person works alone with many different tasks, where different types of problems can occur. This imposes high requirements on the ability to solve problems independently. In the occupations the education leads to, it is not always the case that a single person has all the knowledge required to solve a specific task. The education should thus develop students' ability to work both independently, and in teams where people with different knowledge and cultural backgrounds cooperate to solve problems. Students should thus be given the opportunity to develop the ability to take initiatives, be resourceful and businesslike. The education should give students the opportunity to discuss and reflect on their own learning based on different tasks, and through this develop an understanding of how they practise their profession, and of the profession as a whole.

The education should give students skills in managing and developing relationships with co-workers and customers. Students should also develop appropriate use of language that functions in different situations using vocabulary that is adapted to the area in both Swedish and English. In addition, students should develop their ability to document their work in accordance with the requirements existing in the industry.

The education should develop students' knowledge of national and international agreements, laws and other regulations within their chosen vocational area. This knowledge is important, for example, in creating a good working environment and preventing occupational injuries. Students should in addition develop the ability to carry out different tasks based on the requirements of sustainable development.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of

the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Vehicle and Transport Programme has five orientations.

The orientation goods handling should give knowledge of systems for handling goods and logistics. The orientation can lead to work at warehouses or terminals.

The orientation bodywork and paint spraying should give knowledge of spraying vehicles, and diagnostics and repairs of bodywork. The orientation can lead to work repairing damaged vehicles or paint spraying vehicles.

The orientation lorries and mobile machinery should give knowledge of diagnostics, repairs and service of heavy vehicles and mobile machinery. The orientation can lead to work as a lorry mechanic or machine mechanic.

The orientation passenger cars should give knowledge of diagnostics, repairs and service of light vehicles. The orientation can lead to work as a car mechanic.

The orientation transport should give knowledge of transport, its systems and logistics. The orientation can lead to work as a professional driver.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Vehicle and Transport Programme is a vocational programme. The programme has great breadth but can be divided into two main tracks, which thereafter lead to more specific knowledge and vocational areas. One main track covers the use of technology in vehicles, and how this is maintained and where necessary repaired to fulfil the requirements regarding function and safety, for both light and heavy vehicles. The second main track covers transport of different kinds, for both goods and persons. These two main tracks are reflected in the name of the programme, the Vehicle and Transport Programme.

Rapid technological development in the knowledge areas and in the occupations the programme leads to imposes major demands on ongoing competence development, and thus the diploma goals emphasise the importance of the individual's ability to continuously develop knowledge. The capacity to develop is an important quality required in working life. It is thus necessary to build strategies into the education enabling students to develop the ability to take responsibility for their own development of knowledge.

The diploma goals emphasise both relational and communicative skills. The ability to cooperate is an important part of a complex work situation where problem solving together with others is in many cases vital for managing different situations. An important

prerequisite for communication is the use of a common language based on the terminology and contexts related to the specific profession. Communication also involves receiving information via literature, computers and through discussions with others. Today, information is not always available in Swedish, a large part only exists in English, and this makes it important for students to develop a professional language that also includes English.

The fact that the diploma goals emphasise national and international agreements, laws and other regulations is due to the increasing standardisation in the professions the programme leads to. Many agreements, laws and other provisions regulating the industry apply to the whole of Europe. The part of the programme covering maintenance and repairs involves customer guarantees which in certain cases are global in scope and to a large extent apply throughout Europe. The part of the programme covering transport often has a direct or indirect link to other countries and the agreements, laws and other provisions regulating cross-border transport. Large parts of the occupations also affect the environment in different ways, and from this perspective knowledge of national and international agreements, laws and other provisions regarding transport is important.

Entrepreneurship is included in all education programmes. The diploma goals for the Vehicle and Transport Programme cover cooperation, responsibility, initiative, generating ideas, relationships and entrepreneurship. This is developed through the tasks and working forms that are the starting point for student learning. It is important that there are clear strategies in the education enabling students to develop these skills. One such strategy could be the use of an investigative and problem-solving approach in conjunction with tasks closely related to reality.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Vehicle and Transport Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Vehicle and Transport Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcomes *lorry mechanic* and *car mechanic*, recurring tasks may involve carrying out service in accordance with the instructions of the manufacturer, or troubleshooting, checks and measures on wheel alignment, frames, suspension systems and wheels. In the vocational outcome *terminal worker*, recurring tasks may involve receiving different kinds of goods from a lifting device, either on a wharf or in a vessel's cargo hold. In addition, it may involve preparing a landing area for goods and disconnecting lifting mechanisms or transporting goods with machines to stores or other areas, and choosing the optimal driving method and route. In the vocational outcome *car sprayer*, recurring tasks may involve carrying out checks on deliveries and subsequent adjustments, or dual layer spraying based on spraying norms. In the vocational outcome

repairing damaged cars, recurring tasks may involve analysing damage, calculating costs and ordering spare parts or carrying out repairs using manual tools.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of the vehicles, machines and equipment used for the task,
- knowledge of laws and other regulations concerning safety, the environment and working environment of relevance for the task,
- knowledge of quality systems in the industry and requirements on quality in both work processes and results, and
- knowledge of the financial conditions applicable in connection with carrying out a task from both a customer and company perspective.

Skills

In the diploma project, students should demonstrate

- skills in handling vehicles, machinery and equipment in a professional way based on task requirements,
- skills in obtaining the necessary information required for a task,
- skills in working professionally based on laws and other regulations applicable to a task, and
- skills in documenting information which is important for a task.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to propose alternatives, established in the industry, and choose between them, giving reasons for their choice,
- the ability to assess information and its relevance for the work,
- the ability to assess the quality of their own work with regard to working processes and results in relation to existing quality norms,
- the ability in their work to anticipate risks in relation to safety requirements, the environment and working environment in the industry, and
- the ability to act professionally with regard to the value of materials.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Vehicle and transport industry
Vehicle and transport industry – conditions and working areas — 200

Vehicle technology
Vehicle technology – introduction — 200

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 400–500 credits

Goods handling — **400**
Goods handling
Mechanical goods handling — 200
Stocks and terminals
Stock administration and terminal logistics — 200

Bodywork and spraying — **400**
Bodywork
Chassis alignment – introduction — 200
Paint spraying
Paint spraying – introduction — 200

Lorries and mobile machinery — **500**
Machine and lorry technology
Machine and lorry technology – introduction — 200
Repair of lorries and mobile machinery — 300

Passenger cars — **500**
Passenger cars
Passenger cars – introduction — 200
Repair of passenger cars and light transport vehicles — 300

Transport — **500**
Transport
Commercial transport 1a — 200
Commercial transport 1b — 300

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Vehicle and Transport Programme should thus permeate the foundation courses, just like the other courses studied in the programme.

The subject *history* contributes knowledge of living conditions in different periods and people's roles in social change. Development in the vehicle and transport industry over the last hundred years has been a part of these changes.

The subject *English* provides a basis for students to develop specialist terminology. It also provides a foundation for students to receive information in English, and be able to communicate with English-speaking co-workers and customers.

Tasks in the profession the programme leads to require physical work. The subject *physical education and health* contributes knowledge of the importance of physical activity and lifestyle for physical capacity and health, and also about ergonomy. This knowledge is developed in conjunction with subjects typical of the programme.

The majority of knowledge areas in the programme are based on technological and physical principles. The subject *mathematics* can contribute a deeper understanding of underlying explanations for technological solutions. This provides support in solving vocationally related problems.

The subject *science studies* contributes to an understanding of sustainable development. This understanding is important when students choose alternatives for practising their profession.

The subject *social studies* contributes to knowledge about the labour market, labour legislation and the working environment. This is the knowledge area developed in interaction with the subjects typical of the programme.

Subjects specific to the programme

The subjects which are common to the Vehicle and Transport Programme are *vehicle and transport industry* and *vehicle technology.* These subjects cover 400 credits and provide the basis for the orientations.

The subject *vehicle and transport industry* gives an orientation to the industries and vocational areas the programme leads to. Through this broad orientation, students are able to choose their orientation before year 2. The subject also deals with rules in traffic, and risk factors and human factors in traffic.

The subject *vehicle technology* supplements the subject vehicle and transport industry, by dealing with vehicles, how they are built, their construction and simpler repairs of vehicles. Irrespective of whether the student should work with transport with vehicles, or with service, maintenance and repairs of vehicles, knowledge of the main components

of vehicles and their construction and design is fundamental. Carrying out simple repairs is part of a driver's or mechanic's work.

Both subjects introduce the specialist language and terms used in all occupations the programme leads to.

Orientations

The orientations in the Vehicle and Transport Programme are *goods handling, bodywork and paint spraying, lorries and mobile machinery, passenger cars* and also *transport.*

The orientation goods handling

The orientation provides a common foundation for the vocational outcomes stockroom worker and terminal worker. The handling of goods and logistics is covered in this orientation. The places where goods are handled may differ, e.g. at a terminal or warehouse.

The courses machine goods handling, together with the course stock administration, and terminal logistics, develop knowledge in both administration and logistics, and the handling of goods independent of working place.

The orientation bodywork and paint spraying

The orientation provides a common foundation for the vocational outcomes car sprayer and car repairer. Vehicle bodywork and spraying are covered in this orientation. A car sprayer and car repairer work with two different parts of the same process, and they need to have a good knowledge of each other's working area.

The course chassis alignment – introduction, together with the course paint spraying – introduction, develops knowledge of both chassis constructions and simpler alignment and the principles for building spray levels and simpler spraying work. The orientation courses also give an understanding of different working areas in the occupations.

The orientation lorries and mobile machinery

The orientation provides a common foundation for the vocational outcomes lorry and machine mechanics. Diagnostics, repairs and service of heavy vehicles are covered in this orientation. Heavy vehicles differ in several ways from passenger cars and light transport vehicles, especially in terms of their construction, equipment and working methods. These differences justify a specific orientation.

The courses machine and lorry technology – introduction, together with the courses repairing lorries and mobile machinery, cover the knowledge areas which are common to both lorries and mobile machinery. The orientation courses give a total perspective of the function and construction of lorries and mobile machinery, and also deal with how different systems and components work together.

The orientation passenger cars

The orientation provides the foundation for the vocational outcome as a passenger car mechanic. It can also provide the basis for closely related occupational areas such as a motorcycle mechanic. The courses passenger cars – introduction, and repair of passenger cars and light transport vehicles, develop knowledge of cars as a whole, and also the ability to carry out simpler maintenance and repair work. The orientations provide an overall perspective of the car's function and construction and cover how different systems and components work together.

The orientation transport

The orientation provides a common foundation for the vocational outcomes lorry driver and bus driver. The courses commercial transport 1a and 1b give the knowledge needed to carry out transport of both goods and passengers. The orientation courses give a knowledge of the technical functions of transport vehicles and about the conditions for goods and passenger transport, and also skills in operating and driving transport vehicles.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and nature of the Vehicle and Transport Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Vehicle and Transport Programme is published on the Agency's web site.

The programme specialisations contain all the orientation courses except for commercial transport 1a and 1b. This provides students with access to orientations other than the one the student is following.

The subject tourism is one of the programme specialisations since this knowledge area may be needed by future bus drivers. The role of the bus driver is not just to drive the bus, but also to perform to some extent a guiding function, and also have knowledge about destinations and routes.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation modules for the Vehicle and Transport Programme are drawn up in consultation with the national programme council. They can be found on the Agency's web site. The programme specialisation modules gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation modules can be adapted to local conditions in conjunction with the local programme council. See the section, Vocational outcomes and the programme specialisation modules, on page 41.

Some of the vocational outcomes in the Vehicle and Transport Programme are *stockroom worker, bus driver* and *passenger car mechanic*.

The vocational outcome *warehouse worker* has its foundation in the orientation goods handling.

Courses in the programme specialisation module for the vocational outcome warehouse worker
Goods handling, 200 credits
Load carriers, 200 credits
Stock processes, 200 credits

The vocational outcome *bus driver* has its foundation in the orientation transport.

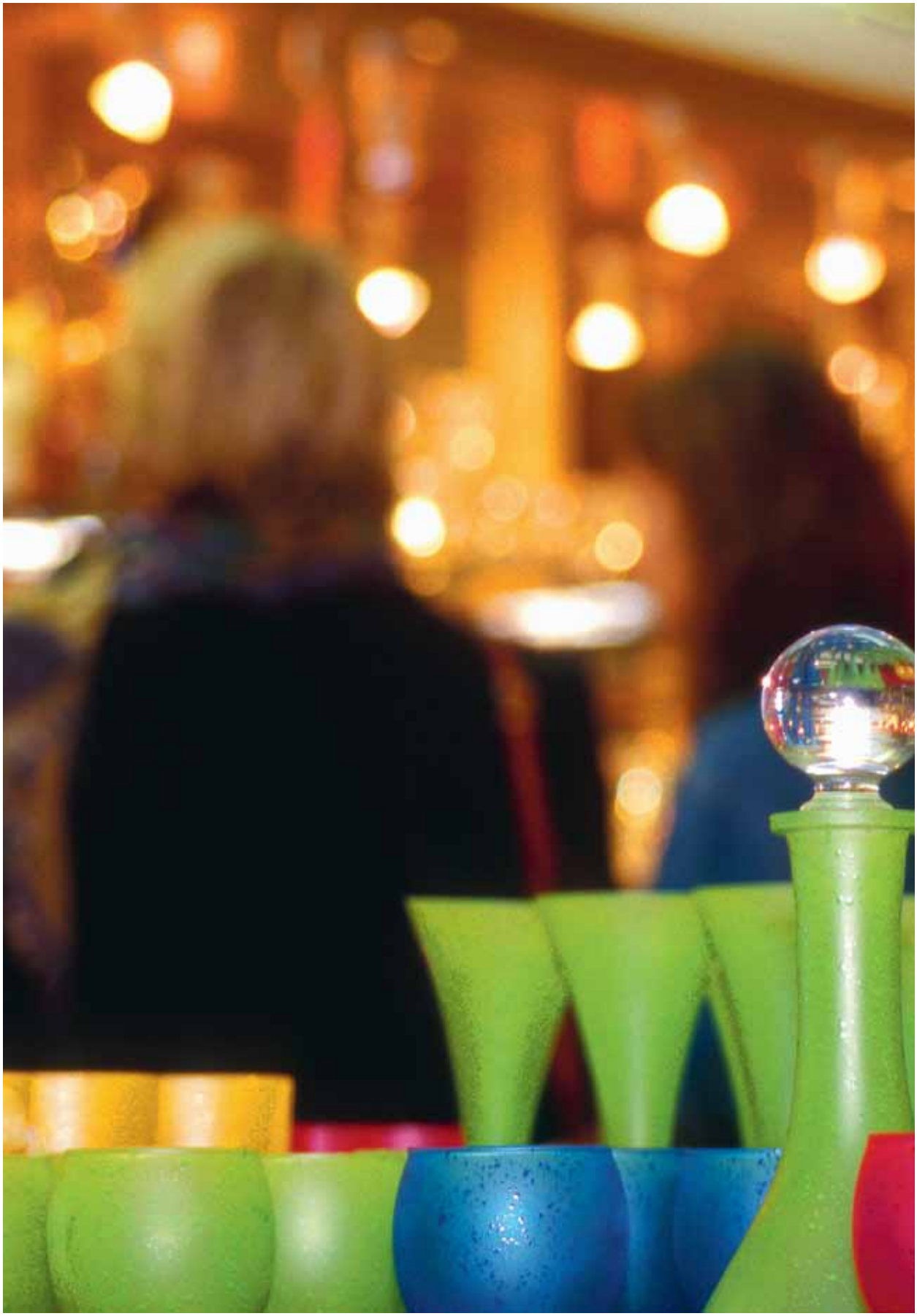
Courses in the programme specialisation module for the vocational outcome bus driver
Passenger transport 1a, 200 credits
Passenger transport 1b, 200 credits
Passenger transport – specialisation, 100 credits

The vocational outcome *passenger car mechanic* has its foundation in the orientation, passenger cars.

Courses in the programme specialisation module for the vocational outcome passenger car mechanic
Brakes, body and chassis, 200 credits
Engine and transmission, 300 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Vehicle and Transport Programme that can give specific eligibility for higher education can be seen on the Agency's web site.



Business and Administration Programme (HA)

DIPLOMA GOALS FOR THE BUSINESS AND ADMINISTRATION PROGRAMME

The Business and Administration Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in business occupations such as salespersons, purchasers, store managers, or in administrative areas such as personnel, finance and IT administration.

The education should develop students' knowledge of business and administration, where service and communication are central. It should also develop skills in carrying out tasks in vocational areas such as sales, purchases and flow of goods, service, financial follow-up and running a business.

Business covers sales and logistics, marketing and production, knowledge of industry, customer service and business development of different types. Administration covers administrative work and organisation in companies and public administration, communication, customer service, and conference and reception work. In both business and administration, there are opportunities to start and run companies, and for this reason the education should develop students' knowledge of entrepreneurship and running their own business.

Business and administration presupposes contacts between people and countries, and in this context personal meetings are important. The education should thus develop students' ability to meet people in both business and co-worker situations. Students should get the opportunity of expressing and communicating their viewpoints and messages, both orally and in writing, and with the help of different media. The education should develop students' ability to search for, analyse and assess information from different industries and areas. It should develop students' skills in using IT in ways appropriate to the situation. The education should also give students opportunities for advanced studies in English.

The education should give knowledge about labour law, the working environment and discrimination issues in working life. Students should also get knowledge about the factors influencing health and well-being.

Professional roles entail taking responsibility and acting with judgement. The education should develop students' ability to act in an ethical way in their future professional role. Students should, in addition, develop the ability to discuss and reflect over their own learning based on different tasks and methods, and by this means prepare for further learning in professional life, and obtain an understanding of the business and their professional role. In the vocational area, students should also be able to discuss and reflect on environmental aspects and the role of the company in society. By working in project oriented ways, students' should develop their ability to act and take initiatives.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Business and Administration Programme has two orientations.

The orientation administrative services should give advanced knowledge of working with administrative and organisational tasks in companies and public administration. The orientation can lead to work in e.g. personnel administration and organisation, communication, finance, conference and reception work, or customer service.

The orientation commerce and service should give advanced knowledge of working in retailing and wholesaling. The orientation can lead to work in e.g. sales and marketing, shop communication, shop management, purchasing and logistics or customer service.

Both orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Business and Administration Programme is a vocational programme. It is a broad programme that should provide education for many different industries and professions. Common to these is that they require the ability to plan, carry out and assess service oriented tasks in a professional manner. The diploma goals emphasise service and communication as a prerequisite for commerce and administration, and the students are given the opportunity to develop knowledge of customer service, communication and business enterprise in different forms. Students can after their education start work immediately in working life as a salesperson in a shop, or with administration in a company or organisation.

Service and communication involves contact between people and countries. For this reason, the diploma goals emphasise that students develop the ability to handle personal meetings in different contexts. Attitudes, values and approaches also influence sales and service situations. Thus knowledge of customer psychology and body language is included in the education.

Entrepreneurship is included in all education programmes. The diploma goals for the Business and Administration Programme state that students should work in a project-oriented way and thus develop their ability to act and be business oriented. In both retailing and administration, there are opportunities for starting and running a business. Students also receive in the education, and in workplace-based learning, a good insight into and knowledge of conditions for the industry and for running a business.

Work in commerce and administration requires good knowledge of information technology, which is thus a self-evident tool in the education. Apart from basic knowledge in information technology, there are opportunities for developing advanced knowledge of different computer applications, social media and other ways of communicating.

Taking personal responsibility, acting with judgement and concern for the environment, and also applying ethical approaches are other aspects which the diploma goals highlight. Ethical norms in industry reflect shared values and principles for professional practice. By discussing, reflecting and making their knowledge and learning visible, students are prepared for further learning in professional life and for their professional role. By choosing alternative ways of working, such as project oriented methods, and making use of social media and other communication, students are given the opportunity of developing their capacity to act and be business oriented.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Business and Administrative Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Business and Administration Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcome *shop sales* recurring tasks can be ordering and receiving goods with the right equipment, materials, techniques and working methods, displaying goods, managing the cash register, and taking care of and handling customers in a service oriented way. In the vocational outcomes *IT administrator, order administrator* and *project administrator*, recurring tasks can be managing the company's or organisation's routines and functions, and also with the right technology and software designing and handling different kinds of documents.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge which is relevant for tasks in commerce or administration, and
- knowledge of laws and other provisions relevant for the task.

Skills

In the diploma project, students should demonstrate

- skills in communicating and solving problems in a professional manner, and
- skills in working safely and with environmental awareness in accordance with existing regulations.

Assessment ability and approaches

In the diploma project, students should demonstrate

- service ability, quality and ethical awareness in carrying out tasks,
- the ability to work both independently and together with others to carry out tasks,
- the ability to act with judgement in their work, and take responsibility for carrying out their tasks,
- the ability to search for, choose, interpret and critically examine information in a professional manner, and
- the ability to discuss, assess, and reflect on how the work process has affected results.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Entrepreneurship
Entrepreneurship — 100

Sales and customer service
Service knowledge — 100

Commerce
Industry knowledge in commerce and administration — 100

Information and communication
Information and communication 1 — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 500 credits

Administrative services — **500**
Administration
Administration 1 — 100

Business communication
Business communication — 100

Information and communication
Information and communication 2 — 100
Internal and external communication — 100

Leadership and organisation
Leadership and organisation — 100

Commerce and service — **500**
Sales and customer service
Personal sales 1 — 100

Commerce
Practical marketing 1 — 100
Business development and leadership — 100

Purchasing and logistics
Purchasing 1 — 100

E-commerce
E-commerce 1 — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Business and Administration Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subjects *Swedish* or *Swedish as a second language* and *social studies* can interact with the subjects of *business communication* and administration – specialisation, where it concerns social, economic and cultural conditions, and business customs and body language in different countries.

The areas commerce and administration, are becoming increasingly international, which presupposes a good knowledge of languages. One example may be in customer service and reception where a knowledge of languages is a prerequisite for dealing with people. Another example is in e-commerce which requires good language skills as the whole world can be the working area. For this reason, it is important in the subject *English* to coordinate with the other subjects typical of the programme.

Commerce requires many financial calculations and in the subjects typical of the programme there can thus be close coordination with the subject *mathematics*. In professions such as salesman and purchaser, good knowledge of mathematics is required when making calculations for additional charges, margins, and inventory levels.

Subjects specific to the programme

The subjects which are common to the Business and Administration Programme are *entrepreneurship, sales and customer service, commerce* and *information and communication*. These subjects provide the basic knowledge needed for the different vocational outcomes in the programme, and are chosen as the programme is broad and intended for many different industries and occupations.

In the subject *entrepreneurship*, students should be given the opportunity of working in a creative and development oriented way to prepare for both employment and running their own business.

The subject *sales* and *customer service* creates an understanding of how attitudes and behaviour influence our actions, and the importance of personal meetings between sales staff and customers. The task of sales persons is not just to sell, but also create good customer relationships, take responsibility and work in a long-term and goal oriented way.

Commerce is the link between the manufacturer and the consumer, and takes place for both goods and services, physically, digitally and globally. The subject *commerce* gives basic knowledge of industries and professions, and also gives students an insight into possible vocational outcomes in the area.

The subject *information and communication* gives basic knowledge to understand and manage different types of information. It deals with both verbal and non-verbal communication in professional contexts. In the subject, skills are also developed, amongst other things, for designing documents and managing software and social media.

Orientations

The orientations in the Business and Administration Programme are *administrative services* and *commerce and service*.

The orientation administrative services

The orientation provides a common foundation for vocational outcomes in the three areas internal service, external service, and marketing and communication. It provides students with in-depth knowledge in different administrative areas. Internal service is intended for internal work in companies and organisations, such as personnel administration. External service relates to external work, such as customer service and reception work. Marketing and communication relates to areas in sales, finance and marketing.

The orientation includes, amongst other things, the subject information and communication, since students develop knowledge in information technologies and communication, and also the ability to use social media and understand their role in society. Knowledge of information technology makes it possible to produce and disseminate goods and services. The orientation also covers students developing knowledge in critically examining and assessing the information and communication that takes place through the use of ICT.

The orientation commerce and service

The orientation provides a common foundation for the vocational outcomes in the three areas of sales, purchasing and flows of goods, and also leadership and business enterprise. It provides students with advanced knowledge and experiences of tasks in commerce and service companies. Students should develop their knowledge of purchasing and sales, logistics and transport, also customer service and marketing in retailing, specialised retailing and wholesaling. The orientation gives students the opportunity to get advanced knowledge of industry and products, and also knowledge about the conditions and terms for both employment and running their own business.

Programme specialisations

The programme specialisations contain courses within the framework of the Business and Administration Programme's diploma goals and nature, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Business and Administration Programme is published on the Agency's web site. For example, it is the courses in the subjects *events* and *conferences and events* which together with the subject *exhibition design* provide a good foundation for working with events, displays and exhibitions. Working at stores and terminals is an important part of wholesaling. For this reason, there are courses in the subject *stocks and terminals* in one of the vocational outcomes.

In the programme specialisations, there are two courses, *administration – specialisation* and *commerce – specialisation*. These courses can be studied a number of times with different contents, and they provide the opportunity for in-depth studies in a specific area, such as an industry or in different product or service areas.

The programme specialisations also contain courses in the subjects *computers and ICT* and *web technology*. The reason is that computers and appropriate computer programs are tools used to a large extent in the occupations for which the Business and Administration Programme provides training, such as in e-commerce and IT administration.

The subjects *English* and *modern languages* are included in the programme specialisations. The reason is that students in the programme need to have good language knowledge to be ready for employment, and be able to work in a labour market that is becoming increasingly international. The courses *Swedish* or *Swedish as a second language 2* and *rhetoric* are also in the programme specialisations to enable students to develop their ability to communicate, learn more in their vocational area, and reflect over their own actions.

The course *mathematics 2a* is included in the programme specialisations, since more mathematics is needed for some of the programme's vocational outcomes, such as assistants in auditing and finance, logistics and shop management.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Business and Administration Programme are drawn up in consultation with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the Business and Administration Programme are *shop sales, company sales, personnel assistant* and *IT administrator.*

The vocational outcomes *shop sales* and *company sales* have a common foundation and thereafter different specialisations can be taken. Both variants correspond to industry requirements in the sales area.

Courses in the programme specialisation module for the vocational outcome shop sales	**Courses in the programme specialisation module for the vocational outcome company sales**
Common foundation: English 6, 100 credits Commerce – specialisation, 100 credits Personal sales 2, 100 credits Personal sales 3, 100 credits Practical marketing 2, 100 credits Swedish or Swedish as a second language 2, 100 credits	*Common foundation:* English 6, 100 credits Commerce – specialisation, 100 credits Personal sales 2, 100 credits Personal sales 3, 100 credits Practical marketing 2, 100 credits Swedish or Swedish as a second language 2, 100 credits
Specialisation: Practical marketing 3, 100 credits	*Specialisation:* Entrepreneurship and business, 100 credits

The vocational outcomes *personnel assistant* and *IT administrator* have a common foundation, and thereafter different specialisations can be taken. Both variants correspond to needs within companies and organisations in the administrative area. In the vocational outcome, personnel assistant, courses in business economics and personnel administration can be considered in contrast to the vocational outcome, IT administrator, where courses in web and computer technology are distinguishing features.

Courses in the programme specialisation module for the vocational outcome personnel assistant	**Courses in the programme specialisation module for the vocational outcome IT administrator**
Common foundation: Administration 2, 100 credits Administration – specialisation, 100 credits English 6, 100 credits Swedish or Swedish as a second language 2, 100 credits	*Common foundation:* Administration 2, 100 credits Administration – specialisation, 100 credits English 6, 100 credits Swedish or Swedish as a second language 2, 100 credits
Specialisation: Business economics 1, 100 credits Business economics 2, 100 credits Personnel administration, 100 credits	*Specialisation:* Computer technology 1b, 100 credits Programme handling, 100 credits Web development 1, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Business and Administration Programme that can give specific eligibility for higher education can be seen on the Agency's web site.

Handicraft Programme (HV)

DIPLOMA GOALS FOR THE HANDICRAFT PROGRAMME

The Handicraft Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work within floristry, hairdressing, carpentry, textiles or in their chosen handicraft area.

The education should develop students' knowledge about and skills in the handicraft process. This means being able to carry out recurring tasks from idea to finished product, i.e. identifying needs, planning with sketches or drawings, choosing and managing tools, materials and techniques, carrying out and reporting work, and analysing and assessing results. As preparation for work in the handicraft area which students have chosen, design, entrepreneurship, communication and service should also be included in the education. Expertise in handicrafts and aesthetic thinking interact in the creative process and should thus permeate the education. The education should also lead to students understanding the role of handicrafts in society, and also obtaining an insight into the impact on people and the environment of managing and choosing materials.

In all handicraft occupations personal impressions, technical skills, quality and design are central. In the education, students should be given the opportunity of practising different aspects and techniques of their handicraft and understanding its nature, traditions and opportunities for development. They should get to develop their feeling for colour, form and composition, and also use the digital technologies standard in the area.

The education should also develop students' ability to use the language of their handicraft, and communicate and cooperate with customers, those commissioning them and suppliers. Students should learn a service oriented approach, and to carry out work with quality and a feeling of responsibility, as well as being able to work in accordance with applicable working environmental laws and regulations.

The specific nature of the handicraft requires that theory and practice are interwoven, and that students exercise their ability to solve problems. The education should develop students' ability to analyse and assess their own work and learning, and their ability to independently choose materials and techniques. The education should also contribute to students becoming familiar with the opportunities for their chosen handicraft in an international labour market.

Irrespective of whether one is employed or running one's own company, what is required is the ability to take initiatives, develop ideas, independence, personal responsibility, the ability to cooperate, and self-motivation. For this reason, the education should provide knowledge about entrepreneurship and running one's own business, from basic business economics and marketing to creating and retaining customers.

Students should receive opportunities to develop within the occupation, and be well prepared for future changes by learning the different properties of materials, developments in materials, techniques and their development, as well as through knowledge about tradition and cultural heritage.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Handicraft Programme has five orientations.

The orientation cabinetmaking should give knowledge about and skills in manufacturing methods and handling tools and machinery, and also knowledge about materials used in the industry. The orientation can lead to work in the carpentry area.

The orientation floristry should give knowledge about and skills in combining different materials to create floral arrangements of technical and aesthetic quality, and also give knowledge about potted plants, cut flowers, and other types of materials used in the area. The orientation can lead to work as a florist.

The orientation hairdressing should give knowledge about and skills in different methods, techniques and handling of tools, and also knowledge about materials used in the area. The orientation can lead to work as a hairdresser.

The orientation textile design should give knowledge about and skills in the construction, manufacturing methods, and handling of tools and machines, and also knowledge about materials used in the handicraft area. The orientation can lead to work in the textile industry.

The orientation other handicrafts should give knowledge about and skills in the tasks, techniques and handling of tools, and also knowledge about materials used in the area of their chosen profile. A large number of handicrafts are represented in the orientation, such as glassblowing, gold- or silversmithing, styling and upholstery.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. This should cover the steps in the handicraft process from idea to finished product.

The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Handicraft Programme is a vocational programme. It is a broad programme that provides education in many different handicraft areas.

What is a handicraft, and what is the difference between handcrafted production and industrial production? Handcrafts are a method of production carried out by hand. The handicraft practitioner controls the whole process from original idea to final product. Handicrafts can be arranged under different categories. The category *direct handicrafts* aims at a handicraft where there is material to be used as the basis for the handicraft, and where the result is a handmade product. The category *producing handicraft components* aims at producing materials or a product which can be used later in another handicraft product. The category *handicraft tools* is a handicraft which aims at producing its own tools.

In modern handicrafts, technology and techniques have become increasingly important. Tools and machines have been continuously developed to increase efficiency of working with handicrafts. In certain handicrafts, small-business owners come close to industrial production in making manufacturing efficient and more financially profitable. Examples of this can be found in the carpentry industry. The difference between handcrafted production and industrial production, i.e. small-scale and large-scale is thus sometimes difficult to define.

The diploma goals emphasise a holistic view of handicrafts i.e. the whole process from idea to finished product. The term *handicraft process* is comprehensive and covers the whole process including the development of ideas, needs analysis and assessment. The term work process is a part of the handicraft process. The handicraft practitioner uses techniques and methods in manufacturing and carries out the whole of the handicraft process. She or he works with their hands and puts a personal stamp on the work and each product is unique. The small-scale nature, personal service and close contact with the customer are other important characteristics of the vocation. Professional pride and skill are features which handicraft practitioners point out are specific for the vocational area. The diploma goals emphasise the ability to handle tools, materials and techniques. In addition, knowledge of colour, form and composition are given prominence. A successful handicrafts practitioner is highly knowledgeable about the material he/she uses, and understands its properties and opportunities.

Entrepreneurship is included in all education programmes. The diploma goals for the Handicraft Programme refer to the ability to take initiatives, create ideas, independence, taking personal responsibility, the ability to cooperate, and work autonomously and having a knowledge of business economics and marketing which provides the foundations for creating and retaining clients.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

The diploma goals under the orientation, other handicrafts, state that the orientation leads to a large number of vocational outcomes. One of them is a stylist. Stylist here refers to a hair and make-up stylist.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Handicraft Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Handicraft Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcome *florist*, recurring tasks can refer to receiving an order for a flower arrangement, designing arrangements, also carrying out an order in accordance with a customer's specifications and a result that corresponds to the industry's basic requirements for quality. In the vocational outcome *hairdressing trainee*, a recurring task may be designing a hairstyle in accordance with a customer's requirements and a result

that corresponds to the industry's basic requirements for quality. In the vocational outcome *furniture carpenter*, a recurring task could be receiving an order for some furniture, designing furniture and carrying out the order as required by the customer and with a result that corresponds to the industry's basic requirements for quality. In the vocational outcome dressmaking a recurring task may be receiving an order for some clothing, designing a piece of clothing and carrying out the order in accordance with the customer's requirements and with a result that corresponds to the industry's basic requirements for quality.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of materials, techniques, tools and machines used for the task,
- knowledge of laws and other provisions relevant for the task,
- an understanding of how choice of materials, techniques, tools and machines have affected the result, and
- an understanding of how use of resources when carrying out the task affects finances and the environment.

Skills

In the diploma project, students should demonstrate

- skills in professionally solving problems that occurred during the work,
- skills in making technical sketches, drawings and technical descriptions, relevant for the task,
- skills corresponding to the basic requirements of the industry for planning and choice of technique,
- skills, corresponding to the basic requirements of the industry, calculations of costs, and use of materials and time spent,
- skills, which correspond to the industry's basic requirements in using appropriate tools, machines and techniques safely and with environmental awareness,
- skills in oral communications and presentations appropriate to the requirements of the task, and using appropriate language, corresponding to the basic requirements of the industry,
- skills in carrying out the work with a result that corresponds to the basic requirements of the industry regarding quality, and
- skills in describing their work professionally using text, images and digital technologies relevant for the task.

Assessment ability and approaches

In the diploma project, students should demonstrate

- service skills in ways relevant for the task,
- a critical approach to choice of materials, and the ability to professionally consider financial and environmental factors during the work process,
- skill in assessing how materials and tools have affected the result, and
- quality and ethical awareness by analysing and assessing the quality of the final result in relation to the quality norms of the industry.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Entrepreneurship
Entrepreneurship — 100

Handicrafts
Handicrafts – introduction — 200

Handicraft studies
Tradition and development — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 500 credits

Cabinetmaking — **500**
Handicrafts
Cabinetmaking 1 — 200
Cabinetmaking 2 — 200

Handicraft studies
Materials and environment — 100

Floristry — **500**
Handicrafts
Floristry 1 — 200
Floristry 2 — 200

Handicraft studies
Materials and environment — 100

Hairdressing — **500**
Handicrafts
Hairdressing 1 — 200
Hairdressing 2 — 200

Handicraft studies
Materials and environment — 100

Textile design — **500**
Handicrafts
Textile design 1 — 200
Textile design 2 — 200

Handicraft studies
Materials and environment — 100

Other handicrafts — **500**
Handicrafts
Handicraft techniques 1 — 200
Handicraft techniques 2 — 200

Handicrafts
Materials and environment — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Handicraft Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subjects *history* and *social studies* can contribute to an understanding of the role of the craftsman in society, and the opportunities for the profession on the international labour market. The subject social studies covers amongst other areas the labour market, labour legislation and the working environment. This can be linked to the laws and other provisions which students meet in their professional area.

The subject *science studies* contributes, amongst other things, to an understanding of sustainable development. It reinforces also understanding of the impact concerning the handling and choice of materials on people and the environment, which is also covered in the subjects typical of the Handicraft Programme.

The subject *English* provides a basis for students in the subjects typical of the programme to develop appropriate terminology in English. It also provides knowledge so that students can understand information in English and can communicate with English-speaking customers.

The subject *physical education and health* gives students a knowledge of the importance of physical activities for good health, which is important for a craftsman since working positions often put a strain on the body. Knowledge of how injuries can be prevented by using the right working techniques, and of the importance of physical activities for minimising injuries are important for the students' future health.

The subject *mathematics* contributes to training students in the mathematical skills needed in the vocational area and which are fundamental to their practical work. This may be in connection with designs, or calculations concerning materials and profitability. The subject can also contribute to students developing a deeper understanding of the underlying explanations for technical solutions. Advanced understanding of technical solutions provides support for solving problems in the different occupations. Basic knowledge of using computer programs, such as spreadsheets, is further developed in the subjects typical of the programme.

The subject Swedish or Swedish as a second language develops a knowledge of and skills in oral and written communication needed in working life. This could be for contacts with customers and to market a good or a company.

Subjects specific to the programme

The subjects which are common to the Handicraft Programme are *handicrafts, handicraft studies* and *entrepreneurship.*

In the course *handicrafts – introduction* which is included in the subject of handicrafts, students start their training in techniques. This is a course written in general terms, but should be adapted to the chosen orientation or profile. Focus in the subject of handicrafts is on the knowledge of handicrafts and skills in carrying out work in the area. The subject *handicraft studies* provide the foundations for covering areas such as the environment, working environment, ergonomy, knowledge of materials and products. Knowledge in these areas is applied in the courses in the subject of handicrafts. Courses in the subject of handicrafts can be integrated with courses in the subject of handicraft studies so that students have a holistic view in the education.

The subject *entrepreneurship* gives students the opportunity of identifying opportunities and creating resources for using these opportunities. The subject can be integrated with the subject of handicrafts and in this way permeate the whole of the education.

Orientations

The orientations in the Handicraft Programme are *cabinetmaking, floristry, hairdressing, textile design* and *other handicrafts.*

The orientation cabinetmaking

The orientation courses give knowledge about and skills in cabinetmaking required for all vocational outcomes. Courses in the orientation, cabinetmaking 1 and cabinetmaking 2, have contents that specifically cover techniques used in cabinetmaking. Also in the course materials and environment students acquire the specific basic knowledge required to lead to any of the vocational outcomes provided by the orientation. In addition to the vocational outcome furniture carpentry, the orientation provides a foundation for broader vocational outcomes in the timber trade or furniture and fittings.

The orientation floristry

The orientation courses give knowledge about and skills in floristry required for the vocational outcome. The courses in the orientation, floristry 1 and floristry 2, cover central content specific to floristry techniques. In the course materials and environment students obtain the specific basic knowledge required to go further in their vocational outcome.

The orientation hairdressing

The orientation courses give knowledge about and skills in hairdressing required for the vocational outcome. The courses in the orientation, hairdressing 1 and hairdressing 2, cover content specifically related to hairdressing. The course, materials and environment, gives students the specific basic knowledge required to go further in their vocational outcome.

The orientation textile design

The orientation courses give knowledge about and skills in tailoring textiles required for all vocational outcomes. The courses in the orientation textile design 1 and textile design 2, cover content specifically related to techniques of textile tailoring. Also in the course, materials and environment, students acquire the specific basic knowledge required to lead to any of the vocational outcomes provided by the orientation. Apart from the vocational outcome dressmaking the orientation provides a foundation for a broader vocational outcome in textiles and clothing.

The orientation other handicrafts

The orientation other handicrafts leads to vocational outcomes that are not covered in the other four orientations in the programme, or in any other national programme.

The orientation courses give knowledge about and skills in handicraft techniques required for the specific vocational outcome. Courses in the orientation, handicraft techniques 1 and handicraft techniques 2, are written in general terms, but should be adapted to the chosen vocational outcome. The course materials and the environment gives students the specific basic knowledge required to go further in their vocational outcome.

Chapter 4, Section 2, Upper Secondary School Ordinance (2010:2039) states that: "The National Agency for Education as regards the national orientation other handicrafts may decide on whether an education should be provided in the orientation."

This means that an organiser can only offer education for the orientation other handicrafts if the National Agency for Education has so decided. Those who wish to provide other education can propose this to the Agency. There is a list of the courses that can be provided on the Agency's web site.

Programme specialisations

Programme specialisations contain courses within the framework of the diploma goals and the nature of the Handicraft Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Handicraft Programme is published on the Agency's web site.

In the programme specialisations, there are a further seven courses in the subject *handicrafts* to provide students with the opportunities for further specialisation in their chosen handicraft.

The Handicraft Programme has many different vocational outcomes, and a number of these can lead to students running their own business. For this reason, in the programme specialisations there are a number of subjects covering knowledge that may be needed for running a business, such as the subjects *administration, business communication, entrepreneurship, business economics, sales and customer service* and *purchasing and logistics.*

Other subjects cover the knowledge content intended for one or more vocational outcomes. Examples of this are the subject *alarm and safety technologies* intended for the vocational outcome locksmiths, the subject *medicine* intended for the vocational outcome skin care, and the subject *pattern design* intended for e.g. the vocational outcome textiles and clothing.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Handicraft Programme are developed in conjunction with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

The vocational outcomes under the orientations cabinetmaking, floristry, hairdressing and textile design, are examples of vocational areas. With a diploma from the Handicraft Programme, students have not completed an education for all vocational outcomes, but are ready for employment. The majority of the occupations require a final company based education by working e.g. a number of hours as an employee and thereafter completing some qualifying work. Hairdressing is one example where the industry requires a company based final education and certificate to qualify as a hairdresser. Not all industries have the same requirements regarding final education.

Some of the vocational outcomes in the Handicraft Programme are *florist, trainee florist, skin care, locksmith, furniture carpenter* and *textile and clothing.*

The vocational outcome *florist* in the orientation floristry gives advanced knowledge of floristry techniques, and also knowledge of plants and design arrangements.

Courses in the programme specialisation module for the vocational outcome florist
Floristry 3, 200 credits
Floristry 4, 200 credits
Floristry 4 – specialisation, 50 credits
Floristry 5 – specialisation, 50 credits
Exhibition design 1, 100 credits
Plant studies 1, 100 credits

The vocational outcome *trainee hairdresser* in the orientation, hairdresser, gives advanced knowledge of hairdressing.

Courses in the programme specialisation module for the vocational outcome trainee hairdresser
Hairdressing 3, 200 credits
Hairdressing 4, 200 credits
Hairdressing 5, 200 credits
Hairdressing 6a, 100 credits

The vocational outcome *skin care* in the orientation other handicrafts gives a foundation providing students with good employment prospects at spas, and in the sale of skin care products and skin treatment. It also provides a basis for students to be able to go further in their education e.g. as a skin therapist.

Courses in the programme specialisation module for the vocational outcome skin care
Massage 1, 100 credits
Massage 2, 100 credits
Medicine 1, 150 credits
Medicine 1, 100 credits
Personal sales, 100 credits
Science studies 1a2, 50 credits
Chemistry 1, 100 credits

The vocational outcome *locksmith* in the orientation other handicrafts gives in-depth knowledge of techniques regarding locks, and also a knowledge of alarm, surveillance and security systems.

Courses in the programme specialisation module for the vocational outcome locksmith
Handicraft techniques 3, 200 credits
Handicraft techniques 4, 200 credits
Handicraft techniques 5, 200 credits
Alarm, surveillance and security systems, 100 credits

The vocational outcome *furniture carpenter* in the orientation cabinetmaking gives knowledge of techniques for cabinetmaking, and knowledge about running a business.

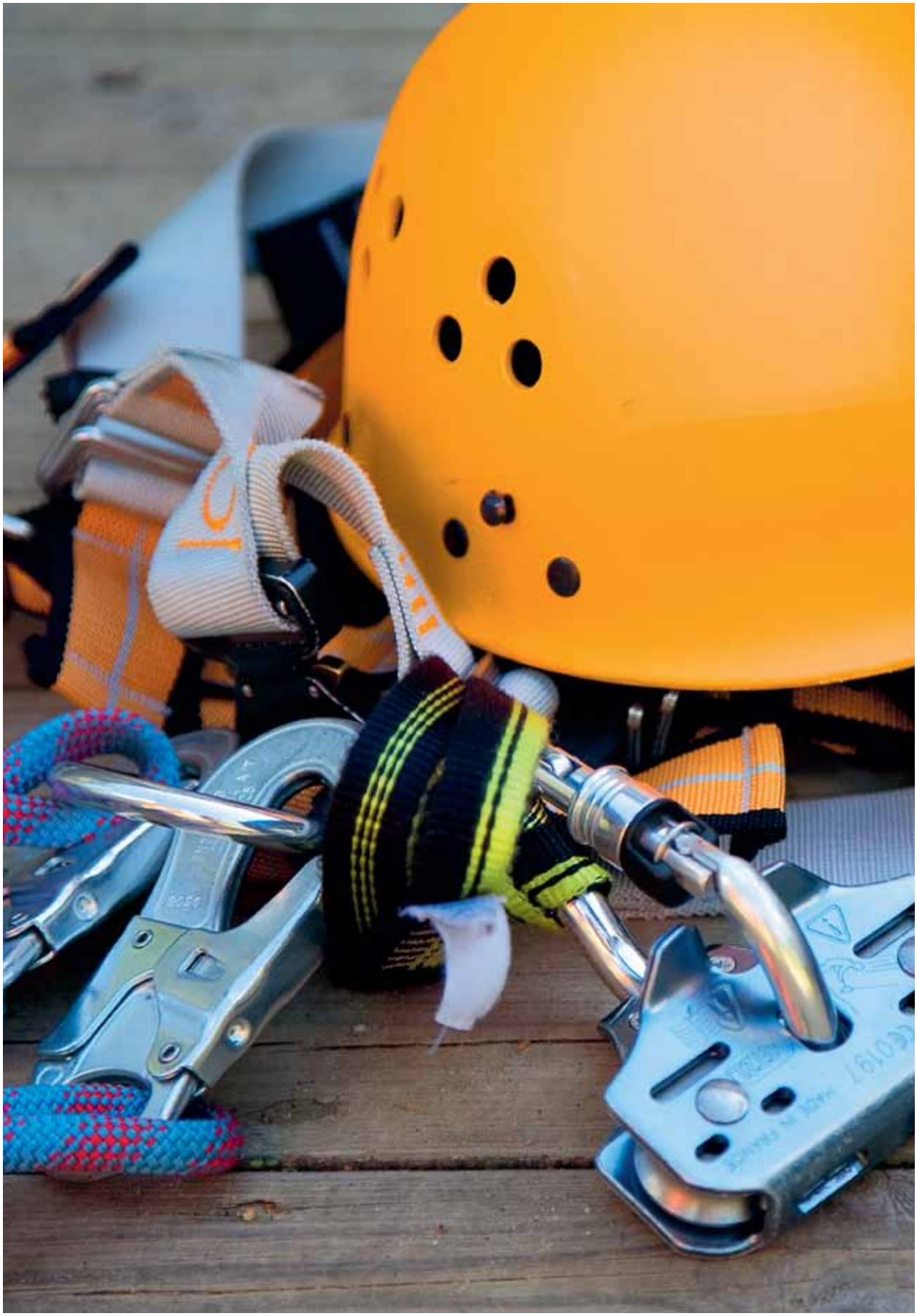
Courses in the programme specialisation module for the vocational outcome furniture carpenter
Cabinetmaking 3, 200 credits
Cabinetmaking 4, 200 credits
Entrepreneurship and business, 100 credits

The vocational outcome *textiles and clothing* in the orientation textile design provides a foundation for students to be ready for employment in textiles and clothing. It also provides a basis for students to be able to continue studies in vocational higher education, such as in clothing.

Courses in the programme specialisation module for the vocational outcome textiles and clothing
Textile design 3, 200 credits
Pattern design 1, 100 credits
Pattern design 2, 100 credits
Computer designed patterns 1, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Handicraft Programme that can give specific eligibility for higher education can be seen on the Agency's web site.



Hotel and Tourism Programme (HT)

DIPLOMA GOALS FOR THE HOTEL AND TOURISM PROGRAMME

The Hotel and Tourism Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in the hotel, conference and tourist industries.

The education should develop students' knowledge about service and customer reception, which is central in the industry. It should also develop students' knowledge in communication, marketing, sales and entrepreneurship. To provide good service and receive guests and customers professionally, requires knowledge of people's needs and traditions in different situations. It involves being sensitive and flexible when dealing with guests and customers with different expectations regarding service. The education should thus give students the opportunity to discuss and reflect on how traditions and ethical views affect people and their service requirements. Students should also be given opportunities to discuss and reflect on social and cultural questions.

Work in the industry imposes high requirements on good knowledge of languages and travel destinations and itineraries. The education should give students the opportunity of developing this knowledge.

The education should also develop students' skills in working with planning, organisation and cash management. In addition, the education should give knowledge of the industry, both nationally and internationally. Industry knowledge covers knowledge of different players and their roles, background for tourism, current scope and future opportunities, impact on the environment, and knowledge of the laws and other regulations to be applied in the area. Questions concerning the working environment and work organisation should have a central place in the education for the prevention of occupational injuries and the promotion of good health.

The vocational role involves taking personal responsibility and acting with good judgement. The education should develop students' ability to search for, analyse, critically examine and assess information, and also provide information both orally and in written form with the help of different media. Students should also discuss and reflect on their own learning based on different tasks and methods, and thereby prepare for further learning in their professional life, and develop an understanding of business and vocational roles.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Hotel and Tourism Programme has two orientations.

The orientation hotel and conference should give knowledge of work in the different departments of a hotel and in conference activities. It should provide advanced knowledge in service and customer relations, and also the ability to organise, plan and carry out meetings and events. The orientation can lead to work in reception and floor services, conferences, exhibitions, and events and sales.

The orientation tourism and travel should give knowledge about working with tourist information, organisation and planning of trips, activities and events of different kinds, covering nature and cultural tourism. The orientation emphasises the ability to provide information, and also organise and lead activities and trips. In addition, emphasis is put on knowledge of travel destinations and itineraries. The orientation can lead to work with tourist information, acting as a guide, experiences and activities, and travel planning, travel agency work and sales.

Both orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Hotel and Tourism programme is a vocational programme. The programme provides basic vocational education in hotel, conference and tourist areas with options for specialising in different vocational areas in the industry.

Service and guests' experience are emphasised in the diploma goals, and are a basic element throughout the education. Experiences, services and personal meetings are also emphasised in the diploma goals, and students are given the opportunity of developing professional approaches in a variety of service situations. An understanding of social and cultural questions is important in the industry, and for this reason students should be given the opportunity of developing their ability to communicate with guests and work colleagues from different parts of the world.

Working in the hotel and tourist sectors requires a knowledge of languages for both working abroad or in Sweden. Sweden as a tourist destination is attracting increasing numbers of foreign visitors, and for this reason language is given prominence in the diploma goals. Locating parts of workplace-based learning in other countries can give students a real opportunity to learn in authentic contexts.

A historical perspective is emphasised in the diploma goals to enable students to manage different contexts and understand the industry's growth, changes and structure. Keeping up to date with developments and reflecting on future trends in the industry are other elements in the diploma goals.

An ethical approach is essential in service contexts in order to achieve credible and lasting customer relations. Vocational ethics in the service area can relate to quality, environmental responsibility, safety and finance. Ethical aspects of quality can cover e.g. service and products to fulfil company undertakings and customer expectations.

In the industry, there are a number of risk areas covering lifting heavy objects, incorrect work positions and stress, all of which can lead to problems. The working environment and work organisation are thus important elements in the diploma goals.

Different activity areas are covered by different laws and other provisions. For this reason, students are given the opportunity of developing their knowledge of these, and also

during the education of having the opportunity to apply current legislation to real situations.

An environmental perspective should permeate the whole of the education and is also emphasised in the diploma goals. Environmental certification is an increasingly important instrument of competition for companies in the industry. Certification also contributes to companies achieving their goals for sustainable development in a structured way.

In the hotel and tourist industry there are many small companies. It is important that the education covers areas providing a realistic picture of what it means to be a small business owner. Entrepreneurship is included in all education programmes. The diploma goals for the Hotel and Tourism Programme cover starting one's own business, taking initiative and responsibility for transforming ideas into action. In addition, entrepreneurship covers curiosity, self-belief, creativity and the ability to cooperate, which are of importance in all vocational areas in the programme.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Hotel and Tourism Programme:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Hotel and Tourism Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcomes *booking, booking and sales, reception* and *floor service*, recurring tasks may involve receiving guests and customers when checking in and out, handling payments and room booking, informing customers, solving problems and dealing with complaints. Other tasks may involve applying routines for quality assurance and emergency plans in the event of threats and danger.

In the vocational outcomes *activities and experiences* and *conferences*, recurring tasks may cover welcoming course leaders and participants, booking, sales and planning meetings or events, and also arranging buffets. Other tasks may be arranging facilities for different meetings, applying routines for quality assurance and action plans in the event of threats and emergencies, and pricing different parts of an arrangement. Communication with guests or customers involves familiarity with products to be able to provide information, solve problems, present and market facilities, and also deal with complaints.

In the vocational outcomes *acting as a guide* and *tourist information*, recurring tasks may involve booking not only trips and activities, but searching for relevant information to satisfy customer needs and presenting this by means of different media. Other tasks may involve planning and carrying out guiding and safe activities in different environments. Additional tasks may be applying routines for quality assurance, risk analysis and marketing, setting prices, profitability calculations, and selling e.g. activities and trips. Com-

munication with guests or customers involves having a knowledge of products and the surrounding world to be able to inform, solve problems and deal with complaints.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of the area which is relevant for the task in order to be able to achieve an acceptable result,
- knowledge of what service and customer relations are required to carry out tasks in a professional manner, and
- knowledge of laws and other provisions relevant for the task.

Skills

In the diploma project, students should demonstrate

- skills in working professionally to complete tasks,
- skills in using technical and other equipment relevant for the task, and
- skills in providing information that is clear and easy to understand and relevant for the task.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability in a relevant way to both cooperate and work independently, and take initiatives when carrying out tasks,
- the ability to receive guests and customers in a professional way in situations during the work,
- the ability to professionally solve problems that occur when carrying out tasks, and the ability to assess.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

English
English 6 — 100

Entrepreneurship
Entrepreneurship — 100

Hotel
Accommodation — 100

Conferences and events
Conferences and events — 100

Service and reception
Service and reception 1 — 100

Tourism
Hospitality industry — 100
Destinations and itineraries — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 400 credits

Hotel and conference — **400**
Hotel
Breakfast and buffet serving — 100
Reception 1 — 100
Floor service 1 — 100

Conferences and events
Conferences 1 — 100

Tourism and travel — **400**
Tourism
Activities and experiences — 100
Sustainable tourism — 100
Marketing and sales — 100
Travel production and sales — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Hotel and Tourism Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The emergence of tourism has been affected by cultural and political conditions. Tourism has its origins in historical traditions and social structures. For students to be able to understand the development of tourism up to today's commercial tourism, they need knowledge of political events and social developments during the 20th century. The subject *history* can contribute to this.

In the course *mathematics 1a*, students are given the opportunity of training mathematical skills which will be of use in the subjects typical of the programme. This could involve calculations of profitability and pricing services. Using different software programmes, such as spreadsheets, is necessary to get an understanding of statistics, financial planning and finances in the area.

The importance of language and a broad knowledge of languages is vital for all professions in the different areas of the Hotel and Tourism Programme. This imposes requirements on interaction between the subjects typical of the programme and the subjects *Swedish* or *Swedish as a second language* and *English*. In the different subjects, there are intersection points such as critically examining information, and carrying out oral presentations in different contexts, sometimes using technical aids. Understanding of the differences between formal and informal use of language is of great importance in carrying out the work, as is being able to use language appropriate to different target groups.

The subject *science studies* strengthens knowledge of the impact of tourism on the environment. The importance of responsible behaviour from an environmental perspective is given prominence in the diploma goals and permeates the subjects studied in the programme.

In the professions for which the programme provides education, an understanding is essential of how people's needs and wishes in service situations vary depending on their outlook on life, tradition and consumption patterns. The subject *religion* can contribute to this understanding.

Issues concerning the working environment and work organisation occupy an important place in the education. The subject *social studies* covers the labour market and development of society from different perspectives. The subject also contributes knowledge about how laws and other regulations, and policy decisions, both nationally and internationally, affect the conditions for running a business and the labour market.

The subject *physical education and health* contributes knowledge about ergonomy which is of importance in preventing occupational injuries. Safety when carrying out physical activities and different arrangements, and behaviour in emergency situations are also important elements in a number of the subjects typical of the programme.

Subjects specific to the programme

The subjects which are common to the Hotel and Tourism programme are *hotel, conferences and events, tourism, English, entrepreneurship* and *service and reception*. The scope of the programme specific subjects is large in relation to most of the other vocational programs. This is due to the fact that the hotel and tourism areas cover many industries with a range of different professions requiring similar basic knowledge. In addition, subjects in the hotel and tourism areas are close to each other, and it is not meaningful to distinguish between them early in the education. The programme specific subjects provide the foundations in the programme to enable students to get an insight into possible vocational outcomes. All introductory courses in the subjects typical of the programme include practical work with simpler tasks.

The subjects *hotel, conference and events* and *tourism* cover a number of courses, which in different combinations with courses in other subjects lead more explicitly to vocational areas such as reception, conference and booking, and sales. Through the three subjects, students obtain an understanding of how different vocational roles interact at workplaces. In addition, students early in the education obtain knowledge of the different players and the scope of the industry.

Well-developed knowledge in English is required for working in hotels and tourism, irrespective of whether students in the future will work abroad or deal with foreign visitors in Sweden. The subject *English* strengthens students' language knowledge for communicating orally and in writing in different vocational situations, and for reading and understanding information in the vocational area.

The subject *entrepreneurship* contributes knowledge which is important irrespective of whether the student will work in the tourist or hotel industry. The tourist industry is characterised by many small business owners, and the demand for entrepreneurs and persons with knowledge of entrepreneurship and business economics is thus large. The hotel industry on the other hand is typified by large international companies who require entrepreneurship in a broad sense, in the form of creativity, initiative, skills in problem-solving and the ability to cooperate.

The subject *service and reception* is central since service and a professional reception are the basis for all who work in the hotel and tourist area. An important competence in business life is being able to discuss with and cooperate with other people and create good relations. Customers and guests today have high requirements for service and their treatment. The subject also contributes to self-insight and an understanding of the importance of personal attitudes when dealing with guests.

Orientations

The orientations in the Hotel and Tourism Programme are hotel and conference and tourism and travel.

The orientation hotel and conference

The orientation covers simpler tasks of different kinds in different activities such as camping, youth hostels, hotel and conference facilities. Knowledge of how tasks are carried out in a systematic and ergonomic way is essential for working in the areas the orientation leads to. The orientation also gives an understanding of how tasks in different vocational areas are organised. In both accommodation and conferences, meals are an important element, and thus the course breakfast and buffet serving is part of the orientation. The course also covers basic knowledge of hygiene and handling food.

The orientation tourism and travel

The orientation covers a number of activities in the tourism area. In addition, the whole chain of trip production, marketing and sales, and planning and carrying out of activities is covered. The orientation also contains the course sustainable tourism, the contents of which affect all parts of the tourism area. Other courses in the orientation deal with a specific part of the tourism area, and in combination provide a broad platform for all the vocational outcomes in the orientation.

Programme specialisations

Programme specialisations contain courses within the framework of the diploma goals and the nature of the Hotel and Tourism Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Hotel and Tourism Programme is published on the Agency's web site. These are courses in the subjects hotel, tourism and conferences and events, and also courses in such subjects as *administration* and *business communication.*

Language skills are essential in the vocations the programme leads to, and thus the provision of the course *rhetoric* and the subject *modern languages* as programme specialisations. Modern languages is included as good knowledge of foreign languages increases employment prospects in an increasingly international labour market.

The subjects *serving* and *drinks* are included as programme specialisations since knowledge of food and drink is required in some of the vocations the programme leads to. The content of the course drinks and responsible serving of alcohol, corresponds to the requirement to work as responsible for serving beverages.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Hotel and Tourism Programme are drawn up in consultation with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the Hotel and Tourism Programme are *reception, conference, floor service, booking, guiding, booking and sales, activities and experiences* and *tourist information.*

The vocational outcome *reception* in the orientation hotel and conference exists in two variants. The first is directed to facilities intended for international customers where there is a requirement for a good knowledge of languages. This programme specialisation module differs from that of the other orientations as the programme specialisations can cover 500 credits depending on the number of courses in modern languages. The second variant is directed to smaller or medium-size facilities where tasks are often more varied and a broader range of competence is required.

Courses in the programme specialisation module for the vocational outcome reception 1 for international customers	Courses in the programme specialisation module for the vocational outcome reception 2 for smaller or medium-sized facilities
Reception 2, 100 credits	Reception 2, 100 credits
Reception 3, 100 credits	Conference 2, 100 credits
Modern languages, 100–300 credits	Serving 1, 100 credits

The vocational outcome *floor service* in the orientation hotel and conference, in addition, provides in-depth knowledge in floor services, and also knowledge of personnel administration and management. This knowledge is required for employment as an assistant housekeeper in a large or medium sized facility.

Courses in the programme specialisation module for the vocational outcome floor service
Floor service 2, 100 credits
Floor service 3, 100 credits
Personnel administration, 100 credits

The vocational outcome *guiding* in the orientation tourism and travel exists in two variants. One is oriented to guiding in a specific place. In this programme specialisation module, all 500 credits can be used depending on the number of courses in modern languages. The second variant is oriented to focusing on nature tours where food and drink may be a part of the overall experience. In the area of nature tours many people are running their own businesses.

Courses in the programme specialisation module for the vocational outcome guiding 1	Courses in the programme specialisation module for the vocational outcome guiding 2
Hosting at travel destination, 100 credits	Nature guide 1, 100 credits
Guide and tour leader, 100 credits	Entrepreneurship and business, 100 credits
Modern languages, 100–300 credits	Drinks and responsible serving of alcohol, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language, 2 and 3, and in English 6. The options for studying these three courses and other courses in the Hotel and Tourism Programme that can provide specific eligibility for higher education can be seen on the Agency's web site.


-005

Industrial Technology Programme (IN)

DIPLOMA GOALS FOR THE INDUSTRIAL TECHNOLOGY PROGRAMME

The Industrial Technology Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in process-oriented areas or machine processing of materials and manufacturing of products, operations and maintenance, and welding and other methods of joining materials.

The education should develop students' knowledge of industrial technology and industrial production. It should develop students' ability to use equipment, process material, manage industrial technological processes, and work with quality assurance for both production and finished products. The education should also give students knowledge of the whole as regards industrial activities, in order to make it possible for them to participate not only in product and production planning, but in production itself.

In the area of industrial technology, the education should give knowledge of the contexts in production and the function of production equipment, its use and maintenance, and how production and technology affect people and the environment. In the area of industrial production, education should give knowledge of work organisation, production economics, use of resources and systematic initiatives on the working environment. Students should receive knowledge of the importance of following rules in their work, and working carefully with quality and safety. The education should also give knowledge about how an idea can be transformed into a finished product, and about a product's function and development until it is consumed or recycled.

Industrial production presupposes raw materials and energy. The education should lead to students developing insights into their own opportunities and those of companies by choosing materials, methods and techniques which affect the consumption of both raw materials and energy.

The choice should be made taking due account of sustainable development from both local and global aspects, as well as from a business perspective.

The industrial technological vocational area is changing rapidly and as a result the education should prepare students for further learning in vocational life. A company's survival may be completely dependent on its own creative power to initiate change. The education should thus develop students' ability to solve problems, and encourage them to identify innovative opportunities for creating and meeting change. By reflecting on experiences and results, students should develop the ability to plan, carry out, document, assess and develop the work. Cooperation with companies in the region contributes to students' understanding of business conditions. In the education, students should be given the opportunity to consider running their own business as an alternative to employment.

Industrial production as a rule is carried out through people cooperating. It is thus important that students in the education develop their ability to communicate and their understanding of what cooperation means for production. The education should develop students' ability to cooperate with others irrespective of e.g. gender, cultural background, age, position or competence, since working groups in industry are often heterogeneous. In addition, students should develop their ability to take initiatives in groups, be sensitive to the ideas of others, work independently and be able to use the language of their profession. Many industries have international contacts as a result of manuals and descriptions being written in English. English is also in many cases the language used internally by companies. The education should thus give students the opportunity for in-depth studies in English.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Industrial Technology Programme has four orientations.

The orientation operations and maintenance should give knowledge about the strategic and systematic importance of maintenance with regard to the functionality of equipment and reliable operations. The orientation can lead to work involving analysis and safe operations of complex industrial equipment, and working with the daily maintenance of equipment and facilities.

The orientation process technology should give knowledge about chemical or mechanical industrial processes, quality control and control and process technologies. The orientation can lead to work in planning and running operations at chemical or mechanical facilities where work can also cover control of flows, status and quality assessments.

The orientation product and machine technology should give knowledge about managing tools and industrial equipment, and about managing and processing certain kinds of materials. The orientation can lead to work as a machine operator, where assessment of a product's quality and design are essential. The orientation can also lead to work that is closely related to products covering both design, construction and production.

The orientation welding technology should give knowledge about and skills in using different welding technologies, processing sheet metal and related tasks. The orientation can lead to work as a welder in many different professions where welding is in demand. This can also lead to work as an approved, international welder.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Industrial Technology Programme is a vocational programme. It is a broad programme which provides an education for many different vocational areas in the industrial sector. The common core of the programme is process-oriented, or machine based material processing, welding and product development, which in its scope and production volumes differs from that in traditional handicrafts. This also includes methods, equipment and analysis of operations from such aspects as wear and tear, maintenance, quality, the environment and safety. Given this open definition, the programme is oriented to different industries where various materials are processed using different equipment for different types of products.

In terms of activities, the programme is closely related to the Electricity and Energy Programme, the Technology Programme, and the HVAC and Property Maintenance Programme, but it has its own identity in specific manufacturing and processing. The most difficult delimitation for certain areas may be with respect to the Handicraft Programme, but generally industrial production is typified by its large-scale operations in contrast to handicraft production.

The word "technology" in the name of the programme indicates the use of technology, understanding of the context of technology and its consequences, and the interaction between people and technology.

The diploma goals emphasise the ability to use equipment, process material, produce products, and understand and assess qualitative aspects not only during production, but also of the final product. To have good employment prospects, students must have developed a sound awareness of safety and, in one or more areas, be able to carry out work in daily production.

The education covers two main aspects: the technical and production oriented. The technical aspect involves understanding the functional whole and the functional context, and the function of equipment, its maintenance, management and impact. The production oriented aspect covers economic, organisational security and cooperative dimensions. Here emphasis is put on the importance of students understanding concepts related to production and the product's life-cycle.

Technical skills are important, but the education should not deal exclusively with technical schooling and training focusing on equipment. A person without an understanding of the whole and the context does not have sufficient vocational knowledge irrespective of expertise in handling this.

The diploma goals emphasise that the education should give knowledge of how an idea can be developed into a final product. This can lead to the idea that the work students carry out, such as the diploma project, should be completely innovative. However, a requirement cannot be imposed that all work should involve new designs or products, but innovation and creativity are encouraged.

Questions about finite raw materials, high cost of energy and vulnerability with regard to environmental and climate change are crucial in the society of today and the future. In this respect industry plays a key role with regard to both the company's own finances and society's route towards sustainable development. Questions about sustainable development are not an issue exclusively for company management. If an industry is to be effective with regard to sustainable development, this must permeate all phases of production, and knowledge about sustainable development must be possessed by all who are working. The diploma goals thus emphasise sustainable development.

Entrepreneurship is included in all education programmes. The diploma goals for the Industrial Technology Programme cover students' ability to be reflective and innovative in their work. There are numerous examples of how companies have developed through ideas that have originated from production perspectives. In addition, it is stated that regarding entrepreneurship students should be given the opportunity to consider running their own business as an alternative to employment. "Considering" means that students should be familiar with the opportunities their own companies have and problematic areas. Today many global industries once had their origins in a garage or a cellar. It is important to remind young people of this piece of history. Having one's own company can be one way of commercialising an idea, or providing services as an alternative to employment.

After the education, many students obtain their first employment in their own region. It is thus important that the education is permeated by regional working life. Regional working life also has a global context which it is important to be aware of based on questions such as what are the implications of rapid development in the industry in other parts of the world in practising the profession in the future?. What opportunities are created by Europe's ambitions to create greater mobility between countries?

Industry is changing rapidly regarding methods, equipment, materials and products. Completely new industries will be developed. The diploma goals emphasise students' ability to deal with change. This can be done, for instance, by students developing confidence in their own ability to learn and thus be able to carry out new tasks. By becoming knowledgeable in a special area, desire, curiosity and general competencies are developed as well as the ability to solve problems, make reflections, identify opportunities for themselves and others, and the ability to pursue their own learning.

The diploma goals emphasise students' ability to communicate. Communication, apart from the pure transfer of information, involves showing respect and tolerance for different views and differences between people. Communication presupposes also an understanding of the shared work culture, and the ability to work together with others to take the work forwards. In addition, communicating in speech, in written form and visually involves expressing oneself clearly and understandably, and where the use of appropriate professional language is a guarantee of clear communication.

Working groups may often consist of people with a range of different backgrounds and ages. This may be about multi-cultural and multi-religious groups involving generational-cultural and gender-cultural views. The work culture existing in different industries can be permeated by different forms of local "jargon" and distinctive internal cultures. It is important that students to the greatest possible extent are prepared before meeting these different cultural expressions, which is also given prominence in the diploma goals. Not least, it is important that students are aware of these questions prior to workplace-based learning, and that they thereafter have the opportunity together with other students of working through and presenting their impressions.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Industrial Technology Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Industrial Technology Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcome *CNC operator*, recurring tasks may involve receiving orders, determining the design and dimensions of a product, documenting manufacturing material, programming equipment, carrying out work and presenting the results to the client.

In the vocational outcome *maintenance mechanics*, recurring tasks based on specific production equipment, consisting of sub-equipment which also covers a number of production steps, may involve analysing and describing wear and tear, risk of accidents, and proposing appropriate work and maintenance routines, and improvement of measures for optimising and making operations safer.

In the vocational outcome *international welder*, recurring tasks may involve everything from an assembly order to developing production material, discussing this with the client, considering different solutions in terms of advantages and disadvantages, carrying out the welding in accordance with client wishes, presenting the work to the client, and assessing the qualitative merits and shortcomings of the task. The tasks should correspond to the level required of an approved international welder.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge about materials, equipment and methods which are essential for carrying out work, and the functionality of the final product,
- understanding of how choice of materials, techniques, tools and machines affect the work process and results,
- knowledge of laws and other provisions relevant to the task,
- knowledge of safety aspects for carrying out the work, and
- knowledge of production economics and about economy in the use of resources and energy to be able to determine in planning that implementation lies within reasonable production cost frameworks.

Skills

In the diploma project, students should demonstrate

- skills in describing and developing an idea, in an understandable way for a person with a background in the area,
- skills in planning work, by choosing materials and techniques, and by drawing up a time schedule,
- skills in clarifying and documenting ideas by making a technical description, which can function as an original for production material,
- skills in carrying out calculations for materials and time spent,
- skills in carrying out work by handling materials, using equipment and methods, in relation to possible certification levels, and working in a correct and safe way with regard to use of equipment, themselves and others, and
- skills in documenting work and using correct terms and relevant illustrations.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take responsibility for carrying out and completing tasks,
- the ability to justify their views and choices during the work with reference to established demands for the effective use of equipment, quality, use of resources and recycling, and
- the ability to reflect over work carried out and results in relation to their own ability, use of equipment, and the functionality and quality of the final product.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Industrial technological processes
Industrial technological processes 1 — 100

People in industry
People in industry 1 — 100

Production knowledge
Production knowledge 1 — 100

Production equipment
Production equipment 1 — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300–400 credits

Operations and maintenance — 400

Operations and maintenance
Support maintenance 1 — 100
Maintenance – reliability — 100
Maintenance – electrical technology — 100
Maintenance – bearings and lubricants — 100

Process technology — 400

Industrial technological processes
Industrial technological processes 2 — 100

Production knowledge
Production knowledge 2 — 100

Production equipment
Production equipment 2 — 100
Production equipment 3 — 100

Product and machine technology — 300

Computer controlled production
Computer controlled production 1 — 100

Production equipment
Production equipment 2 — 100

Product development
Product development 1 — 100

Welding technology — 400

Product development
Product development 1 — 100

Welding technologies
Fillet weld 1 — 100
Welding basics — 100

Manufacturing basis
Manufacturing basis 1 — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Industrial Technology Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subjects *Swedish* or *Swedish as a second language* and *English* develop together with the subjects typical of the programme, the ability to communicate with work teams, managers, customers and suppliers.

The subject *mathematics* gives a foundation for making calculations in the other subjects in the programme, regarding construction and the use of materials. It can also provide increased understanding of the controlling algorithms that exist in many technical devices.

The subject *social studies* contributes to knowledge about the labour market, labour legislation and the working environment. This is the knowledge area developed in interaction with the subjects typical of the programme.

The subject *science studies* covers, amongst other things, sustainable development which is of importance for those working in industrial production.

Much the heavy industrial work has disappeared. Despite this, the work may be physically demanding, and good physical condition and ergonomic knowledge facilitates the work. This knowledge is developed in conjunction with the subject *physical education and health* and the subjects typical of the programme.

Subjects specific to the programme

The subjects which are common to the Industrial Technology Programme are *people in industry, industrial technological processes, production equipment* and *production knowledge*. These subjects give an industrial core and provide a foundation irrespective of orientation.

The course *people in industry 1* covers the interaction between people in both shared work communities, and as parties with their own special interests. It also covers the interaction between equipment and people, and the working environment and safety.

The course *industrial technological processes 1* covers how raw materials are processed into final products by connecting technical equipment to manufacturing lines. It also covers how manufacturing lines are controlled, managed and monitored. Students should be given the opportunity of developing knowledge of manufacturing processes from beginning to end, and what happens at each stage of production.

The course *production equipment 1* provides an initial introduction to the equipment chosen. The course also provides opportunities to try out other equipment, since familiarity with different equipment and the functions of tools is needed to work in the area.

The course *production knowledge 1* covers different production phases. This can be about special machine elements, or about chemical and mechanical processes. Preparation of raw materials, methods of measuring and checking, and systematic quality control are also parts of the course.

The programme specific courses are intended as an introduction to the education, but there is nothing to prevent these courses being studied at a later stage if this seems to be more appropriate locally. For example, there may be reasons why a certain combination of equipment requires more knowledge than provided by the introduction in the education. In this case, the course industrial technological processes 1 can be scheduled later in the education.

All courses are written in general terms so that they can be adapted to all the industries covered in the programme.

Orientations

The orientations in the Industrial Technology Programme are *operations and maintenance, process technology, product and machine technology* and *welding technology.*

The orientation operations and maintenance

The orientation covers the importance of maintenance or preserving the functionality of equipment and safe operations. Operation stoppages and breakdown of equipment creates risks for company finances and the individual worker. Maintenance takes place continuously to minimise wear and tear and not only when a piece of equipment is worn out or has failed. Maintenance requires a knowledge of electricity since many industrial processes are powered by electricity. The orientation includes the course maintenance – electrical technology. It is a basic orientation course in electricity that does not provide any certification in electricity.

In the orientation, questions concerning safety are covered, which is very important as the person carrying out maintenance is often forced to work outside the protective routines applicable for normal operations.

The orientation process technology

The orientation covers activities where material and equipment are combined, and where production itself takes place in distinct stages, and where flows can be regulated and corrected. Often these activities are linked with automatic control systems and regulation, but there are also examples where manual interventions in and between various stages of production are necessary. The activities can cover both chemical and mechanical processes.

The orientation product and machine technology

The orientation covers how tools and industrial equipment are managed, and how specific types of material are handled and processed. The word “product” in the name of the orientation indicates that the person handling machinery must do so with great product awareness. In the professions for which the orientation provides a foundation, the practising professional often takes part in both pre-studies of a product and its final design. The orientation process technology also covers products, but then in the sense of sub-products for further processing.

The orientation product and machine technology covers 300 credits in contrast to the other orientations in the programme that cover 400 credits. This is due to the fact that all industries for which the orientation provides education do not have a meaningful common core of 400 credits.

The orientation welding technology

The orientation covers different welding techniques, sheet metal working, and related work. Welding of product components is an important element in manufacturing industry, where soldering is one of the most frequently used methods. The orientation mainly covers welding technology, but also other types of assembly and joining may be relevant. Traditionally, sheet metal is the material first associated with welding, but the orientation is neutral with regard to materials. It is possible to achieve the most advanced welding level, referred to as an "international welder", in the orientation.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the Industrial Technology Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Industrial Technology Programme is published on the Agency's web site.

The programme specialisations contain all the orientation courses, allowing all orientations to be combined with courses from other orientations.

The Industrial Technology Programme covers a wide technical field. Given this background, in the programme specialisations there are a large number of technical and industry related courses, which not only provide depth, but also enable an industrial "external area" to be studied at a basic level. Examples of such external areas are buildings and constructions and vehicle technology.

Some industrial production requires in-depth theoretical knowledge. This can cover the subject *chemistry* in the process industry, or the subject *mathematics* for optimisation in manufacturing and logistics.

Many companies in the industrial sector working in the international market use English as their means of communication. In addition, literature and manuals in the area are often in English. The subject *English* is included as a programme specialisation.

The programme specialisations contain many electricity subjects since large parts of modern industry are electricity intensive. The subject of electricity makes it possible for students to supplement their industrial technology education and obtain competence in the electricity area. However, it is difficult to encompass the eligibility requirements made by the electricity industry within the framework of the Industrial Technology Programme.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Industrial Technology Programme are developed in conjunction with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the Industrial Technology Programme are *machine carpenter, CNC operator* and *international welder.*

Vocational outcomes can occur in different variants. The different variants can have a common foundation supplemented by different specialisations.

The vocational outcome *machine carpenter* can occur in different variants. The example below focuses on work that requires a large measure of creativity in relation to the products produced. Another variant can focus on working with automated production and predetermined products.

Courses in the programme specialisation module for the vocational outcome machine carpenter
CAD/CAM, 100 credits
Computer controlled production 2, 100 credits
Design 1, 100 credits
Entrepreneurship, 100 credits
Material studies 1, 100 credits
Production equipment 3, 100 credits
Welding, 100 credits
Manufacturing basis 1, 100 credits
Tools, 100 credits

The vocational outcome *CNC operator* can occur in different variants, such as metal or wood, but also as variants using specific types of material. A CNC operator is not unambiguously defined, and thus the number of courses in computer controlled production can vary. In the example below, courses up to level 5 are listed, but an education can also be limited to e.g. level 3, and then other courses instead of computer-controlled production can be taken.

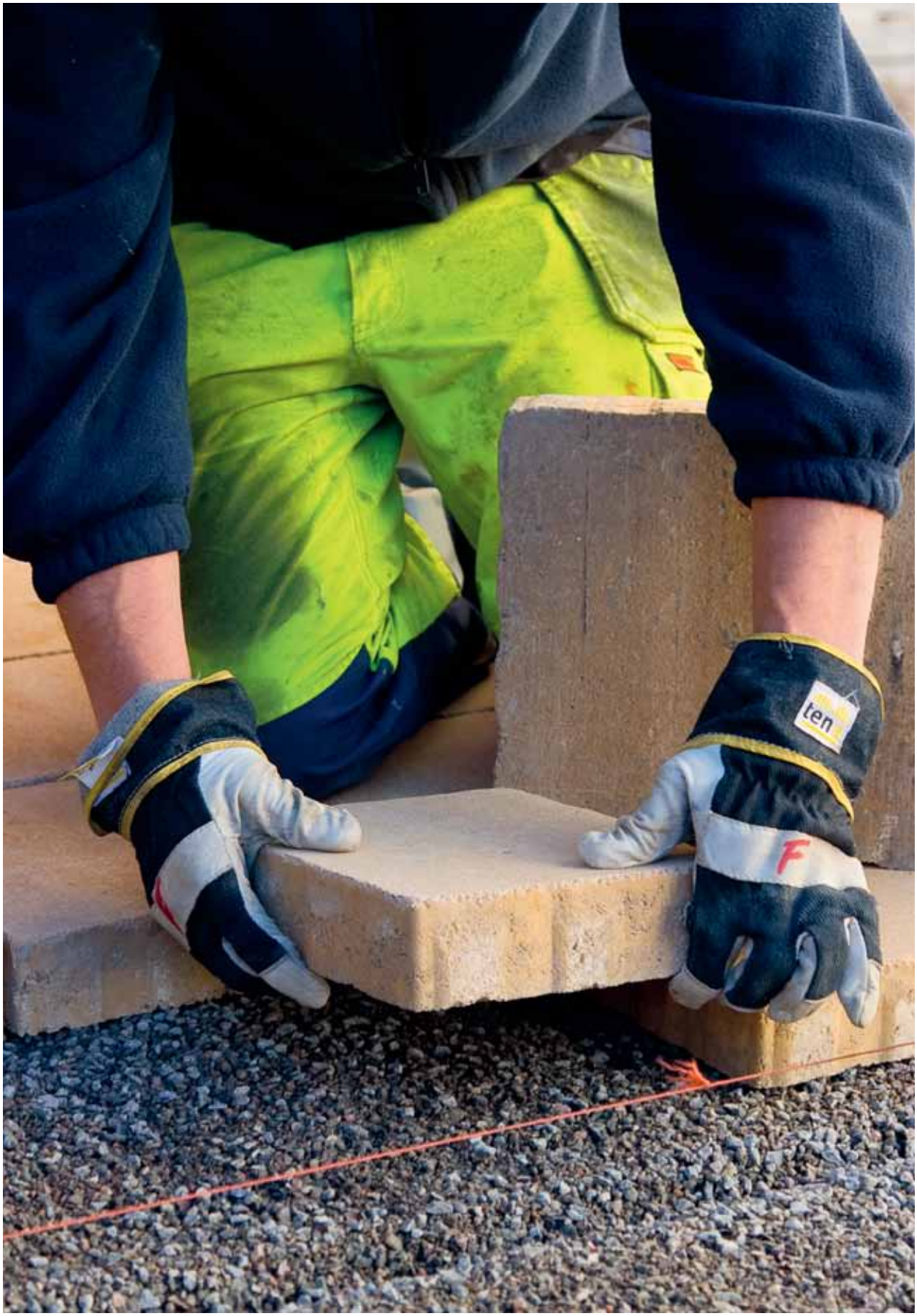
Courses in the programme specialisation module for the vocational outcome CNC operator
CAD 1, 50 credits
CAD 2, 50 credits
Computer controlled production 2, 100 credits
Computer controlled production 3, 100 credits
Computer controlled production 4, 100 credits
Computer controlled production 5, 100 credits
Material studies 1, 100 credits
Material studies 2, 100 credits
Instrumentation and automatic control, 100 credits
Manufacturing basis 1, 100 credits

In the welding area other variants depending on regional needs may occur. One variant may be the vocational outcome *international welder (IW)*, as exemplified below. The vocational outcome imposes special requirements on schools, teachers and contacts with the Welding Research Commission.

Courses in the programme specialisation module for the vocational outcome international welder
Entrepreneurship and business, 100 credits
Material studies 1, 100 credits
Material studies 2, 100 credits
Fillet weld 1, 100 credits (different welding method than in orientation)
Fillet weld 2, 100 credits (welding method MMA)
Fillet weld 2, 100 credits (welding method MIG/MAG)
Butt welding 1, 100 credits (welding method MMA)
Butt welding 2, 100 credits (welding method MMA)

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Industrial Technology Programme that can provide specific eligibility for higher education can be seen on the Agency's web site.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Natural Resource Use Programme (NB)

DIPLOMA GOALS FOR THE NATURAL RESOURCE USE PROGRAMME

The Natural Resource Use Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in the natural resource use sector with plants, animals, land, water or forests. In the programme, students should be given the opportunity to study courses that provide preparation for higher education studies in sciences, mainly linked to natural resource use.

The education should develop students' knowledge of and skills in using nature. Natural resource use covers different activities such as using and managing natural resources. This could be the production of food, plant materials and timber. Other activities are care of nature and the landscape, fishing and aquaculture, working with animals, or with parks and garden environments, and the sales of goods and services. Activities related to recreation and nature experiences are also included.

Using nature in a way that promotes sustainable development with due regard to the ecosystem imposes demands on biological, ecological, technical and economic knowledge. The education should develop students' understanding of diversity in nature, and how different activities use and influence nature and biological processes. This includes knowledge of different types of energy and their use. The education should give students the opportunity to critically examine and reflect over how we can use nature for sustainable development. To develop different activities in natural resource use requires innovative thinking, entrepreneurship and enterprise. The education should thus give students the opportunity to develop these skills. It should also contribute to a global perspective in natural resource use, and give knowledge of international cooperation.

Large parts of the vocational area are regulated in laws and other legislation. The education should give students knowledge of these provisions. Questions concerning the working environment occupy a central place in the education for preventing occupational injuries and promoting good health.

Based on practical work in natural resource use, the education should develop students' ability to take initiatives and solve problems in a responsible way. Students should be able to plan and carry out tasks, and assess results in relation to quality, effectiveness and environmental thinking. During the education, students should develop practical skills linked to understanding and reflection. The education should give students the opportunity to determine their thinking on ethical questions and be able to transform their standpoints into practical actions.

Different vocational areas in natural resource use impose requirements on communication and cooperation with others in different contexts. The education should contribute to students' skills in communication and cooperation. By working with language in all subjects, students develop their ability to argue and express viewpoints, and search for, select and process information.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Natural Resource Use Programme has four orientations.

The orientation animals should give knowledge about animals, animal behaviour and needs, and the interaction between animals and people. In the orientation, students from a scientific perspective should learn to work professionally with animals and manage animal facilities. The orientation emphasises the relationship between technical, biological and economic knowledge for good animal management. The orientation can lead to work in care of horses, work with dogs, work with animals in agriculture, or work as an animal keeper.

The orientation agriculture should give knowledge about land, water, plants, animals, economics and technology. The orientation should also give knowledge about the importance of plants in natural resource use, the environment and people's health. In the orientation, emphasis is put on the biological relationships which are the foundation for different activities. The orientation should give knowledge about the production of goods and services, and about the importance of agriculture in rural development, and about the preservation of the environment, nature and landscape. The orientation can lead to work with plant cultivation, agricultural machinery, combined agriculture or rural services.

The orientation forestry should give knowledge about forests as a renewable and sustainable resource. In the orientation, technical and biological knowledge is emphasised in order to secure a high return from biological diversity, with high values for products and services. The orientation forestry should also give knowledge about forests for recreational activities. The orientation can lead to work as a forestry machine operator, work with forestry machine services or with forestry, game and water conservation.

The orientation gardens should give knowledge about soil, plants, plant environments and the importance of gardens in society. In the orientation, emphasis is put on biological, technological and economic knowledge for ensuring good quality of products and services. Knowledge of plants is central for all work in the gardening industry. The orientation can lead to work with landscape gardening, cultivation, maintenance of external environments or horticultural services.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Natural Resource Use Programme is a vocational programme. It is a broad programme which provides an education for many different vocational areas. The core of the education is the biological knowledge and practical skills that prepare students for activities that use and manage natural resources. Using natural resources means that people use solar energy, land, water and air for the production of goods and services. Managing natural resources involves looking after and caring for plants, animals, soil, water or forests in a long-term sustainable way. Work with recreation and nature experiences in natural resource use should build on vocational knowledge in any of the areas of natural resource use, such as care of horses, agriculture, forestry, horticulture, or fishing and aquatic culture.

The diploma goals state that students should also have the opportunity in the programme to study courses preparatory for higher education in the natural sciences that are mainly connected to natural resource use. This can be about education as a veterinary assistant, hippologist, landscape engineer, farm supervisor, forestry supervisor and as a horticultural engineer. If students choose courses that are preparatory for higher education studies, the programme leads to a vocational diploma, and the scope of the courses chosen as preparatory for higher education should not undermine this.

Many activities in natural resource use, both use and have an impact on nature and biological processes. The diploma goals emphasise ethical questions that can cover views on respect for living beings, nature and cultural values and biological diversity.

Promoting sustainable development and taking care of the ecosystem is important when using natural resources. This is emphasised in the diploma goals and is included in all vocational areas. Sustainable development in natural resource use means both using nature in a sustainable way and viewing natural resource use as a resource for a sustainable society. Natural resource use contributes values connected not only with the production of food and energy, but also such areas as recreation and experiences, production of oxygen, biological diversity, and aesthetic, ethical and cultural values.

Types of energy and use of energy are emphasised in the diploma goals. Irrespective of orientation, knowledge of different energy forms, the use of energy by plants and animals, and energy flows in the ecosystem are covered in the education. In all the areas of natural resource use, the ability to economise on the use of energy centrally, for instance when calculating fodder, installation and maintenance of green areas, and in calculations about energy balance for a production area.

Entrepreneurship is included in all education programmes. The diploma goals for the Natural Resource Use Programme cover innovative thinking, entrepreneurship and business enterprise. Students should train their creative ability in order to be able to plan their work and solve problems, taking as a starting point biological, technological and economic approaches. If people who are active in natural resource use develop early on innovative thinking and the ability to see opportunities, higher value added and new products and services can be developed in natural resource use.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Natural Resource Use Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Natural Resource Use Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcome *horse groom*, recurring tasks may be managing horses, equipment, stables and peripheral equipment. In the vocational outcome *landscape gardening*,

recurring tasks may involve laying a hard surface, or organising an area for planting. In the vocational outcome *forestry machine driver*, recurring tasks may involve planning and operating and driving forestry machines in limited areas. In the vocational outcome *agriculture – plant cultivation*, recurring tasks may involve preparing the soil, spreading manure, planting seeds in a horticultural area. In the vocational outcome *agriculture – animals*, recurring tasks may involve milking, feeding, cleaning out manure in an animal stall.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of the area which is relevant for the task in order to be able to achieve an acceptable result,
- understanding of the conditions of working life and work environment issues in the area of their tasks, and
- knowledge of laws and other provisions relevant for the task.

Skills

In the diploma project, students should demonstrate

- skills in working professionally to complete tasks, and
- skills in working with biological and technical methods which contribute to high quality of products and services in natural resource use.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to assess quality in accordance with industry norms, for products and services in the areas the tasks cover,
- in work with animals the ability to take into account the natural behaviour of animals, and focus on working with what is best for the animals,
- in working with plants, the ability to take account of plants as living material, and the ability to focus on the conditions for plant growth,
- in working with garden facilities, the ability to take as a starting point aesthetic values, user requirements and applicable industry requirements,
- in work with forestry production, the ability to combine timber production whilst preserving natural and cultural environments in accordance with applicable certification standards,
- the ability to think in ecocycling terms and the ability to take account of the environment in accordance with existing provisions in the area the task covers,
- the ability to work in a way which is safe for students and others, and solve problems in a professional way for the task, and
- the ability in a relevant way to communicate and cooperate in order to carry out tasks with acceptable results.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Biology
Biology 1 — 100

Entrepreneurship
Entrepreneurship — 100

Natural resource use
Natural resource use — 200

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300 credits

Animals — **300**
Biology – natural resource use
Animal biology — 100

Animals
Animals in agriculture — 100
Animal management — 100

Agriculture — **300**
Biology – natural resource use
Soil and plant biology — 100

Animals
Animals in agriculture — 100

Natural resource use
Vehicles and tools — 100

Forestry — **300**
Biology – natural resource use
Soil and plant biology — 100

Chain saws and brush cutters
Chain saws and brush cutters 1 — 100

Forestry, land and water
Multiuse of forests — 100

Gardens 300
Biology – natural resource use
Soil and plant biology — 100

Natural resource use
Vehicles and tools — 100

Plant studies
Plant studies 1 — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Natural Resource Use Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subject *science studies* touches on a number of the subjects typical of the Natural Resource Use Programme. The subjects typical of the programme have a clear profile with regard to the knowledge needed for professional activities in natural resource use. Science studies, on the other hand, cover general knowledge where scientific areas of knowledge are discussed and investigated from a societal perspective. Health, energy and sustainable development are knowledge areas in the subject science studies. These areas are also included in many of the subject typical of the Natural Resource Use Programme. The subject science studies thus contributes to providing insights into the knowledge areas of the Natural Resource Use Programme and activities from a societal perspective. If the subject of science is studied at the end of the education, students have good opportunities to deepen knowledge in their chosen professional area from a societal perspective.

Natural resource use gives rise to many ethical questions that can be covered in the subject *religion*. In religion, ethical and moral attitudes can enable understanding of activities in natural resource use and different patterns of consumption. The views of different religions and outlooks on life with regard to animals also supplement the content of the animal subjects.

The diploma goals for the Natural Resource Use Programme state that different vocational areas impose requirements on communication and cooperation with others, and that language skills should be developed in all subjects. The course *Swedish* or *Swedish as a second language 1* provides, amongst other things, the foundations for oral and written communications with regard to presentation technique and language correctness. These foundations are further developed in other subjects and adapted to different vocational areas. Through the interaction between Swedish or Swedish as a second language, and subjects typical of the programme, students are given opportunities to train their ability to argue and develop views in their professional area.

In the course *mathematics 1a*, students are given the opportunity of training mathematical skills which will be of use in the subjects typical of the programme. This could be calculating fodder, fertilisers, concentrations and doses of plant nutrients and pesticides, calculation of surfaces and volumes, use of scales and calculation of growth rates. Different types of diagrams are used in subjects typical of the programme to show relationships and processes, such as the relationship between nutrition and growth. Mathematics contributes to students developing the ability to read and understand diagrams and functions. Basic knowledge of using computer programs, such as spreadsheets, are included in mathematics and further developed in different contexts in subjects typical of the programme.

Subjects specific to the programme

The subjects which are common to the Natural Resource Use Programme are *natural resource use, biology* and *entrepreneurship*. The subjects provide a common foundation for all orientations in the programme. They also contribute to giving students real opportunities when choosing their orientation.

The subject *biology* is a programme specific subject since all the activities in natural resource use build on biology which is emphasised in the diploma goals. The course biology 1 covers the knowledge areas of ecology, evolution and genetics. The course gives students a foundation for further studies in the subject biology – natural resource use. The content of the course can as a result be profiled with regard to natural resource use.

The subject *natural resource use* provides an introduction to the orientations in natural resource use and different vocational areas. This should contribute to giving students the opportunities to train skills which will be of use in all areas of natural resource use. Students should also use and maintain technical equipment and train their ability to operate basic machines. The subject covers the working environment and safety, areas which thereafter recur in the orientation and programme specialisation courses.

The subject *entrepreneurship* is a programme specific subject since both employees and those running their own businesses in natural resource use need the skills developed in the subject. Working in natural resource use often involves independent work where each person is responsible for large values and living material. The ability to take responsibility and solve problems that can occur is thus a requirement.

Orientations

The orientations in the Natural Resource Use Programme are: animals, agriculture, forestry and gardens. All orientations can start in the first year. The argument for this is above all that two growing seasons are needed to achieve high quality for several of the programme's orientations. Students can finalise their choice of orientation after an introductory period which has given them an insight into the whole range of vocational orientations in the Natural Resource Use Programme.

The orientation animals

The orientation gives a biological foundation and practical knowledge for working with animals of different kinds. The orientation courses provide a foundation for a number of different vocational areas.

All work with animals involves taking responsibility for the routines that apply, and taking the needs and behaviour of animals as the starting point. This basic knowledge is developed through students coming into contact with many different types of animals. By studying different kinds of animals and making comparative studies between them, students develop general knowledge of animals which can then be further developed in their respective vocational outcomes. General knowledge about animals also broadens students' professional expertise and their opportunities on the labour market.

The orientation contains three courses. The course animals in nature deals with the role of animals in nature, their impact on the cultural landscape, tasks involving animals outside their facilities, and ethical viewpoints concerning work with animals. The course animal management focuses on the care of animals in stables, maintenance of facilities for animals, and driving of vehicles. The content of the course animal biology provides a foundation for courses in the different animal subjects.

The orientation agriculture

The orientation gives a foundation for the production of food, fodder and raw materials for energy and industrial purposes. Work in agriculture imposes requirements on knowledge of plants, animals and technology. The orientation covers both plants and animals and their importance as natural resources. In the orientation, students are given the opportunity to develop the ability to drive vehicles for different tasks.

A biological foundation and practical vocational knowledge is developed in the three courses land and plant biology, animals in natural resource use, and vehicles and tools. The course, animals in natural resource use, covers the importance of using animals in this area.

The orientation forestry

The orientation gives the basic knowledge required for working with forests as a resource, and a basic understanding of forestry maintenance. This serves as a foundation for many different activities. The orientation course multi-use of forests illustrates this and covers traditional forestry, hunting, sports fishing and outdoor life. The course aims at giving an overall view of forestry, but also practical skills in forestry, and using maps and different types of orientation instruments.

The course soil and plant biology provides a basic understanding of forestry production and the building of different biotopes. The course chain saws and brush cutters 1 gives knowledge of using chain saws safely for felling and processing trees. After the course, students should have knowledge that corresponds to industry requirements for working with chainsaws and brush cutters. When the course is completed as an orientation course in the Natural Resource Use Programme, some of the basics for forestry maintenance and timber processing can be covered.

The orientation gardens

The orientation gives a foundation for many different activities in the horticultural industry. The very core of working with gardens is a knowledge of plants. A biological foundation, knowledge about plants and technical expertise is developed through the courses soil and plant biology, plant studies, and vehicles and tools. Technological expertise is central in today's vocational work in gardening.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the Natural Resource Use Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Natural Resource Use Programme is published on the Agency's web site. There are courses in animals, agriculture, forestry and gardens with regard to the use of natural resources. A number of the courses are available at three levels. The courses at level 3 provide opportunities for specialising in a chosen area.

Other courses in the programme specialisations are a complement to the different vocational areas, for example courses in the subjects *nature guide, sales and customer service, pedagogy, chemistry* and *mathematics*. With professional expertise in any of the different areas of natural resources, the supplementary subjects give students the opportunity of developing knowledge in, for instance, guiding, or in working in sales in a specific vocational area.

Programme specialisations create opportunities to provide students with one or more science courses as a complement to the science knowledge included in the subjects typical of the Natural Resource Use Programme.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Natural Resource Use Programme are developed in conjunction with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the Natural Resource Use Programme are *animal keeper, animal attendant in agriculture, agriculture – horticulture, agriculture – machines, forestry machine driver, forestry machine service, forestry care, maintenance of outdoor environments* and *landscape gardening*.

The vocational outcome *animal keeper* covers a basic module that can be supplemented with courses in e.g. animal parks, pet shops or with animal health and veterinary care. The basic packet covers 500 credits and gives knowledge of managing and caring for animals in different contexts.

The vocational outcome *animal care in agriculture* also covers a basic package of 500 credits, and contains courses providing knowledge of working with agricultural animals. The course package can be supplemented with additional courses concerning animals, such as dogs, animal care in animal health and medical care, and knowledge of horses.

Courses in the programme specialisation module for the vocational outcome animal keeper	Courses in the programme specialisation module for the vocational outcome animal attendant in agriculture
Pets 1, 100 credits	Agricultural animals 1, 100 credits
Pets 2, 100 credits	Agricultural animals 2, 100 credits
Animals – specialisation, 100 credits	Agricultural animals – specialisation, 100 credits
Animal health and veterinary care 1, 100 credits	Vehicles and tools, 100 credits
Communication, 100 credits	Cultivation of animal fodder, 100 credits

The vocational outcomes *agriculture – horticulture* and *agriculture – machines* have a common foundation allowing different specialisations to be taken.

Courses in the programme specialisation module for the vocational outcome – agriculture plant cultivation	Courses in the programme specialisation module for the vocational outcome agriculture machines
Common foundation: Horticulture 1, 100 credits Agricultural machinery 1, 100 credits Agricultural machinery 2, 100 credits Service technology – natural resource use 1, 100 credits Building maintenance, 100 credits	*Common foundation:* Horticulture 1, 100 credits Agricultural machinery 1, 100 credits Agricultural machinery 2, 100 credits Service technology – natural resource use 1, 100 credits Building maintenance, 100 credits
Specialisation: Horticulture 2, 100 credits Cultivation – specialisation, 100 credits	*Specialisation:* Loaders and trucks, 100 credits Service technology – natural resource use 2, 100 credits

The vocational outcomes *forestry machine driver, forestry machine service,* and *forestry care* have a common foundation, and thereafter different specialisations can be taken as regards driving, service or forestry maintenance.

The course terrain transporters provides a foundation for what is common for all terrain driving and service for terrain vehicles. It can be applied to one or more types of vehicles, such as scooters, tractors, terrain scooters or snow scooters.

Work as a forestry driver mainly involves forest conservation, using machines as tools. Courses in forestry maintenance are thus of central importance for the vocational outcome. In the industry driving skills are required and courses with this content are included.

Courses in the programme specialisation module for the vocational outcome forestry machine driver	Courses in the programme specialisation module for the vocational outcome forestry machine service	Courses in the programme specialisation module for the vocational outcome forestry care
Common foundation: Forestry 1, 100 credits Forestry 2, 100 credits Wood science, 100 credits Terrain transporters, 100 credits	*Common foundation:* Forestry 1, 100 credits Forestry 2, 100 credits Wood science, 100 credits Terrain transporters, 100 credits	*Common foundation:* Forestry 1, 100 credits Forestry 2, 100 credits Wood science, 100 credits Terrain transporters, 100 credits
Specialisation: Timber transport with forwarders, 100 credits Felling machinery, 100 credits Forestry machines – specialisation, 200 credits	*Specialisation:* Service technology – natural resource use 1, 100 credits Service technology – natural resource use 2, 100 credits Service technology – natural resource use – specialisation, 100 credits	*Specialisation:* Chain saws and brush cutters 2, 100 credits Forestry – specialisation, 100 credits

The gardening industry emphasises the need for a broad foundation in gardens. All vocational outcomes in the orientation gardening include the courses care of external environments, and horticulture.

The vocational outcomes *maintenance of external environments* and *landscape gardening* have a common foundation, and thereafter different specialisations can be taken. What differentiates both vocational outcomes, is that one has a specialisation in care and maintenance, whilst the other has a specialisation in landscape gardening. The vocational outcome, managing external environments, covers courses for work with the running and maintenance of parks, churchyards and gardens.

Courses in the programme specialisation module for the vocational outcome care of external environments	**Courses in the programme specialisation module for the vocational outcome landscape gardening**
Common foundation: Maintenance outdoor environments 1, 100 credits Landscape gardening 1, 100 credits Gardening machines, 100 credits Horticulture 1, 100 credits Plant studies 2, 100 credits	*Common foundation:* Maintenance outdoor environments 1, 100 credits Landscape gardening 1, 100 credits Gardening machines, 100 credits Horticulture 1, 100 credits Plant studies 2, 100 credits
Specialisation: Pruning and care of trees, 100 credits Maintenance outdoor environments – specialisation, 100 credits	*Specialisation:* Landscape gardening 2, 100 credits Landscape gardening – specialisation, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Natural Resource Use Programme that can provide specific eligibility for higher education can be seen on the Agency's web site.

Restaurant Management and Food Programme (RL)

DIPLOMA GOALS FOR THE RESTAURANT MANAGEMENT AND FOOD PROGRAMME

The Restaurant Management and Food Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in the restaurant and food sector, e.g. in restaurants, bakeries and with fresh foods.

The education should develop students' knowledge in those parts of the restaurant and food industry which involve working closely with customers, and in the first instance using handicraft methods, both traditional as well as modern. It should also develop students' knowledge about and skills in food production, preparation of meals and serving, and also their knowledge of meals as a whole. Meals as a whole are central in the education since different activity areas work together to create meals as an experience. Irrespective of whether it concerns baking, working in a delicatessen or a restaurant, a contribution is made to the whole. The education should also give knowledge of the working environment, sales, service, hygiene, nutrition, special diets and the serving of alcohol.

Working close to customers imposes requirements on good knowledge of communications and service. The education should thus develop students' ability to handle customers. Also knowledge of displaying and labelling goods should be a part of the education. Communication is an important part of functioning in a team. Since work in the vocational area is usually carried out by people working together, the education should develop students' ability to cooperate with others, irrespective of gender, cultural background, age, position or competence. Students should further develop the ability to work in groups, take initiatives, be sensitive to the ideas of others, work independently and be able to use the language of their profession. The education should also develop students' ability to work with planning, organisation and finance.

The industry is permeated by change and development, which imposes requirements on creativity and flexibility. The education should prepare students for further learning in vocational life and develop their ability to see and understand their own role in the business, and to discuss and reflect on their own learning on the basis of different tasks. The education should develop students' sense of responsibility, quality awareness and understanding of business. Issues concerning the working environment and work organisation should have a central place in the education in order to prevent occupational injuries and promote good health. The education should give students the knowledge needed to work in ways that are correct from the perspective of the working environment, and in accordance with laws and other regulations in the professional area.

The food and restaurant industry is highly international. Knowledge of food and meals in other cultures is covered in the education. By tradition the industry is a part of the international labour market. The education should thus give students a knowledge of work in other countries, and opportunities for in-depth studies in English. The industry also has a regional dimension with a focus on local production and local traditions, which should be reflected in the education.

Typical of the industry is the existence of many different types of companies. Irrespective of whether one is employed or running one's own company, the ability to take initiatives, develop ideas, and self-motivation are required. The education should give knowledge about entrepreneurship and business. The education should, in addition, lead to a greater understanding of the ethical questions posed by the handling of food, sales and sustainable development. The ethical questions should also cover the earlier steps in the production chain, animal management, cultivation, transport and processing.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Restaurant Management and Food Programme has three orientations.

The orientation baking and patisserie should give knowledge primarily for work in the handicrafts part of these areas. It should give the knowledge needed for both small and large scale operations. The orientation can lead to work as a baker or as patisserier.

The orientation fresh foods, delicatessen and catering should give knowledge in the food area, for the purpose of sales, and about meals and their ingredients, choice of raw materials, cooking, drinks, table laying and arrangements. The orientation can lead to work on providing information about food, or sales specialising in food preparation, bakery or patisserie.

The orientation kitchen and serving should give knowledge of cooking food in public or private restaurants, serving and bar tending, and work in the tourist industry. The orientation can lead to work as a cook, with cold-buffet, as a waiter or waitress.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Restaurant Management and Food Programme is a vocational programme. It is a broad programme and the diploma goals emphasise the meal as a whole, and all its constituent parts. Meals are an occasion for experiencing different dishes, bread, drinks and pastry, but a number of other aspects also affect the overall experience. The environment where we are sitting or standing, the company we have, the raw materials meals are created from, the time of day and atmosphere in the room are some examples of the factors creating our overall experience of meals. Meals as a whole also include baking, sales of fresh foods, cooking and serving, and are thus an important concept for the whole programme.

The diploma goals emphasise handicraft methods, both traditional and modern. These methods apply in addition to purely handicraft methods also in handling standard machines and equipment.

The programme is limited to covering *handcrafted food*. The more industrial parts of the bakery sector are not a part of the programme. This distinction is expressed in the diploma goals by the phrase "working closely with customers, using in the first instance

traditional handicraft methods", since handicraft methods often involve close contacts with customers. For this reason, service and customer relations are emphasised as important knowledge areas in all parts of the programme.

Handicraft methods can be both *traditional* and *modern*. The traditional methods cover basic knowledge which is important for practising handicrafts. Traditional handicraft methods are continuously developing towards more modern methods. Some of these modern methods are related to time-specific phenomena, and what customers or guests are currently asking for. Knowledge of traditional methods may sometimes be required to understand and apply a modern method optimally, for example to understand the process in a modern oven. Traditional methods themselves can in certain cases also create value-added for guests or customers even though in a narrow sense they may not be rational. One example may be carving in the dining room or describing some handcrafted food to a customer from a delicatessen counter.

Entrepreneurship is included in all education programmes. The diploma goals for the Restaurant Management and Food Programme cover creativity and flexibility, and taking initiatives, resourcefulness and self-motivation. These skills are important irrespective of whether they involve running one's own business or working as an employee. These abilities can be developed by students working in project forms on tasks closely related to reality, together with companies in the industry, or in other ways where they have opportunities to take their own initiatives and responsibility. Entrepreneurship is also evident in formulations about conditions for business, about understanding business and the role of the individual in the activity. This should lead to students in their future vocational roles understanding how the different choices they make affect the whole activity.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Restaurant Management and Food Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in Restaurant Management and Food Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcomes *bakery and patisserie*, recurring tasks may involve planning work, managing raw materials, baking and displaying, and cleaning and washing up. In the vocational outcome *cook*, recurring tasks may involve planning work, managing raw materials, cooking and arranging, cleaning and washing up. In the vocational outcome *waitress or waiter*, recurring tasks may be serving, bar work, taking care of customers, giving advice and managing the cash till. In the vocational outcomes *shop seller of fresh foods and delicatessen products*, recurring tasks may involve ordering, calculating, managing and handling products, displaying products, handling customers, giving advice and managing the cash till.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge about the working environment, hygiene, food and nutrition, relevant to the task,
- knowledge about the importance of service and sales to carry out tasks in a professional manner,
- knowledge of laws and other regulations relevant for the task, and
- knowledge of common ethical questions in the professional area.

Skills

In the diploma project, students should demonstrate

- skills in using methods, tools and machines in a professional manner,
- skills in carrying out handicrafts in a professional manner, and
- skills in carrying out tasks in a way that is safe for students and others with regard to the working environment.

Assessment ability and approaches

In the diploma project, students should demonstrate

- an economic and environmental approach,
- the ability to take initiatives,
- the ability to solve problems and see the consequences of different choices,
- the ability to assess the quality of their own work in relation to the quality norms of the industry, and
- the ability to take into account professional ethical and aesthetic factors.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Hygiene
Hygiene — 100

Food and nutrition
Food and nutrition 1 — 100

Meals and industry knowledge
Industry knowledge in restaurant and food — 100

Service and reception
Service and reception 1 — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300–600 credits

Bakery and patisserie — **300**
Bakery and patisserie
Baking 1 — 100
Chocolate and confectionery — 100
Patisserie 1 — 100

Fresh goods, delicatessen and catering — **600**
Sales and customer service
Personal sales 1 — 100
Personal sales 2 — 100

Food and nutrition
Food and nutrition 2 — 100

Food and retail
Food and retail 1 — 100

Food and drink combined
Food and drink combined — 100

Service and reception
Service and reception 2 — 100

Kitchen and serving — **300**
Food and drink combined
Food and drink combined — 100

Cooking
Cooking 1 — 100

Serving
Serving 1 — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Restaurant Management and Food Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subject *science studies* can in conjunction with subjects typical of the programme develop knowledge about food and health, and the functions of the human body, and the importance of nutritional intake for its functioning. The food industry's responsibility for sustainable development can also be covered in the subject. Also the subject *physical education and health* can provide insight into the importance of nutrition on health. In addition, the subject physical education and health develops in conjunction with the subjects typical of the programme, a knowledge of ergonomy and lifting techniques, needed to be able to physically manage tasks in the professions the programme leads to.

The diploma goals for the Restaurant Management and Food Programme emphasise communication and service. The subjects *Swedish* or *Swedish as a second language* and *English* develop together with the subjects typical of the programme, students' communicative skills and their use of appropriate professional language. In addition, English provides a foundation for working in an international restaurant and the food industry.

The subject *social studies* can, together with the subjects *history* and *religion*, develop an understanding of people's different conditions and circumstances. These subjects can together with the subjects typical of the programme, contribute to students developing the skill of cooperating with others, irrespective of gender, cultural background, age, position or competence. In the professions the programme leads to, ethical questions are common. This can be about ethics in connection with food and meals, or questions about the care of animals and sustainable development. These ethical issues can be covered in the subject of religion together with subjects typical of the programme.

Subjects specific to the programme

The subjects which are common to the Restaurant Management and Food Programme are *hygiene, food and nutrition, catering and industry knowledge* and *service and reception.* These subjects shape the nature of the programme and give students the knowledge needed for all orientations and vocational outcomes.

Knowledge requirements for food hygiene have increased in the industry, and for this reason the subject *food hygiene* is specific to the programme. People are increasingly thinking about nutrition, and allergies have become more common. This means that the demand for special diets is increasing. The subject *food and nutrition* provides a foundation for meeting this demand.

The subject *catering and industry knowledge* provides an orientation and an overview of the restaurant and food industries. This links together different activities in the programme such as restaurants, bakeries, patisseries, charcuteries and shops. The subject

also give students the opportunity to work with different tasks and get an understanding of all the players in the industry in order to make well founded choices for their orientation. In addition, the subject covers knowledge of the working environment and safety, and also serving of alcohol which is common to the programme.

The subject *service and reception* is specific to the programme since the programme provides education for working with customers or guests where service is important.

Orientations

The orientations in the Restaurant Management and Food Programme are *baking and patisserie, fresh foods, delicatessen and catering* and *kitchen and serving*.

The orientation baking and patisserie

The orientation has a common vocational outcome for those working in bakeries and patisseries. The orientation includes the subject, bakery and patisserie, which is based on courses in these areas. The subject covers handicraft methods of producing different types of bread, cakes and patisseries, how raw materials are used and also regulations concerning hygiene and the working environment. The orientation includes, in addition, the courses baking 1 and patisserie 1, and also the course chocolate and confectionery.

The orientation fresh foods, delicatessen and catering

The orientation covers 600 credits in contrast to the other orientations in the programme that cover 300 credits. The reason is that it should provide a broad common base for the professions for which the orientations provide a foundation. Despite the broader scope of the orientation, good opportunities exist in programme specialisations to specialise in different vocational outcomes.

The orientation provides broad knowledge in the food domain and meals, which is necessary to be able to advise customers and sell. It also provides skills in services and sales. The orientation provides a foundation for work mainly in shops and related activities, and the term “catering” should be interpreted on this basis. This means that catering in this context involves transactions completed over-the-counter, in contrast to the restaurant business where catering can also cover transport and serving.

The orientation kitchen and serving

The orientation provides a common foundation for vocational outcomes such as a cook, waiter or waitress. The orientation includes both a course on food preparation and serving. It not only provides a foundation for both vocational outcomes, but also gives an understanding that good cooperation between different vocational roles in the kitchen and dining-room are needed to create a total experience of the meal for guests. The course, food and drink combined, are included in the orientation since basic knowledge in composing meals is important for all vocational outcomes.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the Restaurant Management and Food Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Restaurant Management and Food Programme is published on the Agency’s web site.

The programme specialisations contain all the orientation courses to provide greater breadth with respect to other orientations than the one the student is studying. In addition, some courses are included in the subjects *hotel, conference and events* and *tourism* to broaden students' competence in relation to local needs.

The food and restaurant industry has a strong international dimension, and for this reason the subjects *English* and *modern languages* are included as programme specialisations.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Restaurant Management and Food Programme are developed in conjunction with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the Restaurant Management and Food Programme are *baker and patisserie, waitress or waiter* and *shop sales of fresh foods and delicatessen foods.*

The vocational outcome *bakery and patisserie* provides a common foundation recommended by the industry for both these professions. Apart from the courses proposed below, students can specialise in either bakery or patisserie.

Courses in the programme specialisation module for the vocational outcome baker and patisserier
Baking 2, 200 credits
Baking 3, 100 credits
Patisserie 2, 200 credits
Patisserie 3, 100 credits

The vocational outcome *waiter or waitress* provides preparation for working in different environments such as restaurants and at larger events.

Courses in the programme specialisation module for the vocational outcome waitress or waiter
Drinks, 100 credits
Drinks and responsible serving of alcohol, 100 credits
Arrangements, 100 credits
Dining room handicrafts, 100 credits
Serving 2, 200 credits
Service and reception 2, 100 credits

The vocational outcome *cook* should prepare for work in both small and large kitchens, and with both warm and buffet food.

Courses in the programme specialisation module for the vocational outcome cook
Cooking 2, 200 credits
Cooking 3, 200 credits
Cooking 4, 200 credits
Special diets, 100 credits

The vocational outcome *retail sales in fresh foods and delicatessens* can be found in many different variants. One variant is presented here.

Courses in the programme specialisation module for the vocational outcome retail seller of fresh foods and delicatessen products
Food and retail 2, 100 credits
Food and retail – specialisation, 100 credits
Business economics 1, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Restaurant Management and Food Programme that can provide specific eligibility for higher education can be seen on the Agency's web site.

HVAC and Property Maintenance Programme (VF)

DIPLOMA GOALS FOR THE HVAC AND PROPERTY MAINTENANCE PROGRAMME

The HVAC and Property Maintenance Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in the sectors of property, refrigeration and heat pumps, ventilation, water and sanitation.

The education should develop students' knowledge of installation, troubleshooting, repairs, operations and maintenance, as well as management of properties, technical facilities and systems, such as heating, ventilation and refrigeration systems. It should also give students knowledge of control technology and energy optimisation of plants, and develop their skill in systems thinking. Planning, implementation and documentation of tasks, quality assurance and assessment of completed tasks should be a part of the education. In addition, the education should give students knowledge of the rules concerning working environment and safety provisions, and familiarity with national and international agreements applicable to the profession.

The education should increase students' awareness of the environment, and develop their ability to transform knowledge about the environment, ecology and use of resources into practical action. Students should be given opportunities to understand how effective use of energy leads to sustainable development. With new buildings, refurbishment of existing buildings, repairs, maintenance and installation, knowledge is required about what systems and products are most effective in terms of energy, and how work can be done with the greatest possible account being taken of environmental factors.

Many tasks in the vocational areas entail contact with entrepreneurs, customers and people placing orders. This imposes requirements on social skills and service mindedness. The education should develop students' ability to communicate and work together with other people and other professional groups. The education should also develop service-mindedness, quality awareness and creativity. The education can also prepare students to run their own business in the area.

The education should develop students' ability to critically examine and assess their own work in relation to quality and safety requirements. Skills training in the profession should be an essential part of the education and carried out in such a way that students learn to carry out tasks both independently and together with others. The education should also give students the opportunity to work with both new and established materials and working methods.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The HVAC and Property Maintenance Programme has four orientations.

The orientation property should give in-depth knowledge of building up energy systems and about the functions of systems and their related components, and the technical documentation used in the work. It should also give advanced knowledge of service,

operations and maintenance, and also external and internal environments. The orientation should give in-depth knowledge for communicating with clients and customers in different housing environments. The orientation can lead to work as a property technician, caretaker and property manager.

The orientation refrigeration and heat pump technology should give advanced knowledge of installation, service, operations and maintenance of different facilities, such as ice rinks, chilled and refrigeration counters and heat pumps. It should give basic knowledge about energy optimisation and develop the skill of systems thinking. The orientation should give students knowledge about the environment and safety, particularly regarding the handling of cooling agents. The orientation can lead to work as a refrigeration fitter or technician in property and industry.

The orientation ventilation technology should give in-depth knowledge of service, operations and maintenance, and also measurement and installation adjustments. It should provide advanced knowledge of how different ventilation systems operate, and how to carry out troubleshooting and remedy errors using the right type of equipment and tools. The orientation should develop an understanding of plans and sectional drawings for installations, flowcharts and control and regulatory diagrams. It should also provide familiarity about the importance of effective ventilation in terms of achieving a good internal environment. The orientation can lead to work as a ventilation technician.

The orientation HVAC should give in-depth knowledge of installation, service and maintenance of e.g. heating and sanitary systems. It should give students knowledge of building systems with specified functions in accordance with existing installation rules and legislation on building. The orientation should also give advanced knowledge of energy and environmental questions, and about safety in HVAC technology. The orientation can lead to work as a fitter in the areas of HVAC, industrial plumbing, and insulation of technical installations.

All the orientations can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the HVAC and Property Maintenance Programme is a vocational programme. The programme provides education for those interested in working with property, both privately and commercially owned. It also provides education for the sector in the process industry that needs people to assemble pipes and insulation materials. The HVAC and Property Maintenance Programme creates conditions for maintaining important functions of society such as systems for the supply of heating, refrigeration and ventilation, water and waste. This is done through education in installation, operations, maintenance and repairs of e.g. heating, ventilation and sanitary equipment.

Communicative skills and understanding of people's different backgrounds is emphasised in the diploma goals. The activities for which the programme provides education

are largely customer related, and this imposes requirements on communication, understanding of others and service mindedness. Tasks are often located in home environments and other environments where comfort and security are of great importance. They need to be carried out with great attention to the surroundings and be of high quality, technically, aesthetically and environmentally.

The HVAC and Property Maintenance Programme has intersecting points with the Electricity and Energy Programme, not least as regards areas such as energy and the environment. Heating and electrical energy distributed from power plants is received by and used in property by personnel educated in the HVAC and Property Maintenance Programme. Another closely related programme is the Building and Construction Programme. The programme covers, for example, construction and assembly of ventilation facilities, whilst education for starting operations, optimisation, service and maintenance of existing facilities takes place within the HVAC and Property Maintenance Programme. In addition, there are points of contact with the Natural Resource Use Programme since the HVAC and Property Maintenance Programme provides education for maintaining external environments connected to properties, such as care of garden areas, bushes and trees.

Some concepts which are emphasised in the diploma goals are optimisation of energy, systems thinking, systems, products and communication.

Energy optimisation involves i.a. building and operating an installation or a system in an energy effective way so that use of resources and environmental impact is as small as possible. It can also involve making the facility or system as safe as possible.

System thinking in these types of technological environments involves an understanding of how processes operate in the system. This also involves an understanding of the functions of the components from which the system is built up, such as pumps, valves and measuring and control instruments. In addition, this involves understanding elementary physical laws which set the conditions for how the system is designed, built up and operated. System thinking provides the foundation to be able to troubleshoot and correct breakdowns quickly and effectively, irrespective of whether the fluid system is for heating or cooling, the ventilation system, the electrical system or steering and regulatory systems.

A *system* is a network of components that are dependent on each other, and which function together to fulfil the goals of the system. A system is described in terms of the functions it has. This can involve, for instance, heating or sewage systems where all the components concerning pipes, pumps, valves and monitoring instruments work together to form a functioning whole.

The term *product* is used in the diploma goals to refer to the components and equipment that may be included in e.g. a heating system. A product may also be a substance or a medium, such as a type of energy used in a system.

The concept *communication* here refers to a professional approach to dealing with people, not only the technical communication used in different computerised systems.

The diploma goals of the HVAC and Property Maintenance Programme give prominence to the environment and use of resources, quality, safety and entrepreneurship. Entrepreneurship is included in all education programmes. The diploma goals for the HVAC and Property Maintenance Programme refer to developing the ability for system thinking and planning, carrying out and documenting tasks in a way that requires a large measure of self-motivation, and the ability to cooperate with others over different tasks. In addition, the diploma goals state that the education can also provide prepara-

tion for students to run their own business since many in the HVAC and property sector start and often run their own small businesses.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the HVAC and Property Maintenance Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the HVAC and Property Maintenance Programme? Some examples are given here of the vocational outcomes for the programme.

In the vocational outcomes *property caretakers, property maintenance* and *property technicians*, recurring tasks may involve carrying out service work of a preventative or remedial nature, and managing contacts with users. Other recurring tasks may involve checking and optimising the operations of a facility through measurements and adjustment of pressure, temperature and flows. In the vocational outcome property maintenance recurring tasks may involve information about property maintenance, such as planning, carrying out and following up inspection of flats.

In the vocational outcomes *industrial pipe fitter, insulation fitter, refrigeration fitter* and *HVAC fitter*, recurring tasks may involve installation, troubleshooting, checking operations and repairs.

In the vocational outcome *ventilation technician*, recurring tasks may involve following up operating status, making functional checks, service work and troubleshooting, and also remedying errors in ventilation facilities.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to their chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge of how to document work in accordance with the profession's norms on quality assurance, which may involve writing an inspection report about a house, or documentation of an installation for a customer,
- knowledge about the rules governing the working environment, safety regulations and international agreements relevant to the task, which may mean investigating what the environmental and safety requirements for a task are, both internationally and nationally, and choosing protective equipment for one's own and others' safety, and
- knowledge of materials, components and properties of apparatuses, which may mean investigating applicable requirements and choosing approved and safety classified material when installing, for instance, new equipment in a property.

Skills

In the diploma project, students should demonstrate

- skills in carrying out calculations for the task, which in ventilation technology may involve calculating and assessing the size of ventilation systems prior to rebuilding,
- skills in drawing up documentation required for the task, which may mean regarding an installation finalising a supplier agreement, maintenance instructions and insurance documents,
- skills in using relevant professional terminology to the extent required for the task, which may mean using appropriate professional language in a work team for discussions, and in discussions with contractors or insurance companies using the right terminology to avoid misunderstanding or mistakes,
- skills in using appropriate instruments for a task, machines, measuring instruments and special tools in professional, ergonomic and environmentally correct ways, and
- skills in handicraft expertise so that the work is carried out professionally.

Assessment ability and approaches

In the diploma project, students should demonstrate

- service skills in carrying out tasks,
- the ability to assess and reflect on the consequences that different choices of materials and working methods lead to, and how this affects the result,
- the ability to assess results based on aesthetic, environmental and economic aspects, and
- the ability to assess whether the work is being carried out professionally and in accordance with laws, ordinances, standards and industry standards.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English
English 5 — 100

History
History 1a1 — 50

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1a — 100

Science studies
Science studies 1a1 — 50

Religion
Religion 1 — 50

Social studies
Social studies 1a1 — 50

Swedish
Swedish 1 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100

Programme specific subjects — 400 credits

Practical electricity
Practical electricity — 100

Systems knowledge
Systems design — 100
Thermodynamics — 100

Tools and material handling
Tools and material handling — 100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300–400 credits

Property — **300**
Electrotechnology
Electric power engineering — 100
Property administration and maintenance
Property administration — 100
Property service
Property service – buildings — 100

Refrigeration and heat-pump technology — **300**
Electrotechnology
Electric power engineering — 100
Refrigeration and heat-pump technology
Refrigeration and heat pump technology – basics — 100
Refrigeration and heat pump technology – environment and safety — 100

HVAC — **400**
Heating, ventilation and sanitation engineering
Contracting — 100
Sanitary technology 1 — 100
HVAC welding and soldering pipes — 100
Heat technology 1 — 100

Ventilation technology — **300**
Electrotechnology
Electric power engineering — 100
Ventilation technology
Air treatment — 100
Ventilation technology – balancing — 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the HVAC and Property Maintenance Programme should thus permeate the foundation courses, and the other courses studied in the programme.

In the vocational areas for which the programme provides education, meetings between people with different ethnic and cultural backgrounds is an important ingredient. The subject *religion* give knowledge of the similarities and differences between different religions and outlooks on life. This knowledge is of importance for vocational roles.

A practitioner in the HVAC and property area should be able to communicate with people in different societal functions. The ability to communicate is developed not only in the subjects *Swedish* or *Swedish as a second language* and *English*, but also in the subjects typical of the programme.

The subject *mathematics* give students the opportunity of training their mathematical skills which they can then use in the subjects typical of the programme. This may involve calculations of the energy consumption of plants or the use of materials for installation.

Subjects specific to the programme

The subjects which are common to the HVAC and Property Maintenance Programme are *system knowledge, tools and material handling* and *practical electricity*. These subjects define the programme and give students the knowledge needed for all orientations.

The course *system design* in the subject system knowledge, covers how HVAC, ventilation, refrigeration and heat pump systems function and are built up. It is specific to the programme since it provides an overall view of the system, and this is needed for all the vocational outcomes of the programme.

The course *tools and material handling* provides a foundation for being able to handle the tools, materials and methods used in all the orientations of the programme, and in the professions for which the programme provides education.

The course *practical electricity* is specific to the programme since it provides a foundation for building the theoretical knowledge required for limited electrical authorisation. It is one of two courses required for eligibility. Another reason that the course is programme specific is that all operations, control and monitoring of systems and plants involve some form of electrical technology. In addition, students need knowledge about electricity and safety concerning electrical systems when working at building sites, and in industries and properties.

Orientations

The orientations in the HVAC and Property Maintenance Programme are *property, refrigeration and heat pump technology, ventilation technology* and *HVAC.*

The orientation property

The orientation provides a common foundation for the vocational outcomes property caretaker, property maintenance and property technician. The tasks in these occupations vary and they are defined in the industry's nomenclature. Common to the professions, however, is maintenance of properties and safeguarding the comfort and security of tenants and users.

The orientation contains three courses. The courses property administration and property service – buildings, provides a basis for being able to work with running properties and buildings, their maintenance and administration. The course electrical power technology, supplements the course in practical electricity which is specific to the programme, and which together provide the theoretical competence required for limited electrical authorisation.

The orientation refrigeration and heat pump technology

The orientation provides a foundation for the vocational outcome of refrigeration technician. A refrigeration technician handles substances which if incorrectly handled can be harmful for the environment and health.

The orientation contains three courses. The courses refrigeration and heat pump technology – basic, and refrigeration and heat pump technology – environment and safety, cover environmental and safety aspects when handling coolants, cooling agents and oils. The course electrical power technology, supplements the course practical electricity, which is common to the programme and together they provide the theoretical competence for limited certification in electricity.

The orientation ventilation technology

The orientation gives knowledge about what is required for effective indoor climate. This provides the basis for the vocational outcome ventilation technician. A ventilation technician puts into operation, fine-tunes and optimises ventilation equipment, and carries out service and ongoing maintenance.

The orientation contains three courses. The courses air treatment and ventilation technology – adjustment, cover the properties of air, principles and conditions for ventilation technology, and the adjustment of air treatment systems. The course electrical power technology, supplements the course practical electricity, which is common to the programme and together they provide the theoretical competence for limited certification in electricity.

The orientation heating, ventilation and sanitation

The orientation provides a common foundation for the vocational outcomes HVAC fitter, industrial pipe fitter and insulation fitter.

The orientation includes four courses – contracting, sanitary technology 1, HVAC welding and soldering pipes, and heat technology 1. Common to these courses is that they cover installation, service and maintenance of different systems and processes taking place in the systems.

The course electrical power technology, is not included in the orientation HVAC since students do not need limited electrical authorisation for the vocational outcomes installation fitter, and industrial pipe fitter. On the other hand, students may need this eligibility for the vocational outcome HVAC fitter, and so it is possible to study the course as a programme specialisation.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the HVAC and Property Maintenance Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the HVAC and Property Maintenance Programme is published on the Agency's web site.

The subject CAD is one of the programme specialisations since drawings and diagrams are often produced with the use of CAD software. In the subject, students have the opportunity of more advanced knowledge in interpreting drawings, understanding symbols, and carrying out changes in drawings in relation to reconstruction work.

The courses *electrical metering technology 1* and *mechatronics 2* are included in the programme specialisations to provide in-depth studies in metering technology, regulation and monitoring. The specialisation is important for vocational outcomes in property, refrigeration and heat pump technologies, and ventilation technologies.

The course *mathematics 2a* is included as a programme specialisation to strengthen students' ability to solve mathematical problems which occur in subjects typical of the programme.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the HVAC and Property Maintenance Programme are developed in conjunction with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the HVAC and Property Maintenance Programme are *property caretaker, HVAC-fitter, refrigeration fitter* and *ventilation technician.*

The vocational outcome *property caretaking* involves working with outdoor environments, such as park areas and playgrounds.

Courses in the programme specialisation module for the vocational outcome property caretaker	Courses which can broaden or deepen the programme specialisation module
Property communications, 100 credits Information technology in property maintenance, 100 credits Property service – HVAC, 100 credits Business economics 1, 100 credits Air treatment, 100 credits External environment – plants, 100 credits External environment – machines and tools, 100 credits	Maintenance outdoor environments, 100 credits Plant studies – property maintenance, 100 credits

The vocational outcome *HVAC fitter* deals with the installation and service of e.g. water, heating and sanitary systems in properties. In daily language, an HVAC fitter is referred to as a plumber.

Courses in the programme specialisation module for the vocational outcome HVAC fitter	Courses which can broaden or deepen the programme specialisation module
Installation adjustments, 100 credits Sanitary technology 2, 100 credits HVAC gas welding pipes, 100 credits HVAC technology, 200 credits Heat technology 2, 100 credits	Electrical power technology, 100 credits Entrepreneurship 1, 100 credits

The vocational outcome *refrigeration fitter* deals with installation, operations and maintenance of systems in refrigeration and heat pump facilities. Facilities can cover everything from refrigerated counters in retailing to larger facilities in ice halls or district cooling systems.

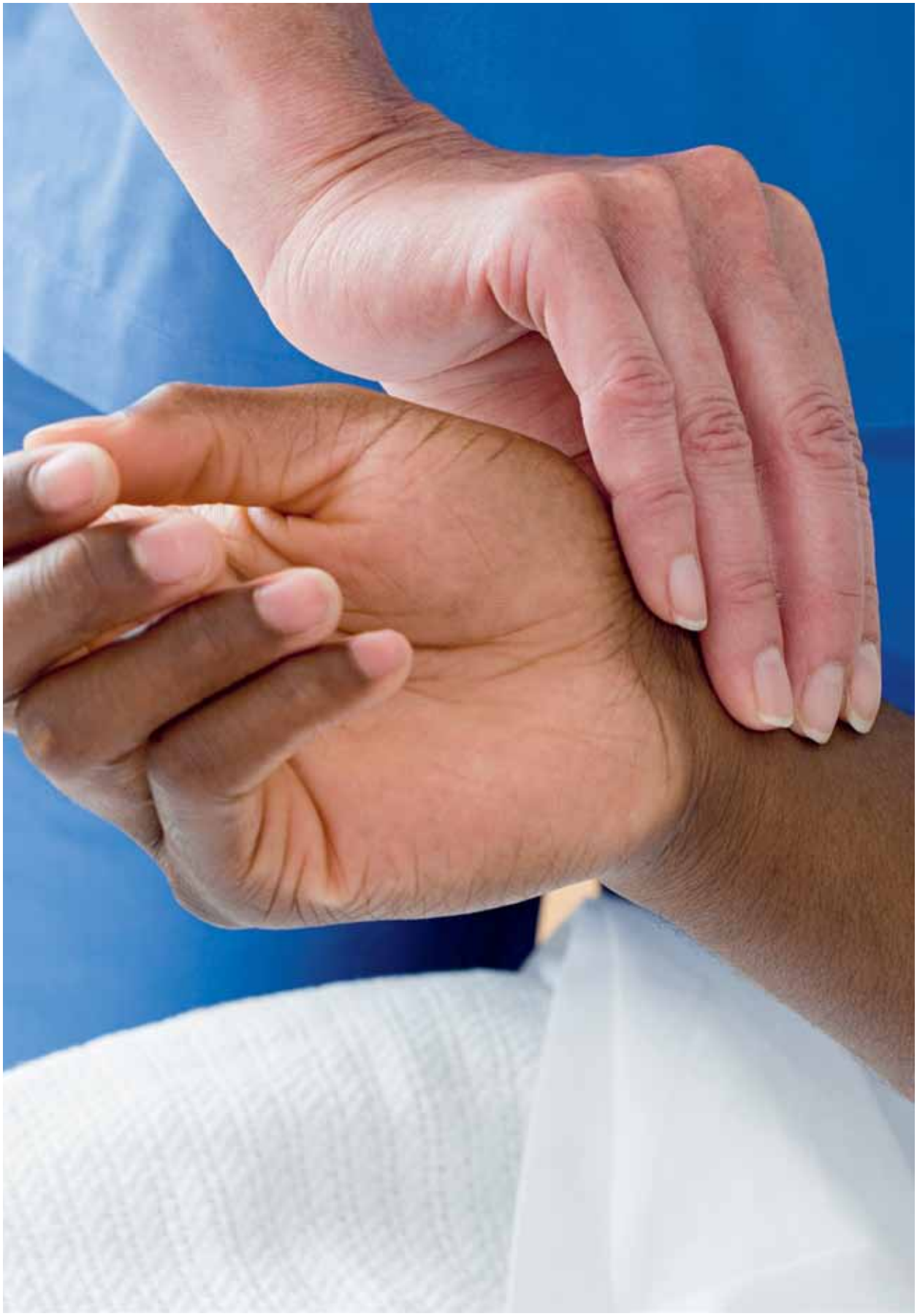
Courses in the programme specialisation module for the vocational outcome refrigeration fitter	Courses which can broaden or deepen the programme specialisation module
Business economics 1, 100 credits Refrigeration and heat pump technology – effective use of energy, 100 credits Refrigeration and heat pump technology – installation, 200 credits Refrigeration and heat pump technology – service, 200 credits Instrumentation and control technology, 100 credits	Electrical measurement technology, 100 credits Mechatronics 2, 100 credits

The vocational outcome *ventilation technician* is a specialisation in a relatively narrow area where the tasks carried out consist of starting operations, balancing and maintaining different types of climate facilities.

Courses in the programme specialisation module for the vocational outcome ventilation technician	Courses which can broaden or deepen the programme specialisation module
Property automation 1, 100 credits Property automation 2, 100 credits Business economics 1, 100 credits Air treatment facilities, 200 credits Air flow, 200 credits	Air treatment systems, 200 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the HVAC and Property Maintenance Programme that can provide specific eligibility for higher education can be seen on the Agency's web site.



Health and Social Care Programme (VO)

DIPLOMA GOALS FOR THE HEALTH AND SOCIAL CARE PROGRAMME

The Health and Social Care Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work in health and medical care, and the social services. In the programme, students should be given the opportunity of studying courses that provide preparation for higher education studies mainly in these areas.

The education should develop students' knowledge of skills in care, health and social care, and give knowledge of health, ill-health and functional impairment. In health and social care, work focuses on maintaining or restoring people's health and supporting their ability to develop their own resources. The work is based on a view of people that emphasises their equal value, human dignity, quality of life, and a sense of well-being. The education should thus develops students' knowledge of human beings of different ages from biological, psychological, social, cultural and existential aspects in relation to health, ill-health and functional impairment. Working in the area requires knowledge combined from different subject areas such as medicine, pedagogy, sociology, psychology and health care sciences. The education should thus lead to students developing a holistic view of human beings and an understanding of the importance of lifestyle for health.

The education should develop students' ability to deal with people in a professional way, communicate with respect for the integrity of the individual, and give people opportunities for participating and exercising influence. Students should also be able to develop an understanding of the different needs and conditions people have and face. In addition, students should develop the ability to discuss and develop their thinking on ethical questions concerning the practice of their profession, and follow the ethics applicable to their vocational area.

Large parts of the vocational area are regulated in laws and other legislation. The education should give students knowledge of these provisions.

The education should develop students' ability in oral and written communication, since this creates the foundation for good cooperation, and also to be able to give correct and complex information to patients and other users. In addition, a rich and varied repertoire of language is a tool for reflection and learning. Knowledge of languages increases the opportunities to communicate with patients and other users, and work in other countries. The education should give students the opportunity for advanced studies in English.

IT, digital aids and other technical equipment are used in health and social care. The education should thus give students the opportunity to manage these.

The education should give students skills in carrying out tasks that occur in the area, especially support and help for personal care, medical technical information, household tasks, and administrative, social and social pedagogical tasks. These tasks should be carried out in a professional way, i.e. ethically, aesthetically, hygienically, be rehabilitative, ergonomic and health promoting.

Identifying, analysing and taking initiatives to solve problems in different health care situations, and understanding the consequences of alternatives is important in the vocational area. The education should develop the students' ability to do this, as well as their creativity, the ability to take initiatives and their awareness of quality. The education can also prepare students to run their own business in the area.

The education should also give students knowledge of the historical development of health and social care. With this as a foundation and with the support of current research, students should develop the ability to critically examine established routines, and be able to propose changes that lead to greater quality in the area.

The education should give knowledge and insights about the importance of the working environment in terms of mental and social health, and how to work together to create good and equal working conditions.

Workplace-based learning should be a part of all vocational programmes. Workplace-based learning should contribute to students developing vocational knowledge and a vocational identity, and understanding their vocational culture and becoming a part of the professional community at a workplace. Workplace-based learning can also provide an insight into the conditions under which companies operate.

The diploma goals apply to both school-based education and apprenticeship education.

Orientations

The Health and Social Care Programme has no orientations, but the programme provides scope for specialisation within the framework of programme specialisations.

The programme can lead to work in health and medical care, and in the social services. In health and medical care, work may be at a hospital, health care centre, or home nursing. In social services students may work in special living arrangements, group living, daily activities, home services or as a personal assistant.

The education can lead to further studies in vocational higher education.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Health and Social Care Programme is a vocational programme. In the first instance, the education should contribute to students developing the skills required for working closely with patients and users in health and medical care, psychiatry, care of the elderly, and in the functional impairment area. Students should also have the opportunity within the framework of the programme to study courses preparatory for higher education mainly in these areas.

The core knowledge areas given prominence in the diploma goals are those required for working in all activity areas in healthcare. This involves knowledge about people from a holistic perspective, how to treat them and about attitudes. This also involves communication and cooperation, and carrying out tasks in a professional manner in accordance with current legislation.

Knowledge of people from a holistic perspective involves knowledge about people of different ages, and about people's views of the world physically, mentally, socially and culturally or spiritually as regards health, ill-health and functional impairment. The starting point should be health from a salutogenic perspective which means taking what

is healthy as a benchmark, and as far as possible applying this. By taking health as a starting point, conditions are created for greater insight into a personal lifestyle and the ability to carry out actions to increase well-being and a positive self-image for the individual. The education should be permeated by an inclusive approach, where emphasis is put on the right all persons have for health and well-being on equal conditions.

Meeting people is central to all work in health and social care. The focus in the programme is on students developing the ability for good *customer relations* and *attitudes* which amongst other things means respect for individual integrity and the opportunity to influence. The starting point and approach in meeting people is the equal value of people, and the right to good health and social care, which is also laid down in the legislation regulating health and medical care, and the different areas of the social services. Fundamental to good reception is an empathic approach, understanding of patients' and users' view of the world, and the ability to communicate and cooperate with them, as well as their relatives and staff. The ability to *communicate* both orally and in writing, and *cooperate* is emphasised in the diploma goals.

In health and social care, it is important to be able to *carry out tasks in a professional way.* Among the tasks stated in the diploma goals, there are, amongst others, medical tasks, both those which in accordance with legislation require formal competence and thus cannot be delegated, and also those where formal competence is not required and which can be delegated. Social and social pedagogical tasks are today central in health and social care and are thus emphasised in the diploma goals. The professional role also includes administrative tasks where documentation is an important part. The ability to use information technology as a working tool is emphasised in the diploma goals. Technological development in health and social care is rapid, and this means all personnel must have good skills in using technical equipment and aids in safe ways. For students to develop the ability to work in a professional way, knowledge is needed from a number of areas, such as ethics, medicine, pedagogical care and health sciences.

Entrepreneurship is included in all education programmes. The diploma goals for the Health and Social Care Programme refer to creativity and flexibility, and the ability to take initiatives, be aware of quality, the ability to solve problems in daily work, and critically examine established routines.

The diploma goals state that workplace-based learning should take place, and that the diploma goals apply to both school-based education and apprenticeship education. For commentaries on this, see the section Workplace-based learning (APL) on page 22, and the section School-based education and apprenticeship education on page 23.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Health and Social Care Programme state the following:

The diploma project should demonstrate that students are prepared for the vocational area applicable to their chosen vocational outcome. The project should demonstrate the student's ability to carry out recurring tasks in the vocational area. The diploma project should be carried out in such a way that students plan, carry out and assess their work. The diploma project can be organised so that students have the opportunity of demonstrating their expertise in company-like settings.

What is meant by recurring tasks in the Health and Social Care Programme? Some examples of the programme's vocational outcomes are given here.

In the vocational outcomes *functional impairment area, health and medical care, psychiatry* and *care of the elderly*, recurring tasks may involve providing support and service,

and carrying out medical tasks, service tasks in the home or household, social and social pedagogical tasks and administrative tasks. The tasks should where necessary be carried out with the help of information technology or other technical equipment.

See also the section The diploma project in vocational programmes on page 42.

As an aid in assessing whether a student is prepared for the vocational area related to the chosen vocational outcome, and can carry out recurring tasks in the vocational area, the points set out below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- knowledge about people based on physical, mental social or cultural, and other aspects relevant for the task with regard to health, ill-health or functional impairment,
- knowledge of common ethical questions in the professional area, and
- knowledge about the importance of the working environment for physical, mental and social health.

Skills

In the diploma project, students should demonstrate

- skills in planning, carrying out, assessing and documenting tasks in a professional manner,
- skills in using information technology for information, communication and documentation, and
- skills in appropriate cases of using relevant medical-technical and other technical equipment on the basis of applicable provisions and in a way which is safe for patients, users and personnel.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to assess the quality of their own work,
- the ability to work with an ethical approach,
- the ability to receive, communicate and cooperate with patients and users with respect to individuals' conditions and needs,
- the ability to analyse and solve problems that occur during the course of the work, with assessment and focus on the patient's and user's best interests, and
- the ability in a relevant way to cooperate with other staff and take responsibility for tasks.

PROGRAMME STRUCTURE

Foundation subjects — 600 credits

English	
English 5	100
History	
History 1a1	50
Physical education and health	
Physical education and health 1	100
Mathematics	
Mathematics 1a	100
Science studies	
Science studies 1a1	50
Religion	
Religion 1	50
Social studies	
Social studies 1a1	50
Swedish	
Swedish 1	100
or	
Swedish as a second language	
Swedish as a second language 1	100

Programme specific subjects — 1 100 credits

Health	
Health pedagogy	100
Medicine	
Medicine 1	150
People	
Ethics and human living conditions	100
Psychiatry	
Psychiatry 1	100
Psychology	
Psychology 1	50
Social studies	
Social studies 1a2	50
Special pedagogy	
Special pedagogy 1	100
Swedish	
Swedish 2	100
or	
Swedish as a second language	
Swedish as a second language 2	100
Health and social care	
Health and social care 1	200
Health and social care 2	150

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Health and Social Care Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The diploma goals emphasise communication, which is developed in the subject *Swedish* or *Swedish as a second language* in interaction with subjects typical of the programme. A rich and varied language repertoire is a tool for reflection and learning. Opportunities for students to develop their language is not just a responsibility for teachers of Swedish, or Swedish as a second language. Students should train both their spoken and written language in the subjects typical of the programme.

Those working in health and social care meet patients and users with a range of different cultures, religions and outlooks on life. The subject *religion* can together with the subjects typical of the programme in the course, ethics and human living conditions, contribute to knowledge to improve interaction with people from different cultures.

The diploma goals emphasise the historical development of health and social care. The subject *history* contributes to knowledge of how society has changed over time, and the impact this has had on people's living conditions. What this means for the historical development of health and social care can be examined in the subjects typical of the programme.

Occupational injuries are a health problem among staff working in health and social care. The subject *physical education and health* can contribute to increasing physical strength, and also together with the subjects typical of the programme, provide knowledge about how injuries can be prevented through using appropriate techniques at work.

In health and social care, there are many situations where a basic knowledge of mathematics is necessary, such as when calculating fluid balance or assessing the reasonableness of pharmaceutical dosages. The subject *mathematics* can contribute to both theory and skills training.

The subject *English* contributes to the communicative skills needed in multicultural healthcare. This also provides a language foundation for working with health and social care in an international context.

Subjects specific to the programme

The subjects which are common to the Health and Social Care Programme are *health, medicine, people, psychiatry, psychology, social studies, special pedagogy, Swedish* or *Swedish as a second language* and *health and social care*. These subjects lay the common foundation for work in all the activity areas covered by the programme.

The subject health, contributes to students developing knowledge about what factors determine people's health and life quality, and how the lifestyle of the individual can

contribute to preventing ill-health. The subject is specific to the programme since all health and social care takes as its starting point what is healthy and as far as possible applies this.

Through the subject *medicine*, students develop knowledge of the health and ill-health of people. The subject contributes to the ability to identify changes in people's health status.

The subject *people* contributes knowledge of people from a social, cultural and existential perspective. This also contribute to ethical approaches.

In the subject *psychiatry*, knowledge of different mental disabilities is developed, and also the ability to meet and communicate with patients and users with mental impairments.

The subject *psychology* contributes to students developing knowledge about human beings from a psychological perspective.

The subject *social studies* contributes to knowledge of policy determination in society and welfare theories, which are of importance for understanding the profession in the future, and the settings they will be working in.

The subject *special pedagogy* contributes to basic knowledge of different functional impairments, knowledge which is of value in all the activity areas.

In the subject *Swedish* or *Swedish as a second language*, students will be exposed to literature, which apart from developing language, also conveys knowledge about and experiences of people's lives, cultures, history and ways of living. Literature has an important function as a communicator of experiences which students do not yet possess, but which they will need in their future vocational activities. In addition, there is a need to express oneself in speech and above all in writing, since the requirement for documentation applies to all personnel in the health and social care sector.

In the subject *health and social care*, students develop the ability to plan, carry out and assess health and social care tasks which occur more or less in all activity areas.

Orientations

The Health and Social Care Programme has no orientations. This is justified by the industry's view that the vocational area needs a broad common foundation with options for flexible specialisation later on. Without orientations, the organiser can in conjunction with the local programme councils adapt the education to changes in working life and in relation to research findings.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the Health and Social Care Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Health and Social Care Programme is published on the Agency's web site.

In the programme specialisations, which covers 500 credits, there are subjects which deepen, broaden and allow for specialisation in the areas for which the programme provides education. This can cover the subject *gerontology and geriatrics* which gives specialist knowledge of working with the elderly, the subject *psychiatry* which leads to specialisation in psychiatry, and the subject *medical care* for work in health and social care. In

addition, this can involve the subject *special pedagogy* which gives advanced knowledge of working in the functional impairment area.

The programme specialisations contain subjects that contribute valuable knowledge for all activities, such as the subject *health*. Technological development in health and social care takes place rapidly, and courses such as *technology in health and social care* and *IT in health and social care* contribute knowledge of importance for all activities. The course *international* work can contribute to in-depth knowledge in the profession in a multicultural society or for working abroad.

The courses *English 6* and *Swedish* or *Swedish as a second language 3* are included in the programme specialisations to deepen students' communicative skills. The course mathematics 2 is often a requirement for specific eligibility for different higher education programs in health and social care.

Vocational outcomes and the programme specialisation module

The Agency's proposals for vocational outcomes and the programme specialisation module for the Health and Social Care Programme are developed in conjunction with the national programme council. They can be found on the Agency's web site. The programme specialisation module gives examples of the knowledge the industry needs for students to be ready for employment. The vocational outcomes and the programme specialisation module can be adapted to local conditions in conjunction with the local programme council. See the section Vocational outcomes and the programme specialisation module, on page 41.

Some of the vocational outcomes in the Health and Social Care Programme are *health and social care, psychiatry, care of the elderly* and *the area of functional impairment*. The vocational outcomes are given in terms of activity areas rather than professional positions, since there are no standard positions applicable to the whole country.

The vocational outcome *health and medical care:*

Courses in the programme specialisation module for the vocational outcome health and medical care
Emergency care, 200 credits
Medicine 2, 100 credits
Palliative care, 100 credits
Home nursing, 100 credits

The vocational outcome psychiatry:

Courses in the programme specialisation module for the vocational outcome psychiatry
Psychiatry 2, 200 credits
Alternative medicine, 100 credits
Community-based psychiatry, 100 credits
Forensic psychiatry, 100 credits

The vocational outcome *care of the elderly:*

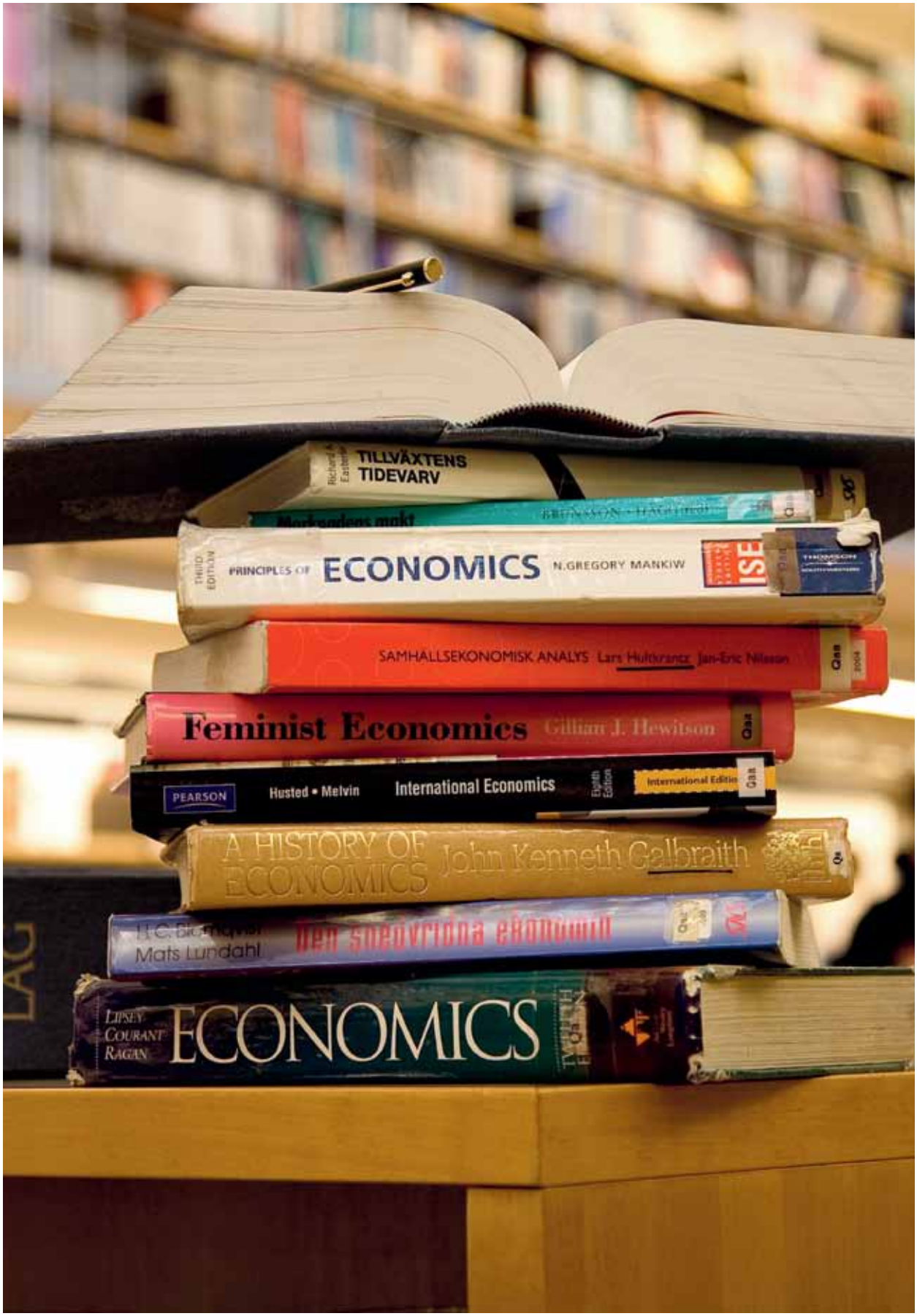
Courses in the programme specialisation module for the vocational outcome care of the elderly
Older people's health and quality of life, 200 credits
Health and social care for dementia, 100 credits
Home nursing, 100 credits
Social pedagogy, 100 credits

The vocational outcome *functional impairment area:*

Courses in the programme specialisation module for the vocational outcome functional impairment area
Special pedagogy 2, 100 credits
Social pedagogy, 100 credits
Wellness and health, 100 credits
IT in health and social care, 100 credits
Healthcare pedagogy, 100 credits

Eligibility for higher education

Students in the vocational programmes obtain general eligibility for higher education if they have a vocational diploma and passing grades in Swedish, or Swedish as a second language 2 and 3, and in English 6. The options for studying these three courses and other courses in the Health and Social Care Programme that can provide specific eligibility for higher education can be seen on the Agency's web site.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TIDEVARV
PRINCIPLES OF ECONOMICS N.GREGORY MANKIW
SAMHALLSEKONOMISK ANALYS Lars Hultkrantz Jan-Eric Nilsson
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Mats Lundahl
LIPSEY COURANT RAGAN ECONOMICS

Business Management and Economics Programme (EK)

DIPLOMA GOALS FOR THE BUSINESS MANAGEMENT AND ECONOMICS PROGRAMME

The Business Management and Economics Programme is a higher education preparatory programme. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in economics, law and other social science areas.

The education should develop students' knowledge of economics, business economics, entrepreneurship and law. Economics deals with how the resources of society are used in the best way to satisfy human needs. Business management takes the perspective of the company and should together with entrepreneurship develop the knowledge needed to start and run a company. The Swedish legal system and laws and other legislation affecting companies, organisations and private life is studied in the subject of law. The education should also develop students' knowledge of how human beings think, feel and act. Such knowledge in psychology is important when making decisions and assessments in both economics and law.

Economic relationships in the world are complex and changes taking place in one area can often have consequences in completely different areas. The education should thus develop students' knowledge of economic conditions in society, about the conditions countries face for trade, and about the foundations for international groupings and agreements. It should also provide knowledge about the conditions for sustainable development, not only from environmental but also economic and social viewpoints. For studies in economics, a knowledge of history is central. The education should develop students' knowledge of history so that they understand the present, and can reason over causal relationships and the consequences of different decisions.

The education should, in addition, give knowledge about the role of companies in the development of society, locally, regionally, nationally and globally. It should also highlight the legal and moral responsibility of businesses. Content and working forms should promote students' creativity and ability to cooperate, take responsibility and transform ideas into practical actions. In the education, students should be given the opportunity to develop skills in running a business.

The education should provide opportunities for students to develop the foundations of a scientific approach, and also training in searching for, selecting, analysing and assessing information mainly in relation to economic, business and legal questions. The education should develop, not only the ability of students to reason from the perspective of the individual, company and society, but also their ability to draw conclusions and reflect on the arguments for their standpoints. To describe and explain economic and legal phenomena in society, the education should give students knowledge of using key concepts, theories and models. The education should also develop students' ability to structure and present their results in accordance with scientific norms and adapted to their target group. All subjects in the education should contribute to students developing language skills and that modern technology is used as a tool in searching for information, presentations and communication.

Orientations

The programme has two orientations.

The orientation economics should give knowledge of business areas such as accounting, calculating, marketing, leadership and organisation. The orientation should also provide skills in starting and running a business.

The orientation law should give knowledge about the importance of the legal system in a democratic society and how it is affected by international law. The orientation should develop students' ability to analyse and assess legal problems with reference to legal sources and methods.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the economic or legal area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a written form with a short summary in English. Students should present and discuss their work and also give responses to the diploma projects of others.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Business Management and Economics Programme is a higher education preparatory programme. The studies should be permeated by a scientific approach. This means that students should, amongst other things, develop critical thinking, their creativity and communicative ability, and also the ability to take responsibility.

The diploma goals emphasise economics, business economics and law. In *economics* an understanding of economic events and processes is central. In business economics, students should not only develop knowledge about business, and starting and running businesses, but also develop a critical and scientific approach to questions concerning usefulness and responsibility of companies to society. The term *law* refers to the Swedish legal system, laws and other provisions which apply to the individual and the regulatory framework governing business. Studies in law can in many ways contribute to higher education preparation. In law, students are given the opportunity to formulate problems, identify relevant sources, interpret texts and put the arguments for and against a given position. They should also have the opportunity to develop their language skills since legal language often imposes requirements on precision, objectivity and logical clarity. The combination, law and business economics, gives students the opportunity to interpret laws and other regulations in business contexts.

The diploma goals state that students should develop knowledge of how people think, feel and act. Psychology provides a basis for understanding established theories on human behaviour in areas such as marketing and leadership. This knowledge also provides support for understanding legal judgements, such as those involving questions about legal predictability, reliability and credibility.

The education should develop knowledge of the conditions for sustainable development. This covers ecological, economic and social sustainability. This deals with the responsibility that can be placed on different players, covering nations and institutions in society, to companies and individuals.

The diploma goals state that students should develop knowledge of history as a foundation for understanding the present. This can apply to different aspects of entrepreneurship, from long-term industrial development and different structural forms of entrepreneurship to more specific questions such as trade union cooperation and gender equality in vocational life. This can also concern questions about migration, problems in the welfare state, and the effect of globalisation on people's living standards in different countries.

The diploma goals state that students should develop knowledge of how companies affect the development of society. With regard to this, students are given the opportunity to reflect over the values and norms which are the foundation for decision-making in companies. This can contribute to students developing ethical approaches.

The diploma goals emphasise international economic relationships. This can be about the reciprocal dependence of countries, economic development and distribution of resources. It can also involve the role of the company and its actions in an international environment or with international customers.

Entrepreneurship is included in all education programmes. The diploma goals for the Business Management and Economics Programme state that students should be given the opportunity of developing creativity, capacity to take initiatives, and the ability to transform ideas into action. In addition, it is stated that students should be able to gain experience of running a business. They should also apply business principles to a reality simulation process by starting and running a company, from idea to final accounts, and in a context. Application can take place under more or less realistic conditions or in simulated forms.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Business Management and Economics Programme state the following:

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the economic or legal area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a written form with a short summary in English. Students should present and discuss their work and also give responses to the diploma projects of others.

The diploma project should take as its starting point the key knowledge areas described in the diploma goals of the Business Management and Economics Programme. These are economics, business economics, entrepreneurship and law.

The diploma project should be reported in a written form with a short summary in English, as this is the relevant reporting form used in higher education for economics and law.

See also the section The diploma project in programmes preparatory for higher education on page 44.

As an aid in assessing whether a student is prepared for higher education studies, in the first instance in the economic or legal area, the points listed below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- relevant knowledge about the chosen knowledge area with a starting point in specific questions,
- knowledge of relevant terms, theories, models and methods in the chosen knowledge area, and
- knowledge of relevant sources and how their relevance and credibility can be assessed.

Skills

In the diploma project, students should demonstrate

- skills in defining their starting questions,
- skills in using relevant terms, theories, models and methods to deal with their questions,
- skills in using appropriate techniques and methods to search for and gather information, and process the material,
- skills in presenting results in a written report that fulfils the basic requirements of the genre in terms of language correctness and formal structures,
- skills in orally summarising and presenting diploma projects in a way that is adapted to the situation and the target group, and also
- skills in briefly summarising results in written English in appropriate language.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take initiatives and responsibility for adapting planning and working methods to the situations and requirements that occur during the work,
- the ability to critically assess and work independently with selected sources,
- the ability to examine questions from different perspectives,
- the ability to assess and draw conclusions from their results based on choice of methods and sources, and also their own working methods and input, and
- the ability to give, consider and assess objective responses.

PROGRAMME STRUCTURE

Foundation subjects — 1 250 credits

English
English 5 — 100
English 6 — 100

History
History 1b — 100

Physical education and health
Physical education and health 1 — 100

Mathematics
Mathematics 1b — 100
Mathematics 2b — 100

Science studies
Science studies 1b — 100

Religion
Religion 1 — 50

Social studies
Social studies 1b — 100
Social studies 2 — 100

Swedish
Swedish 1 — 100
Swedish 2 — 100
Swedish 3 — 100
or

Swedish as a second language
Swedish as a second language 1 — 100
Swedish as a second language 2 — 100
Swedish as a second language 3 — 100

Programme specific subjects — 350 credits

Business economics
Business economics 1 — 100

Law
Civil law — 100

Modern languages — **100**

Psychology
Psychology 1 — 50

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300 credits

Economics — **300**

Entrepreneurship
Entrepreneurship and business — 100

Business economics
Business economics 2 — 100

Mathematics
Mathematics 3b — 100

Law — **300**

Philosophy
Philosophy 1 — 50

Law
Business law — 100
Law and society — 100

Psychology
Psychology 2a — 50

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Business Management and Economics Programme should also permeate foundation courses, and the other courses studied in the programme.

The subject *English* emphasises oral and written communication, and provides a foundation for being able to work in the subjects typical of the programme with English texts related to the nature of the programme. The use of English-language sources and training in communication in English contributes to developing a language that can be used in international contexts.

Students in the Business Management and Economics Programme study, similar to students in the Social Science Programme, the Arts Programme and the Humanities Programme, a special mathematics track the "b track". *The courses, mathematics 1b* and *2b* have a clear focus on mathematics relevant to these programmes, with an emphasis on statistics and the aesthetic aspects of mathematics (symmetry).

The subject *science studies* covers i.a. the conditions for sustainable development. Knowledge of these conditions is fundamental to being able to reflect over socio-economic questions, such as economic growth and consumption, and over the role of companies and their responsibility.

In the Business Management and Economics Programme, all students study 200 credits in the subject *social studies*, which covers amongst other things macroeconomics. The diploma goals emphasise knowledge about how society's resources are used to best satisfy people's needs.

In the subject *Swedish* or *Swedish as a second language*, emphasis is put on oral and written communication, and also the ability to read and write texts of a scientific-like nature. By working in both Swedish or Swedish as a second language and in the subjects typical of the programme with scientific texts, students are given the opportunity of developing the language skills required for studies in higher education.

Subjects specific to the programme

The subjects which are common to the Business Management and Economics Programme are *business economics, law, modern languages* and *psychology*.

The subject *business economics* covers the role and responsibility of companies in society. This also covers entrepreneurship and running a business, and what is required to start and run a business.

The subject *law* provide students with in-depth knowledge of the legal system in Sweden, and develops their ability to solve legal problems in different contexts.

Economics is becoming increasingly dependent on international contexts. In the Business Management and Economics Programme students need to develop good knowledge of languages. To be able to communicate in a number of languages other than Swedish and English, and to be able to work in an international environment, the subject *modern languages*, is common to the programme. In addition, the goals in the EU are that every citizen should be able to communicate in two languages apart from their mother tongue.

The subject *psychology* develops knowledge of the thinking, feelings, behaviour and interaction of human beings. It is knowledge which is of importance in many economic and legal contexts.

Orientations

The orientations in the Business Management and Economics Programme are *economics* and *law.*

The orientation economics

The orientation provides a foundation in entrepreneurship and business. This gives students theoretical knowledge about companies and methods for managing company activities. In addition, students get the opportunity to apply in practice their theoretical knowledge through working with case studies or in other simulated processes. The orientation includes an additional course in mathematics, since good knowledge of mathematics supports students' learning in business economics.

The orientation law

The orientation covers the regulatory system applicable in legal areas of relevance for companies. It also covers broader legal areas such as criminal law, legal procedures and international law.

The courses in the subject law are supplemented in the orientation by courses in the subjects of psychology and philosophy. The course in psychology is included in the orientation as it contributes to students developing an understanding of human behaviour in legal contexts. The course in philosophy contributes to students developing the ability to discuss ethical questions in legal contexts. Theories of science and linguistic philosophy also strengthen students' preparation for higher education.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the Business Management and Economics Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Business Management and Economics Programme is published on the Agency's web site. The programme focuses on courses in subjects specific to the programme and subjects included in the orientations, and courses which are of importance for further studies in the areas. In addition, other courses are included in the social sciences and humanities which strengthen and broaden the character of the programme.

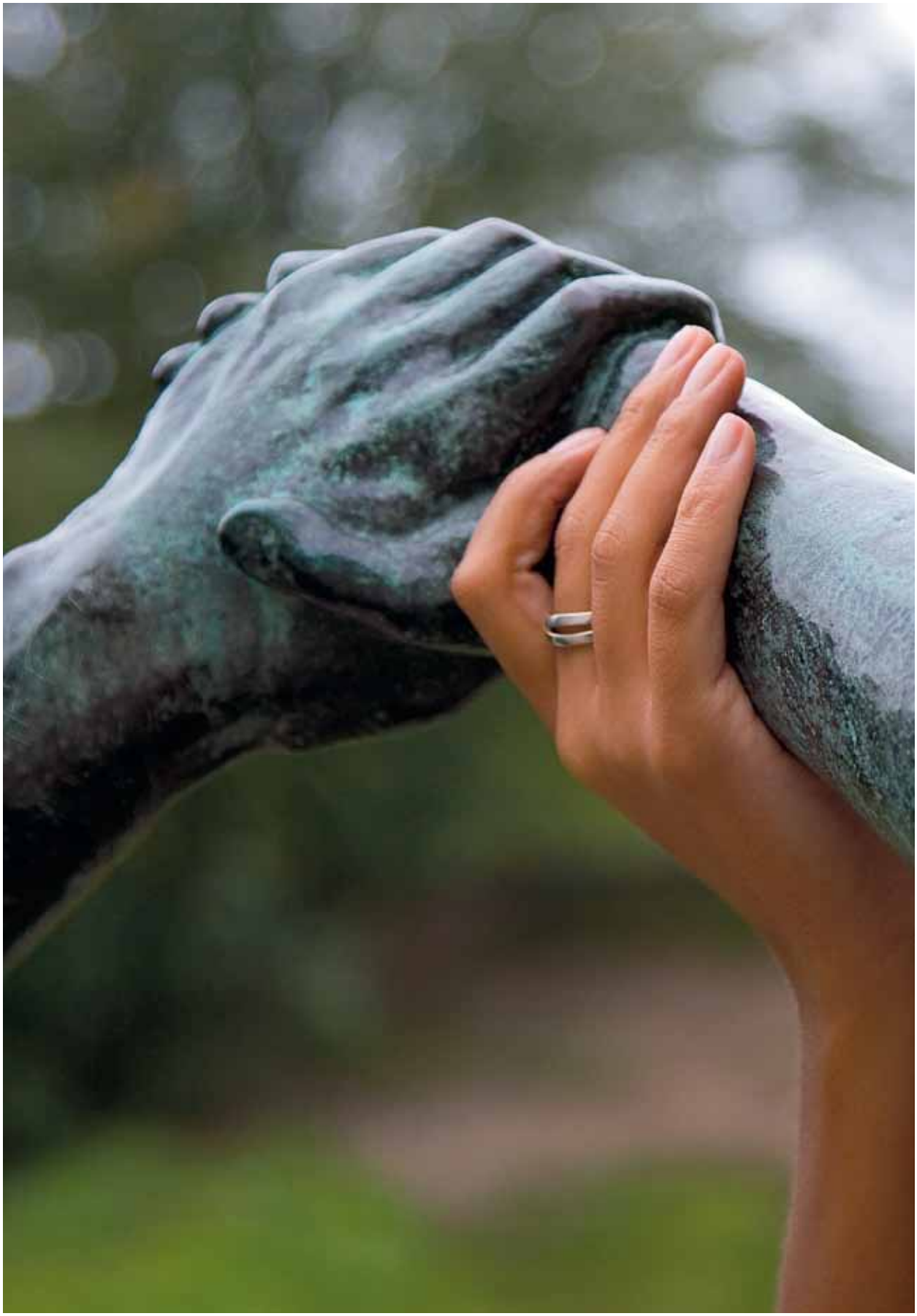
The course *humanistic and social science specialisation* makes possible an interdisciplinary or deeper scientific study in knowledge areas the school chooses. Examples of specialisation areas can be peace and conflict resolution questions, and criminological questions such as causes and trends in crime, behaviour of criminals, and society's response to

crime. The course imposes clear demands on scientific capability, managing sources, practical applications and relevant types of presentations. Entry knowledge requirements specify not only when in the education the course can be studied, but also at what level of knowledge.

The course *business economics – specialisation* makes possible in-depth studies in the knowledge areas the school chooses. Examples of specialisation areas can be business economic questions of an international nature, such as intercultural communication and international marketing. The course imposes clear demands on scientific capability and a solid grounding in theory. Entry knowledge requirements specify not only when in the education the course can be studied, but also at what level of knowledge.

Courses of a more vocationally oriented nature in economics, retailing and administration are not included as programme specialisations, since the Business Management and Economics Programme is preparatory for higher education. The demarcation from the Business and Administration Programme is thus clear.

Within the framework of programme specialisations, the school may choose its own profile. This can be about the school profiling itself in a specific economic area, such as accounting, marketing, international trade or leadership and organisation. It can also deal with legal profiling such as the role of law in society and the world, or criminology.



Arts Programme (ES)

DIPLOMA GOALS FOR THE ARTS PROGRAMME

The Arts Programme is a higher education preparatory programme. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in artistic, humanistic and social science areas.

The education should develop students' knowledge in and about aesthetic forms of expression, and about people in contemporary society, in history and in the world based on artistic, cultural and communicative perspectives. Aesthetics deals with how different expressions are perceived by people. Aesthetics can be understood as specific art forms as well as a part of culture, defined as forms for communication, coexistence and shared understanding between people. The education should give students the opportunity to work in creative ways. Both individually and together with others, students should be given the opportunity of developing their ability to communicate their thinking and ideas using different modes of expression. During the education, students should thus show both artistic and scientific approaches.

The core of the education is that students should create, experience, and interpret art and culture. Students should have the opportunity of reflecting over and increasing their understanding of quality and communication through discussions about their own work and that of others. The education should give students the opportunity to work together in other aesthetic areas and with knowledge areas where aesthetics plays a prominent role, such as cultural studies, history, languages, technological development and communication.

The education should give students all-round training in aesthetic handicrafts. Students should be given the opportunity of developing both their skills and analytical ability. The education should also make students aware of legal and ethical issues concerning freedom of expression and copyright in cultural activities and in communication with the general public. Many cultural workers receive commissions in their own companies. There should be opportunities for students to develop knowledge of entrepreneurship and business.

Creativity, curiosity, communication, interaction and the ability to be personally creative and performance oriented should be central in the education. Taking responsibility for one's own work, managing and assessing large quantities of information, examining questions from different perspectives, using digital tools and media, and having the opportunity to broaden and specialise should exist in the education as preparation for artistic and scientific studies at higher education level.

Orientations

The Arts Programme has five orientations.

The orientation art and design should give in-depth knowledge of two and three dimensional image production techniques. It should develop students' ability to express themselves and communicate visually, and to experience, interpret and reflect over visual expressions from different perspectives. The orientation should give broad knowledge of the arts area and its applications and combinational opportunities in rapidly changing visual cultures. The orientation should also provide opportunities to focus on one or more parts of the arts area.

The orientation dance should give in-depth knowledge of dancing on stage. It should develop students' ability to perform and communicate by means of dance and understand this as an expression of different social and cultural contexts. The orientation emphasises the relationship between techniques of dancing, creativity, stagecraft, and how history and contemporary dance can be experienced and interpreted from different perspectives. The orientation should provide opportunities to focus on various genres or styles.

The orientation arts and media should give in-depth knowledge in digital media from an aesthetic perspective. It should develop students' ability to communicate using digital tools. Audio, images and narratives are the focal points. The orientation should give students the opportunity to experience, interpret and reflect over digital expressions from different perspectives, and also meet, use and create digital products. The orientation should also provide opportunities to focus on some digital media.

The orientation music should give in-depth knowledge of music from different periods and cultures. It should develop students' musical performance and artistic creativity, and also the ability to experience and interpret music from different perspectives. The orientation should provide the opportunity of focusing on an area of music.

The orientation theatre should give in-depth knowledge of the theatre from different perspectives. It should develop students' ability to perform onstage and communicate, and to experience and interpret other students' performances as professional theatrical performances from different perspectives. The orientation should give the opportunity of focusing on one or more of the theatre's areas of expression.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the arts, humanities or social science area. It should be carried out in such a way that students plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a way that resembles the reporting forms used in relevant higher education programmes. The report should contain a description of the work in English. Students should present and discuss their work and also give responses to the diploma projects of others.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Arts Programme is a higher education preparatory programme. It provides education mainly in artistic, social science and humanistic higher education areas such as art, pedagogy, culture, language and social sciences. The Arts Programme is a broad programme with its core in aesthetics and the term aesthetics is given a broad definition in the diploma goals. Aesthetics covers different forms of art which are expressed in different ways in the programme's orientations. This also covers viewing and understanding how culture and society are represented in aesthetic terms. Students should thus be given the opportunity to develop not only their skills in creating and representing aesthetic expressions, but also develop a knowledge of aesthetic expressions, their meaning and functions.

The diploma goals emphasise knowledge *of* aesthetic forms of expression which means that students themselves use these, and that they try and use more than one way of communicating. Knowledge about the aesthetic forms of expression are also emphasised in the diploma goals. This means that students develop knowledge, for example, about art and culture, and about general humanistic and social science areas from an aesthetic perspective.

Creating, experiencing and interpreting art and culture means that students themselves should produce aesthetic expressions, and that they should be given the opportunity of meeting these through concerts, films, performances and exhibitions. This also means that students should have the opportunity of understanding, and creating new knowledge when meeting art and culture. To be able to do this, students need knowledge of analytical methods and theories of communication and visual language. In addition, students should be given the opportunity of developing a knowledge of how aesthetic forms of expression are built up. The education should thus train students in aesthetic handicrafts – both in order to be able to communicate their own achievements, and to be able to interpret those of others.

Entrepreneurship is included in all education programmes. The diploma goals for the Arts Programme cover creativity, curiosity and communication. Students can work with their own creations, present their artistic representations and products in different ways, and develop their ability to originate new ideas. Communicative skills are central in the education. Irrespective of aesthetic forms of expression, or expertise achieved in application, aesthetics always communicate.

COMMENTARIES ON THE GOALS OF THE DIPLOMA PROJECT

The goals of the diploma project in the Arts Programme state the following:

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the arts, humanities or social science area. It should be carried out in such a way that students plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a way that resembles the reporting forms used in relevant higher education programmes. The report should contain a description of the work in English. Students should present and discuss their work and also give responses to the diploma projects of others.

The diploma project should take as its starting point the key knowledge areas described in the diploma goals for the Arts Programme. These are aesthetics, art, culture and communication.

The diploma project should be reported in a way that resembles the reporting forms used in relevant higher education programmes. The report should contain a description of the work in English. The Arts Programme prepares students mainly for higher education studies in the arts, humanities or social science areas. Since reporting and admission procedures in these higher education areas differ, how the diploma project should be reported is presented in general terms. If work in the artistic area is involved, a theatrical performance may be a relevant reporting form. On the other hand, if work in the humanistic area is involved, reporting can resemble that of the Humanities Programme, i.e. a written report.

The report should, as mentioned earlier, contain a description of the work in English. There is no requirement that there should be a written description. Students must, however, in some way show that they have a sufficient command of English to be able to use it in their subject area. It is reasonable that students make a summary in English of their written work.

See also the section The diploma project in programmes preparatory for higher education on page 44.

As an aid in assessing whether a student is prepared for higher education studies, in the first instance in the artistic, social science and humanities area, the points listed below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- relevant knowledge about the chosen knowledge area with a starting point in a specific idea or question,
- knowledge of relevant terms, theories, methods and techniques in the chosen knowledge area,
- knowledge of relevant sources and how their relevance and credibility can be assessed, and
- understanding of the interaction between aesthetics and arts with other knowledge areas.

Skills

In the diploma project, students should demonstrate

- skills in expressing themselves in the chosen medium,
- skills in using artistic, humanistic or social scientific methods,
- skills in using appropriate techniques and methods to search for and gather information, and process the material,
- skills in using language correctly, and formal correctness based on the genre specific requirements which the reporting forms for the diploma project require,
- skills in summarising and presenting the diploma project in a way that is adapted to the situation and target group, and
- skills in describing work in English in language appropriate to the subject.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take initiatives and responsibility for adapting planning and working methods to the situations and requirements that occur during the work,
- the ability to critically assess and work independently with selected sources and aesthetic expressions,
- the ability to assess and draw conclusions from their results based on their own intentions and choice of expressions, methods, technologies and sources, based on their own working methods and work input, and
- the ability to give, consider and assess objective responses.

PROGRAMME STRUCTURE

Foundation subjects — 1 150 credits

English
English 5 100
English 6 100

History
History 1b 100
History 2b – culture 100

Physical education and health
Physical education and health 1 100

Mathematics
Mathematics 1b 100

Science studies
Science studies 1b 100

Religion
Religion 1 50

Social studies
Social studies 1b 100

Swedish
Swedish 1 100
Swedish 2 100
Swedish 3 100
or

Swedish as a second language
Swedish as a second language 1 100
Swedish as a second language 2 100
Swedish as a second language 3 100

Programme specific subjects — 150 credits

Aesthetic communication
Aesthetic communication 1 100

Art and culture
Art forms and society 50

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 400 credits

Art and design **400**
Art
Art and design 1b 100
Art 100
Design 100

Art theory
Art theory 100

Dance **400**
Dance performance
Dance performance 1 100

Dance training
Dance training 1 100
Dance training 2 100

Dance theory
Dance theory 100

Aesthetics and media **400**
Digital creativity
Digital creativity 1 100

Media production
Media production 1 100
Media production 2 100

Media, society and communication
Media, society and communication 1 100

Music **400**
Music
Ensemble with choral singing 200
Instrument or song 100

Music theory
Pitch and music theory 1 100

Theatre 400
Theatre
Stage performance 1 100
Stage performance 2 100
Stage performance 3 100
Theatre theory 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Arts Programme should thus permeate the foundation courses, and the other courses studied in the programme.

In relation to the other higher education preparatory programmes, the foundation subjects in the Arts Programme differ mainly in terms of the scope given to the subjects of history and mathematics.

The subject *history* has greater scope, 200 credits, in the Arts Programme and the Humanities Programme than in the other national programmes. This subject has a special responsibility for giving students the opportunity to develop the knowledge expressed in the diploma goals in the Arts Programme where it covers people in history based on artistic, cultural and communicative perspectives. The course history 2b – culture, makes possible in-depth thematic studies from cultural historical perspectives. The diploma goals emphasise knowledge about the arts and their aesthetic expressions, and about their historical and societal role, which can have an effect on the choice of thematic specialisations. The course history 1b, can be studied from a cultural historical perspective.

To provide more scope for the aesthetic nature of the programme, there is one course in mathematics, the course *mathematics 1b*. In the course, students should be given the opportunity to develop mathematical skills based on core contents covering i.a. statistics, aesthetic aspects of mathematics, and mathematics of relevance for social science and economic issues. Within the framework of programme specialisations, more courses can be provided in mathematics.

Subjects specific to the programme

The subjects which are common to the Arts Programme are *aesthetic communication* and *art and culture*. These subjects only cover 150 credits, thereby providing more scope through programme specialisations. Students thus obtain the opportunity to immerse themselves in their chosen aesthetic areas as preparation for art studies in higher education, or the possibility of specialisation as preparation for other higher education studies.

The subject *aesthetic communication* develops the communicative knowledge emphasised in the diploma goals. This unites and links together the different orientations of the programme. In the subject, students work with different aesthetic expressions, and interaction between these is given special emphasis in the first course in the subject. In the second and third courses, which may be offered as specialisations, it is on the other hand possible to focus on a single dimension.

In the subject *art and culture*, art and culture are covered, and students have the opportunity of analysing art and other forms of cultural expression. The course art forms and society, covers how these affect the life of society, how they reflect society, and societal issues, and the importance of art in social change.

Orientations

The orientations in the Arts Programme are *art and design, dance, aesthetics and media, music* and *theatre*. All orientations contain a theoretical course in different aesthetic expressions, as a theoretical understanding of these is important for students in their further development and preparation for higher education studies. In the orientation art and design, dance, aesthetics, media and music, are included in a theoretical course as a subject on its own. In the orientation theatre, there is the course theatre theory, in the subject, theatre. The theoretical orientation courses can be studied at the same time as and be integrated in the more practical orientation courses.

The orientation art and design

The orientation contains two subjects: art and art theory. The subject art covers creating art using different materials and techniques, and also working with two and three dimensional art. The subject art theory covers theories in the graphics and art area. This cover theories about how pictures are understood and interpreted, and how they are created and used. The subject also covers the artistic process and pictures as a visual language. The subject can be linked to the subject of art.

The orientation dance

The orientation contains three subjects: dance performance, dance techniques and dance theory. The distinction between the subjects dance performance and dance techniques are based on traditions in the dancing area, where technical training is distinguished from the representational, even though these two subjects have many points in common. The subject of dance theory has an interdisciplinary character. Dance is studied in the subject, both from an analysis of the aesthetic qualities of dance, and from a social and cultural perspective.

The orientation aesthetics and media

The orientation contains three subjects: digital creativity, media production, and media, society and communication. In the subject digital creativity, the creative process in aesthetic and artistic representations is studied and trained. The subject media production covers tools in the media area for creating and distributing products. The subject media, society and communication, are the orientation's counterpart to the theoretical courses in the other four orientations in the programme. It is interdisciplinary in nature and covers the media from social and cultural perspectives on the basis of aesthetic expressions.

The orientation music

The orientation contains two subjects: music and music theory. The subject, music, has two courses in the orientation: ensemble with choral singing and instruments or song. The course ensemble with choral singing, deals with groups playing music, irrespective of genre or type of musical performance. In the course, focus can be put on vocal or instrumental ensemble music. The course instruments or song, can be studied at a higher level than level 1 in the orientation if students are already at this higher level when starting upper secondary school. If students wish, and the school considers that the students' level is sufficiently high, students can skip level 1 and it is not graded. The subject of music theory puts the emphasis primarily on analysing aesthetic expressions of music and understanding the language and structures of music.

The orientation theatre

The orientation contains one subject: theatre. This subject covers both analysis of the theatre, and work with the different techniques and modes of expression. Acting, stage design, lighting, sound, text analysis, production and other knowledge areas are closely interwoven in creating theatrical performances. The course theatre theory, is a part of the subject theatre, and can be integrated with courses in acting and stage performance.

Programme specialisations

Programme specialisations contain courses within the framework of the diploma goals and the nature of the Arts Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Arts Programme is published on the Agency's web site.

Programme specialisations cover 500 credits and make possible in-depth studies prior to continuing studies in artistic, social science and humanity programs in higher education. In the programme specialisations, students can deepen their knowledge either in aesthetic subjects to be prepared for such studies in higher education, or in social science and humanistic subjects to be prepared for higher education studies in these areas.

The wide scope in programme specialisations also gives students the opportunity to broaden themselves in more than one artistic area, by for instance combining education in music with theatre to develop their skills in musical theatre.

Humanities Programme (HU)

DIPLOMA GOALS FOR THE HUMANITIES PROGRAMME

The Humanities Programme is a higher education preparatory programme. With a diploma from the programme, students should have the knowledge for studies in higher education, primarily in the humanities but also in the social sciences.

The education should develop students' knowledge of the humanities. In the humanities, people are studied both in the present and historically on the basis of cultural and language perspectives, locally and globally, nationally and internationally. The education should focus on people's creativity and thinking, and cover cultural heritage, contemporary culture and intercultural questions, such as language and the transmission of culture. The core knowledge areas are thus language, literature, history, cultural history and philosophy.

Language and texts occupy a special position, and language awareness should permeate the education. The education should develop students' confidence in using languages, their creativity in speaking and writing, and their ability to consciously use language for communication, reflection and learning in all subjects. The education should give students tools to analyse and interpret different types of texts and spoken language in Swedish and English in the different knowledge areas of the programme.

The education should give students knowledge of methods of formulating and dealing with questions in the humanities, and skills in identifying facts, values and logical reasoning in different types of sources. Students should be given the opportunity of developing their ability to argue in speech and writing, draw conclusions and give reasons for their views. The education should also give students skills in using digital tools and media for searching for information, communication and presentation, and in searching for, selecting and processing information from different types of material with critical awareness of source material.

The education should contribute to developing students' interest in the humanities. Through the education's emphasis on people's thinking and creativity, students are given the opportunity to reflect over ethical and philosophical questions, and develop an all-round humanistic perspective and knowledge which is important in other areas. Students should be given the opportunities to develop their ability to describe and interpret human behaviour from different perspectives, and be able to empathise with and examine different ways of thinking and expressing themselves.

The education should develop students' ability to cooperate and encourage them to see opportunities and take initiatives. In addition, the education should make it possible for students to transform knowledge of the humanities into action through meetings, study visits, exchange or other comparable activities.

The education should provide opportunities for students to develop the foundations of a scientific approach. It should also develop students' capacity to be independent and take responsibility.

Orientations

The Humanities Programme has two orientations.

The orientation culture should give in-depth knowledge of culture and aesthetic forms of expression, literature, philosophy and psychology, and show how culture influences people and how people create culture. The orientation should develop students' ability to describe, analyse and reflect over different cultural expressions and their own cultural experiences from different perspectives.

The orientation languages should give in-depth knowledge of languages and provide insight into the relationship between language, culture and society. Languages are a prerequisite for working in a globalised world, and an international perspective is thus crucial. The orientation should show the value of knowing several languages, and how knowledge of one language strengthens knowledge of others.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the humanities area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a written form with a short summary in English, or optionally one of the modern languages. Students should present and discuss their work and also give responses to the diploma projects of others.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Humanities Programme is a higher education preparatory programme. The nature of the programme is made evident in the diploma goals through the focus on a number of higher education skills being given prominence in a programme context. This covers, amongst other things, the foundations of a scientific approach, which involves being able to formulate, investigate and answer questions, to analysing and interpreting texts and critically examining sources and assessing their value. This also involves being able to examine questions in the humanities from a number of different perspectives, drawing conclusions, supporting these with arguments and presenting the results.

The Humanities Programme takes as its point of departure a broad definition of the humanities, and the education gives both broad and in-depth knowledge in the area. This knowledge provides a good foundation for higher education studies in the humanities and social sciences. The humanities deal with the study of human beings, their creativity and thinking, and examine both concrete and abstract expressions such as ideas, works of art, literature, society, languages and traditions. The programme is addressed to students who are interested in languages, culture and history, and who in the future will perhaps choose to work as authors, journalists, teachers or information officers, or with international questions covering art, archaeology, translation, interpretation or language technology.

Language, linguistics, history, literature, philosophy, cultural history, cultural sciences, contemporary culture and psychology are knowledge areas expressed in the diploma goals. The different knowledge areas overlap and often appear in one or more subjects.

Language, text and students' communicative ability are given prominence particularly in the diploma goals, not only because these are crucial aspects of the humanities and human sciences, but to provide general preparation for higher education studies. In addition, language awareness is emphasised, where students should be able to use language not only creatively and to investigate, but also with a focus on precision, structure and correctness, both orally and in writing. Language should also be a tool for analysing and interpreting, for example, historical events, mathematical problems and language questions. Students develop language skills mainly in the Swedish language, but as English occupies a special position, both in Sweden and the rest of the world, the diploma goal also emphasise reading texts in English. Giving students the opportunity to develop skills in using digital media and tools imposes demands on working methods and relevant tools.

The diploma goals use the concept of culture, both the anthropological and the aesthetic. This means that the education should cover people's group affiliations, values and traditions such as artistic expressions in history and in the current era. The diploma goals also emphasise culture as a process and not only as a product, i.e. both as something dynamic and changing, and something more concrete and observable. In addition, the intercultural aspect is given prominence in the diploma goals in order to emphasise that the education should provide a focus for meetings between different cultures. The terms locally and globally, similar to nationally and internationally in the diploma goals, are used to express the fact that the programme should cover what is available locally and further afield, and in overlapping areas. Intercultural questions and language as mediators of culture serve to highlight the concept that language is culture; culture and language are inextricably linked. Questions about how culture is transmitted through language, and how language is used to convey cultural meaning are important in the education.

The term humanistic education is used in the diploma goals to express the fact that the education provides both specific subject knowledge, general education, and contributes to students developing as individuals, fellow human beings and citizens. It involves a process where learning provides the foundations, but where knowledge and experiences must be put into a context and addressed and examined independently and critically. Humanistic education, i.e. this process through subjects in the humanities, creates the conditions for future preparedness, and the ability to meet different people and new situations through an open and pragmatic approach.

Entrepreneurship is included in all education programs. The diploma goals for the Humanities Programme cover encouraging students to see opportunities and take initiatives. The practical elements in the education, where students are given scope for creativity and brainstorming, supplement the more theoretical parts. They contribute not only to developing students' familiarity with the area, but also to their personal development. The diploma goals emphasise that knowledge should provide opportunities for it to be transformed into action, for example in conjunction with local organisations and higher education via virtual meetings, in projects or during study trips. Studies and language experiments, exhibitions and other creative forms of reporting are additional examples of how students can apply their knowledge in practical actions in relevant ways in the humanities.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Humanities Programme state the following:

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the humanities area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a written form with a short summary in English, or optionally one of the modern languages. Students should present and discuss their work and also give responses to the diploma projects of others.

The diploma project should take as its starting point the key knowledge areas described in the diploma goals for the Humanities Programme. These are language, linguistics, history, literature, philosophy, cultural history, cultural sciences, contemporary culture and psychology.

The diploma project should be reported in a written form with a short summary in English, as this is the relevant reporting form for the humanities in the higher education area.

See also the section The diploma project in programmes preparatory for higher education on page 44.

As an aid in assessing whether a student is prepared for higher education studies, in the first instance in the humanities area, the points listed below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- relevant knowledge about the chosen knowledge area with a starting point in specific questions,
- knowledge of relevant terms, theories and methods in the chosen knowledge area, and
- knowledge of relevant sources, such as text sources, films, works of art and historical relics, and how relevance and reliability of sources can be assessed.

Skills

In the diploma project, students should demonstrate

- skills in defining their questions,
- skills in using relevant concepts, theories and methods for dealing with their questions, such as using relevant language concepts in linguistic work, or applying a gender perspective to a task in history,
- skills in using appropriate techniques and methods to search for and gather information, and process the material,
- skills in presenting results in a written report that fulfils the basic requirements of the genre in terms of language correctness and formal structures,
- skills in orally summarising and presenting diploma projects in a way that is adapted to the situation and the target group, and also
- skills in briefly summarising results in written English, or an optional modern language in appropriate language. In cases where the supervisor is not familiar with the chosen language, there should be a co-assessor with this knowledge, who can assess the summary and the relevance of the specific language used.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take initiatives and responsibility for adapting planning and working methods to the situations and requirements that occur during the work,
- the ability to critically assess and work independently with selected sources,
- the ability to examine questions from different perspectives,
- the ability to assess and draw conclusions from their results based on choice of methods and sources, and also their own working methods and input, and
- the ability to give, consider and assess objective responses.

PROGRAMME STRUCTURE

Foundation subjects — 1 150 credits

English	
English 5	100
English 6	100
History	
History 1b	100
History 2b – culture	100
Physical education and health	
Physical education and health 1	100
Mathematics	
Mathematics 1b	100
Science studies	
Science studies 1b	100
Religion	
Religion 1	50
Social studies	
Social studies 1b	100
Swedish	
Swedish 1	100
Swedish 2	100
Swedish 3	100
or	
Swedish as a second language	
Swedish as a second language 1	100
Swedish as a second language 2	100
Swedish as a second language 3	100

Programme specific subjects — 350 credits

Philosophy	
Philosophy 1	50
Modern languages	**200**
Human languages	
Human languages 1	100

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 400 credits

Culture	**400**
Philosophy	
Philosophy 2	50
Art and culture	
Culture and history of ideas	100
Contemporary culture	100
Psychology	
Psychology 1	50
Swedish	
Literature	100

Languages	**400**
Latin – language and culture	
Latin – language and culture 1	100
Languages	300

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Humanities Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subject history has greater scope, 200 credits, in the Humanities and the Arts Programme than in the other national programmes. It plays a special role in giving students the opportunity to develop the knowledge expressed in the diploma goals in the Humanities Programme where it covers people in history based on cultural and language perspectives, locally and globally, nationally and internationally. The course history 2b – culture, makes possible thematic in-depth studies from a cultural historical perspective, which can cover current ideas and the history of mentalities. The thematic specialisations should take as their starting point historical questions, and students should work with historical explanatory models and sources. The course takes its starting point in a broad concept of culture i.e. the anthropological as well as the aesthetic, in contrast to the course culture and the history of ideas, see the orientation culture, below.

To provide scope for the humanistic nature of the programme, there is only one course in mathematics, course mathematics 1b. In the course, students should be given the opportunity to develop mathematical skills based on core contents covering i.a. statistics, aesthetic aspects of mathematics, and mathematics of relevance for social science and economic issues. Within the framework of programme specialisations, more courses can be provided in mathematics.

Subjects specific to the programme

The subjects which are common to the Humanities Programme are *philosophy, modern languages* and *human languages.*

The subject of *philosophy* deals with scientific theories and also develops students' critical thinking and judgement in assessing arguments, and forming views on ethical, existential and knowledge related issues. This contributes to the development of a structured scientific approach to further studies.

The subject *modern languages* broadens student knowledge of languages and contributes to language awareness. In the subject, students should develop an all-round communicative competence. The subject also contributes to examining language as an instrument for mediating culture and thus to the international and intercultural perspective in the diploma goals.

The subject *human languages* also contributes to awareness of languages. This covers language as a system, a bearer of culture and a biological phenomenon, i.e. a broad linguistic subject at upper secondary level. By developing students' analytical skills, problem-solving abilities and scientific approaches related to language, the subject contributes to students' preparedness for higher education studies in the humanities.

Orientations

The orientations in the Humanities Programme are *culture* and *languages*.

The orientation culture

The orientation deepens studies about people from a number of different perspectives. Analysis and reflection and also personal experiences are common to the orientation courses.

The course literature contributes to a humanistic education which is also emphasised in the diploma goals. By reading literature, students develop their understanding of how people think and live in different periods and contexts.

In the orientation, studies on people's thinking and behaviour in the subjects of philosophy and psychology are deepened and broadened. In-depth studies in philosophy also strengthen student preparedness for higher education and develop their critical thinking.

The subject psychology has both humanistic and social science aspects, and can i.a. contribute to an understanding of human behaviour, feelings and relationships based on psychological theories and models.

The orientation also includes the courses culture and history of ideas, and contemporary culture, to provide breadth and balance between history and the present. The courses take as a starting point the concept of aesthetic culture and human creativity, in contrast to the course history 2b – culture, see the foundation subjects above. The courses cover historical, contemporary and possibly future aesthetic means of expression.

The orientation languages

The orientation provides scope for in-depth language studies and also contributes to all-round education in the humanities. The diploma goals emphasise that the orientation should show the value of how knowledge of different languages strengthens each other, and also that the international perspective is central. The international perspective is given prominence to emphasise the fact that the education should take as its starting point functional and meaningful contexts where students have the opportunity of applying their knowledge in international and intercultural contexts, by such means as virtual scenarios, through study trips, through authentic material, or by making use of different cultures and languages that exist in the surrounding area.

The aim within the EU is that each citizen should be able to communicate in two languages in addition to their mother tongue, and in the orientation languages, there is great scope for deepening and broadening their language knowledge. The ability to use languages other than Swedish and English creates more opportunities for studies in Sweden and abroad, and provides access to an expanded labour market in the EU and the whole world. Language knowledge also provides opportunities to participate actively in a society that is open to other cultures. From a higher education perspective, it is also important to have knowledge of several languages other than English and Swedish, in order not to be limited to understanding research in just these two languages.

The orientation includes 300 credits for languages. Languages refers to the subjects of English, classical Greek – language and culture, Latin – language and culture, modern languages, mother tongue tuition and Swedish sign language for the hearing.

The orientation includes one course in the subject Latin – language and culture. It covers language, both as a theoretical and cultural subject which deepens students' language, cultural and historical knowledge.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the Humanities Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Humanities Programme is published on the Agency's web site. There are courses included not only in the humanities, but also in closely related aesthetic and social science areas, or which in different ways contribute to preparation for higher education.

The subjects *art, aesthetic communication* and *theatre* makes possible practical application of the different cultural expressions studied in the Humanities Programme.

The subjects *media communication, media, society and communication* and *visual communication* have communication as their common starting point and contribute to the diploma goals of developing skills in using digital tools and media.

The subjects *pedagogy, pedagogical work* and *sociology* add depth to the studies of human beings.

The subject *humanistic and social science specialisation* makes it possible to study in-depth the knowledge areas the school chooses. Examples of specialisation areas in the humanities can be architectural history, archaeology or intercultural communication. The subject imposes clear demands on a scientific approach, management of sources, practical applications and relevant types of presentations. Entry knowledge requirements specify not only when in the education the course can be studied, but also at what level of knowledge.

The subject *entrepreneurship* is included in the programme specialisations. The Humanities Programme can be oriented to cultural entrepreneurship, i.e. creating, further developing or discarding ideas in cultural activities.

The programme specialisations contain all the orientation courses to provide greater breadth with regard to the other orientation.

Natural Science Programme (NA)

DIPLOMA GOALS FOR THE NATURAL SCIENCE PROGRAMME

The Natural Science Programme is a higher education preparatory programme. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in the natural sciences, mathematics and technology, and in other areas.

The education should develop students' knowledge about context in nature, about the conditions for life, about physical phenomena and events, and about chemical processes. In biology, physics and chemistry, the surrounding world is described in models that are developed in interaction between experiment and theory. The education should also develop students' knowledge of mathematics. Mathematics is a subject with its own distinctive character, and is also an instrument whose concepts and symbolic language is used for models developed in order to understand and analyse relationships in other subject areas. The education should stimulate students' curiosity and creativity, and their ability to think analytically.

Through the education, students should develop a scientific approach. This covers the ability to think critically, reason logically, solve problems, and make systematic observations. Students should thus be given the opportunity to develop the skill of assessing different types of sources, and the ability to distinguish between statements based on scientific and non-scientific grounds. Understanding of sciences is based on the interaction between theory and practical experience. Experiments, laboratory experiments, field studies and other comparable practical areas should thus be central elements in the education.

The education should contain a perspective from the history of ideas, which means that the ideas and theories of the sciences are studied as parts of a historical process. Students should be given the opportunity of developing their interest in science questions, and they should be able to benefit from current research findings in relevant areas. The education should give an understanding of how science and the development of society both affect and are affected by each other and in particular highlight the role of science in questions concerning sustainable development. Students should also be given the opportunity to take part in ethical discussions of the role of science in society.

Language is a tool for communication, as well as for reflection and learning. The education should thus develop students' ability to argue and express themselves in advanced writing and speaking situations related to science and mathematics. Students should also be able to understand, read and write about, and discuss basic science in English.

In science and mathematics, data collection and calculations are mainly carried out using computers. The ability to search for, select, process and interpret information, and acquire knowledge of new technology is important for scientists and mathematicians. The education should thus provide good practice in using modern technology and equipment.

The education should encourage students into taking responsibility and their ability to cooperate, and stimulate them into seeing opportunities, trying to solve problems, taking initiatives and transforming ideas into practical actions.

Orientations

The Natural Science Programme has two orientations.

The orientation natural sciences should give in-depth knowledge of biology, physics, chemistry and mathematics.

The orientation natural sciences and society, should give knowledge of natural sciences, social sciences and geography.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the natural science or mathematics area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a written form with a short summary in English. Students should present and discuss their work and give oral responses to the diploma projects of others.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Natural Science Programme is a higher education preparatory programme. The programme has a prominent scientific nature and gives knowledge in a number of different subject areas as a basis for further studies, mainly in science and mathematics.

A scientific approach is emphasised in the diploma goals. Students need to develop an awareness of the nature and working methods of science. For instance, this involves scientific descriptions of the surrounding world, i.e. models and theories, which are built up through hypotheses tested in experiments, and how these descriptions can be refined or replaced by other models and theories. Students can get closer to scientific approaches by using scientific methods such as putting questions about phenomena in the surrounding world, formulating their own hypotheses, carrying out experiments, and drawing conclusions which describe the surrounding reality and forecasting results.

Mathematics makes up, parallel with science, the core of the Natural Science Programme. Mathematics prepares students for further studies and their future working lives. The diploma goals also emphasise mathematics as a tool in the sciences.

The diploma goals emphasise that science builds on an interaction between theory and practice. It also states that experiments in the laboratory, field studies and other comparable practical steps should be central elements in the education. The expression “other comparable practical moments” is used so as not to limit the pedagogical freedom of teachers. Comparable moments can involve taking measurements or making observations using digital data collection devices. In the practical phases, students train in carrying out observations in an objective and systematic way, and interpret and report their results.

To be prepared for higher education studies in the natural sciences, students need to develop critical thinking and scientific approaches. They need to train themselves in source criticism and receive tasks where they have to formulate questions, present results, draw conclusions and give their reasoning. Students should be given the opportunity to compare the natural sciences with other sciences, and discuss differences between science and non-science.

The diploma goals state that the ideas and theories of science should be studied as part of a historical process. This may involve examining the relationship between the development of society and natural science with regard to questions concerning sustainable development, and the role of science in society. The diploma goals state that students should be encouraged to develop an interest in scientific questions, and that they should acquire an understanding of current research in relevant areas. Students can for instance, go into greater depth in an area, and as a part of their work have some form of contact with the world of research.

Advanced speaking and writing situations related to the natural sciences and mathematics in the diploma goals refers to oral presentations, debates, articles, reports, reports on experiments and other types of texts containing the language of science. The diploma goals state in addition, that students should be able to understand, read, write about, and discuss basic science in English.

For students to become familiar with using modern technology and equipment imposes demands on the school having access to such equipment, and that the education covers working methods which include the use of modern technology. Modern technology is about equipment that gives students good preparation for science, mathematics and technological studies in higher education. This could be computers with special software and equipment for measuring and safety protection.

Entrepreneurship is included in all education programmes. The diploma goals for the Natural Science Programme cover taking responsibility, the ability to cooperate, take initiatives and transform ideas into practical actions. It also states that students' curiosity and creativity should be stimulated in the education. Students can work with open tasks and be encouraged to use creative reporting forms, interdisciplinary projects and different types of cooperation with the surrounding world.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Natural Science Programme state the following:

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the natural science or mathematics area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported in a written form with a short summary in English. Students should present and discuss their work and give oral responses to the diploma projects of others.

The diploma goals should take as their starting point the key knowledge areas described in the diploma goals for the Natural Science Programme. These are science and mathematics.

The diploma project should be reported in a written form with a brief summary in English, as this is the relevant reporting form in sciences and mathematics in higher education.

See also the section The diploma project in programmes preparatory for higher education on page 44.

As an aid in assessing whether a student is prepared for higher education studies, in the first instance in the science or mathematics area, the points listed below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- relevant knowledge about the chosen knowledge area with a starting point in specific questions,
- knowledge of relevant terms, theories, models and methods in the chosen knowledge area, and
- knowledge of relevant sources and how their relevance and credibility can be assessed.

Skills

In the diploma project, students should demonstrate

- skills in defining their starting questions,
- skills in using relevant concepts, theories, models and methods for handling their questions, such as using natural science or mathematical methods in work where simple or concrete experiments are the starting point,
- skills in using appropriate techniques and methods to search for and gather information, and process the material,
- skills in presenting results in a written report that fulfils the basic requirements of the genre in terms of language correctness and formal structures,
- skills in orally summarising and presenting diploma projects in a way that is adapted to the situation and the target group, and also
- skills in briefly summarising results in written English in appropriate language.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take initiatives and responsibility for adapting planning and working methods to the situations and requirements that occur during the work,
- the ability to critically assess and work independently with selected sources,
- the ability to examine questions from different perspectives,
- the ability to assess and draw conclusions from their results based on choice of methods and sources, and also their own working methods and input, and
- the ability to give, consider and assess objective responses.

PROGRAMME STRUCTURE

Foundation subjects — 1 150 credits

English
English 5 100
English 6 100

History
History 1b 100

Physical education and health
Physical education and health 1 100

Mathematics
Mathematics 1c 100
Mathematics 2c 100
Mathematics 3c 100

Religion
Religion 1 50

Social studies
Social studies 1b 100

Swedish
Swedish 1 100
Swedish 2 100
Swedish 3 100
or

Swedish as a second language
Swedish as a second language 1 100
Swedish as a second language 2 100
Swedish as a second language 3 100

Programme specific subjects — 450 credits

Biology
Biology 1 100

Physics
Physics 1 150

Chemistry
Chemistry 1 100

Modern languages **100**

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300–400 credits

Natural sciences **400**

Biology
Biology 2 100

Physics
Physics 2 100

Chemistry
Chemistry 2 100

Mathematics
Mathematics 4 100

Natural sciences and society **300**
A natural science subject 100

Geography
Geography 1 100

Social studies
Social studies 2 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Natural Science Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subjects *social studies, history* and *religion* provide a foundation for students to be able to study the ideas and theories of the natural sciences as parts of a historical process, discuss the role of natural sciences in society, and take part in ethical discussions about how natural sciences and social development affect each other. In all three subjects, students have the opportunity to learn to search for, examine, interpret and assess different types of sources. In the subject religion, students are given opportunities to develop knowledge of different views of the relationship between religion and science. This knowledge can be developed together with the subjects typical of the programme, for example in discussions about evolution and the development of the universe.

The diploma goals state that the education should develop students' ability to express themselves in advanced writing and speech situations, and that students should be able to understand, read and write about, and discuss basic science in English. The subjects *Swedish* or *Swedish as a second language* and *English* thus play a key role in the Natural Science Programme, even though students' communicative skills are developed in all subjects. In the third course in Swedish or Swedish as a second language, emphasis is put on the ability to read and write texts of a scientific-like nature. By working in both Swedish or Swedish as a second language and in the subjects typical of the programme with scientific texts, students are given the opportunity of developing the language skills required for studies in higher education.

In the diploma goals emphasis is put on the subject *mathematics* in two ways. On the one hand, it is a subject in its own right with its own special characteristics. Mathematical problem-solving, reasoning and demonstrating proof is ultimately based on a conceptual foundation where logic, intuition, creativity and the identification of patterns are important elements. On the other hand, it functions as an aid where concepts and symbolic language are used to develop models with the intention of understanding and analysing relationships in biology, physics and chemistry.

There are a number of intersecting points between the subject *physical education and health* and the natural science subjects. The relationship between physical activity, diet and health is covered in the subject physical education and health. This is also covered in the subjects of biology and chemistry. In addition, the interaction between the subject physics, and the subject physical education and health, can take place through experiments related to forces, movement and energy.

The subject *science studies* is not a foundation subject in the Natural Science Programme since a large part of the subject's contents are covered in the subjects of biology, physics and chemistry. In the subject science studies, interdisciplinary questions of a scientific nature are covered, such as the environment and sustainable development. These questions are not specific to one of the subjects of biology, physics and chemistry, but can be covered through interaction between the subjects.

Subjects specific to the programme

The subjects which are common to the Natural Science Programme are *biology, physics, chemistry* and *modern languages*.

The subjects *biology, physics* and *chemistry* together with the subject of mathematics are the core of the Natural Science Programme. In the subjects biology, physics and chemistry, students develop scientific approaches and become familiar with the working methods of science.

The subject *modern languages* can make it easier to pursue further international studies and work abroad. Globalisation imposes demands on a knowledge of a number of languages other than Swedish and English. The aim within the EU is that each citizen should be able to communicate in two languages apart from their mother tongue. Students study a mandatory 100 credits in modern languages as a programme specific subject, but can study more within the programme specialisations and their individual choices.

Orientations

The orientations in the Natural Science Programme are *natural sciences* and *natural sciences and society.*

The orientation natural sciences

The orientation provides broad eligibility for higher education. It covers 400 credits and contains specialisations in the natural science subjects and in mathematics. After this orientation, students have studied 200 credits in biology, 250 credits in physics, 200 credits in chemistry, and 400 credits in mathematics.

The orientation natural sciences and society

The orientation is a scientific orientation of an interdisciplinary nature. This give students with an interest in societal questions a good scientific basis, but also a broad interdisciplinary education. The orientation covers 300 credits and contains a specialisation in a scientific subject, and courses in geography and social studies. A natural science subject refers to one of the courses biology 2, physics 2 and chemistry 2. The courses to be provided are determined by the school. This makes it possible for the school to profile orientations in different ways through the interaction between geography, social studies and the science subject chosen.

Programme specialisations

The programme specialisations contain courses within the framework of the diploma goals and the nature of the Natural Science Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Natural Science Programme is published on the Agency's web site. There are courses in the natural sciences, mathematics, computer sciences and languages, as well as a number of social scientific, humanistic and behavioural courses.

The subject *art and culture* is interdisciplinary in its nature. The subject covers contemporary ideas and social changes related to art history. The subject has many intersections with the history of literature, and history, and is related to the diploma goals of the Natural Science Programme through the perspective of the history of ideas.

In the subject *training theory*, students should develop knowledge of the body and its functions, and how the body is affected by training, and for this reason the subject exists in the Natural Science Programme.

The subjects *natural science specialisation* and *humanistic and social science specialisation* make possible in-depth studies in the knowledge areas the school chooses. Examples of specialisation areas in the subject of natural science specialisation can be marine biology, astrophysics or advanced biochemistry. Examples of specialisation areas in the subject, humanities and social science specialisation in the natural science programme, can be sustainable development, and the earth's resources from the perspective of equity. The subjects impose clear demands on a scientific approach, management of sources, practical applications and relevant types of presentations. Entry knowledge requirements specify not only when in the education the course can be studied, but also at what level of knowledge.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Social Science Programme (SA)

DIPLOMA GOALS FOR THE SOCIAL SCIENCE PROGRAMME

The Social Science Programme is a higher education preparatory programme. With a diploma from the programme, students should have the knowledge needed for higher education studies in a broad area of the social sciences.

The education should develop students' knowledge about conditions of society in Sweden and the world as a whole, and about the interaction between the individual and society, and about how people's living conditions vary over time and space. This includes knowledge about people as individuals, as members of groups, and as participants in a social community, and about structures in society, activities and functions. The education should cover questions such as democracy, communication, ethics, gender and the environment. The education should also give students an understanding of how different factors affect the scope for building a sustainable society.

The education should also cover power from economic, social and political aspects. This includes studies of factors that can influence and explain what takes place in society from the local to the global level. The education should provide a historical perspective so that students with the help of the past should understand conditions in contemporary society, and be able to orient themselves to future changes in society.

The education should cover the conditions and opportunities presented by media and information technologies. Students should thus be given the opportunity to develop not only knowledge about communication, and about how views and values occur, but also skills in communicating and presenting their knowledge, using digital tools and media.

Based on studies of societal questions, the education should give students the opportunity to develop a scientific and critical approach. This includes being able to determine if the statement is based on facts and the ability to distinguish between values in different types of sources. The education should thus develop students' ability to search for, select and process information with critical awareness of their sources.

The education should develop students' scientific awareness by helping them to formulate and investigate questions, and applying the theories and methods used in the social sciences. Students should be given the opportunity of discussing solutions to social science problems, and give reasons for their views with well founded arguments.

The education should develop students' ability to write, read, interpret and understand different types of texts in the various knowledge areas of the education. Students should be given the opportunity to express themselves in a variety of writing and speaking situations, primarily in Swedish and English.

The education should develop students' ability to cooperate, their creativity, independence, responsibility and the ability to see opportunities, take initiatives and transform ideas into action. The education should also give opportunities for students to develop interdisciplinary approaches.

Orientations

The Social Science Programme has three orientations.

The orientation behavioural sciences should give knowledge about people's development, socialisation and interaction in different contexts. In the orientation, students should deepen their understanding of human behaviour as individuals, and also as participants in groups, organisations and society from different perspectives. The orien-

tation should also give knowledge about communication, learning and leadership, and also develop students' ability to apply the methods used in the social sciences.

The orientation media, information and communication, should give knowledge about the role of the media in society and how media technologies can be used to communicate messages in a way that creates interest. In the orientation, students study journalism, information and advertising, and get experience from working with texts, images and the communicative opportunities provided by audio. Students should develop both practical and theoretical knowledge of different forms of interactive communications. The orientation should give students the opportunity of studying how the media affect people individually and in groups, in relation to how views and opinions and how our view of the world is formed.

The orientation social sciences should give knowledge about the structures of society, and about people's living conditions at the individual, group and societal level. In the orientation, students should broaden and deepen their understanding of societal questions by interpreting and explaining phenomena and contexts. The orientation should also develop students' ability to apply the methods used in the social sciences.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the social science area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported either as a written report, or in relevant cases as a media presentation, or by other appropriate means based on the contents of the project, and should be supplemented with a shorter written account. The report or the written description should contain a brief summary in English. Students should present and discuss their work and also give responses to the diploma projects of others.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Social Science Programme is a higher education preparatory programme. The diploma goals give a broad definition of the social sciences, amongst other reasons, as information, communication and media are some of its knowledge areas.

The diploma goals emphasise that questions concerning democracy, communication, ethics, gender and the environment should be covered. Other societal questions and different social science terms such as integration, segregation and ethnicity can also be taken up from local, national, European and global perspectives. Societal issues deal with how society is functioning today and could develop in the future. There may be societal problems where no solution has yet been found, or questions where people have different views. Common to societal issues is that they can often be examined in terms of cause and effect, and can be studied from different perspectives. The education should develop students' knowledge about the conditions of society in Sweden and the world as a whole.

The diploma goals state that the education should give students an understanding of how different factors affect the building of a sustainable society. This underlines the broad nature of the Social Science Programme, and can contribute to students developing interdisciplinary approaches.

Power is a central concept in the diploma goals. The exercise of power is closely related to the ownership of resources, i.e. different assets which give their owners real influence in one or more areas. Resources for exercising power, and the nature of power, can vary depending on where and what level of society it involves. The education should cover power from economic, social, political and environmental aspects.

The education should give a historical perspective enabling students to understand contemporary societal questions and conditions, and develop a perspective on the future. Such a historical perspective can provide different explanations, for example, of population growth, formation of nations and technological development. A historical perspective is also important for understanding contemporary societal issues and conditions and be able to relate these to the future: Why does the present look as it does, and what could the future look like?

Communication and modern media, and information technology are emphasised in the diploma goals, and are important for the whole education, not just for the media orientation. Media refers to the means by which the message is communicated, and information technology, the technical conditions for communicating information. Information is disseminated through a myriad of different media in a way which means that opportunities for the individual person to disseminate views rapidly, both locally and globally, are being continuously developed. This imposes major requirements on citizens to master the new media being developed and be able to use this skill in daily life. In the education, students should be given the opportunity to develop knowledge about communication and about how views and values occur. They should also be given the opportunity of developing skills in communicating about and presenting their knowledge, using amongst other things digital tools and media. This imposes requirements that a working method that includes this is covered in the education, and that different types of relevant tools are available to students.

The diploma goals state that students should be given the opportunity to develop scientific awareness. This can take place by students formulating and studying questions linked to different societal issues and trying to apply theories and methods used in the social sciences. Such a method may involve collecting information to deal with questions from the Internet, books, interviews, questionnaires and observations, and also processing the information in relation to different theories. Scientific awareness also covers a critical approach. This includes being able to determine if a statement is based on facts and being able to distinguish between values in different sources. Sources refer not just to sources based on text, but also images and photos. Awareness of sources can have an impact on skills for assessing the origins of sources and their reliability, and how close they are in time and space to the information communicated. It can also deal with being able to assess the interest of senders and influencing recipients towards a specific outcome. Such a critical approach presupposes that students can make a considered assessment of a source's reliability and credibility.

As stated in the diploma goals, the education should develop the students' ability to write, read, interpret and understand different types of texts. Different types of texts are included, covering discussion and investigatory texts which may be longer and relatively advanced. Being able to study relatively advanced, long texts in languages other than Swedish is a prerequisite for managing studies in higher education in Sweden and abroad. The diploma goals thus emphasise that students should be given the opportunity to express themselves in a variety of writing and speaking situations, primarily in Swedish and English.

Entrepreneurship is included in all education programmes. The diploma goals for the Social Science Programme cover the ability to cooperate, creativity, independence, taking responsibility and the ability to see opportunities, take initiatives, and transform ideas into action. Entrepreneurship is described in pedagogical terms, and not something which in the first instance should give more specific knowledge in starting and running one's own business. This also involves being able to see the opportunities existing outside the classroom, and the opportunities for cooperation with non-profit making organisations, higher education institutions, companies and industry as a whole.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Social Science Programme state the following:

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the social science area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported either as a written report, or in relevant cases as a media presentation, or by other appropriate means based on the contents of the project, and should be supplemented with a shorter written account. The report or the written description should contain a brief summary in English. Students should present and discuss their work and also give responses to the diploma projects of others.

The diploma project should take as its starting point the key knowledge areas described in the diploma goals for the Social Science Programme. These are societal issues and conditions, structures in society, activities and functions, the interaction between individuals and society, people's living conditions, and the conditions and opportunities inherent in media and information technology.

The diploma project should be reported either as a written report, or in relevant cases as a media presentation, or by other appropriate means based on the contents of the project, and should be supplemented with a shorter written account. The report or the written description should contain a brief summary in English. The Social Science Programme provides preparation primarily for higher education studies in the social science area. It is a broad area, which also covers the higher education programs in e.g. media and communication. For this reason, a written report or where relevant a media production are appropriate reporting forms. Relevant cases may be when a student is studying the media orientation, or if a student in a programme specialisation has studied many courses related to higher education programs in media and communication. When students report their work in the form of a media production or in other appropriate ways, this should be supplemented with a shorter written description since the emphasis should be put on the Social Science Programme as preparatory for higher education. The shorter written report should cover the aim and questions, chosen theories and models for handling questions, discussion of methods and choice of sources including their critical assessment. In addition, the report should contain a summary of the reasoning of the most important conclusions based on the initial starting questions.

See also the section The diploma project in programmes preparatory for higher education on page 44.

As an aid in assessing whether a student is prepared for higher education studies, in the first instance in the social science area, the points listed below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- relevant knowledge about the chosen knowledge area with a starting point in specific questions,
- knowledge of relevant terms, theories, models and methods in the chosen knowledge area, and
- knowledge of relevant sources and how their relevance and credibility can be assessed.

Skills

In the diploma project, students should demonstrate

- skills in defining their questions.
- skills in using relevant terms, theories, models and methods to deal with their questions,
- skills in using appropriate techniques and methods to search for and gather information, and process the material,
- skills in presenting results in a written report which fulfils the fundamental requirements of the genre in terms of language correctness and formal structure, or in relevant cases as a media production, or by some other appropriate means,
- skills in orally summarising and presenting diploma projects in a way that is adapted to the situation and the target group, and also
- skills in briefly summarising results in written English in appropriate language.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take initiatives and responsibility for adapting planning and working methods to the situations and requirements that occur during the work,
- the ability to critically assess and work independently with selected sources,
- the ability to examine questions from different perspectives,
- the ability to assess and draw conclusions from their results based on choice of methods and sources, and also their own working methods and input, and
- the ability to give, consider and assess objective responses.

PROGRAMME STRUCTURE

Foundation subjects — 1 150 credits

English
English 5 100
English 6 100

History
History 1b 100

Physical education and health
Physical education and health 1 100

Mathematics
Mathematics 1b 100
Mathematics 2b 100

Science studies
Science studies 1b 100

Religion
Religion 1 50

Social studies
Social studies 1b 100

Swedish
Swedish 1 100
Swedish 2 100
Swedish 3 100
or

Swedish as a second language
Swedish as a second language 1 100
Swedish as a second language 2 100
Swedish as a second language 3 100

Programme specific subjects — 300 credits

Philosophy
Philosophy 1 50

Modern languages **200**

Psychology
Psychology 1 50

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 350–450 credits

Behavioural sciences **450**

Leadership and organisation
Leadership and organisation 100

Pedagogy
Communication 100

Psychology
Psychology 2a 50

Social studies
Social studies 2 100

Sociology
Sociology 100

Media, information and communication **350**

Media communication
Journalism, advertising and information 1 100

Media production
Media production 1 100

Media, society and communication
Media, society and communication 1 100

Psychology
Psychology 2a 50

Social studies **450**

Geography
Geography 1 100

History
History 2a 100

Religion
Religion 2 50

Social studies
Social studies 2 100
Social studies 3 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Social Science Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subjects *history, social studies* and *religion* are central subjects typical of the programme since these subjects give a deeper view of and different perspectives on questions concerning society, its conditions and processes of change in the past and in the current era. In addition, the scientific aspect is emphasised in these subjects, and they provide preparation for further studies in the social science area.

The subjects *English* and *Swedish* or *Swedish as a second language* contribute to students' general preparedness for higher education. Amongst other things, they develop students' ability to study and work with scientific texts. When working with Swedish and English texts about e.g. social questions, students develop certainty and breadth in their language, and they are given the opportunity to use the language in increasingly varied and complex situations.

In the subject *mathematics*, students study a special track, the "b track", which is related to the nature of the programme as the courses cover, amongst other things, statistics, aesthetic aspects of mathematics (symmetry) and mathematics which is relevant for modelling social science and economic phenomena.

The subject *science studies* contributes to students developing an understanding of how different factors affect opportunities for building a sustainable society, which is also emphasised in the diploma goals of the Social Science Programme. The subject can also cover other current issues in society, such as those involving the environment.

The subject *physical education and health* can cover questions such as gender and ethics in relation to sports, and also stimulate student interest in participating in working with health questions in working life and society.

Subjects specific to the programme

The subjects which are common to the Social Science Programme are *philosophy, modern languages* and *psychology*.

The subject *philosophy* deals with scientific theories and also develops students' critical thinking and judgement in assessing arguments, and forming views on ethical, existential and knowledge related issues. This contributes to the development of a structured scientific approach to further studies.

In the subject *modern languages*, students have the opportunity of reflecting over and discussing living conditions, societal questions and cultural phenomena in areas where the target language is used. A command of languages, not only of one's mother tongue but also other languages, is of great importance in a global society. Language knowledge provides opportunities to establish contacts with people from different countries. Many social scientists today are working in an environment that entails international contacts where knowledge of languages other than English is an advantage.

The subject *psychology* contributes to developing students' understanding of the actions of individuals, their thoughts, feelings, knowledge and insights. The subject covers different psychological perspectives and their explanatory models in order to develop a deeper understanding of explanations of human behaviour and human thinking and feelings.

Orientations

The orientations in the Social Science Programme are *behavioural sciences, media, information and communication* and *social sciences.*

The orientation behavioural sciences

The orientation covers people's development and living conditions, socialisation and interaction in different contexts. This gives students the opportunity to develop an understanding of human behaviour, both as individuals and participants in groups, organisations and society from different perspectives. The orientation also gives knowledge about communication, learning and leadership, and develops students' ability to apply the methods of social science.

The orientation includes the subjects psychology, pedagogy, sociology, leadership and organisation, and social studies. The subjects, psychology, pedagogy and sociology contribute i.a. to giving students broad knowledge of human behaviour, development, living conditions, socialisation and interaction. The subject leadership and organisation, covers how individuals and groups function in organised settings, and also group processes and conflict resolution. In the subject social studies, students get a deeper understanding of different social questions, and the opportunity of applying different social science methods.

The orientation media, information and communication

The orientation gives basic knowledge in communication theory and students are given the opportunity to use different theories of mass media to analyse and structure mass communications. It covers the communicative role and function of the media, is linked to the development of society and democracy, and the actions of different players. New forms of media are covered in relation to the rapid changes taking place in the media landscape from a global perspective. In the orientation, the distinction between the media's message and its content is covered. The role of text as a means of communication in this context is an important aspect. In addition, the orientation give students a basic knowledge about how media is produced.

The orientation includes the subjects media, society and communication, media communication, media production and psychology. The subject media, society and communication, covers media and communication from a theoretical and social science perspective. The subjects media communication and media production, cover how a message can be presented and how a media production can be created to fulfil a specific purpose. The subject psychology supplements the media subjects, as knowledge of what steers people's feelings, thoughts and behaviour is important in determining the message and content of media productions.

The orientation covers 350 credits in contrast to the other two orientations that cover 450 credits. This gives the individual school scope for local profiling in order to be able to deepen or broaden studies in different media areas.

The orientation social sciences

The orientation gives in-depth knowledge about structures of society, and about people's living conditions with reference to individuals, groups and level of society, and

based on local and global perspectives. It also gives advanced understanding of issues in society.

The orientation includes the subjects social studies, history, religion and geography. The subjects social studies, history and religion deepen the core areas of the social sciences and give students the opportunity to apply different scientific methods, concepts, theories and models. They cover the organisation of society, historical questions, religions and outlooks on life. In the subject students are given the opportunity to discuss and determine their views on different ethical questions. The subject geography covers i.a. the relationship between people, society and the environment, and also global environmental and development questions in relation to resource use, resource distribution and sustainable development.

The international and global perspective is particularly prominent in this orientation compared with the other orientations in the programme. In the programme specialisations, the school can create profiles which broaden or deepen knowledge in international and global questions of different kinds.

Programme specialisations

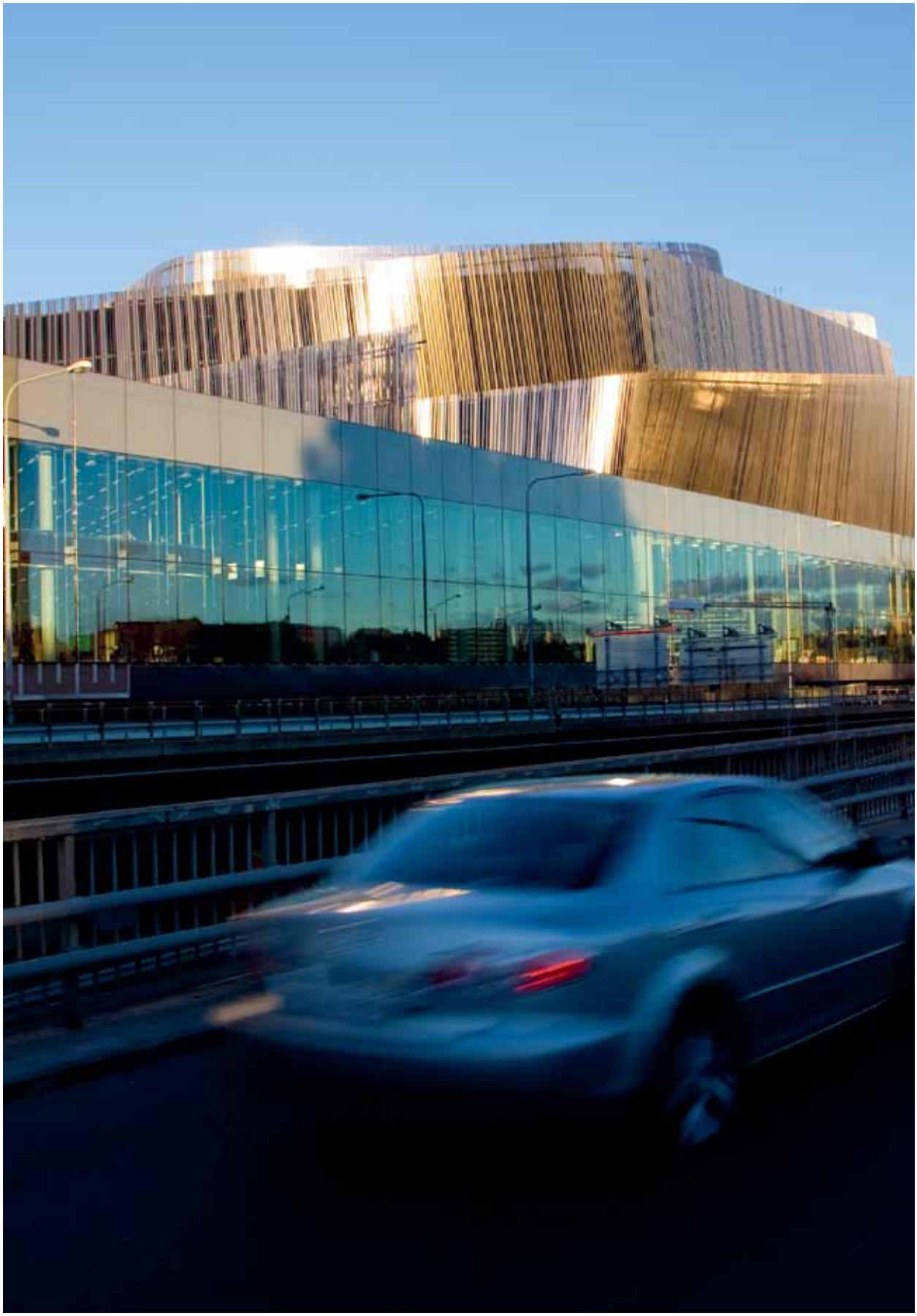
Programme specialisations contain courses within the framework of the diploma goals and the nature of the Social Science Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Social Science Programme is published on the Agency's web site. There are courses which are included in the broad field of social sciences, or which contribute to general higher education eligibility. Breadth can be justified i.a. by the fact that media and information technology are included in the Social Science Programme. Students in these areas need to be able to specialise in a current knowledge area, both on the basis of their interests and the requirements for competence for further studies in the area of media, information and communications. This group of subjects includes, amongst others, *digital creativity, film and TV production, graphic communication, audio production, media communication, media, society and communication, media production* and *visual communication*.

A number of subjects related to the area of behavioural sciences are in the programme specialisations. This deals with, amongst other things, the subject *pedagogy* and the subject *sociology*. These subjects exist to enable students to deepen their knowledge, especially in the orientation for behavioural sciences.

The subjects *biology* and *sustainable society* make possible inter-disciplinary studies and more advanced knowledge of sustainable development. The course, biology 1, emphasises ecology, which is important for achieving an overall understanding of how a sustainable society can be attained. The subject sustainable society examines the term sustainable development from ecological, social and economic viewpoints.

The subject *humanistic and social science specialisation* makes it possible to study in-depth the knowledge areas the school chooses. Examples of specialisation areas in the social sciences can be the UN, the EU, peace and conflict issues, global development and equity issues, and criminology. The subject imposes clear demands on a scientific approach, management of sources, practical applications and relevant types of presentations. Entry knowledge requirements specify not only when in the education the course can be studied, but also at what level of knowledge.

The subject *entrepreneurship* is included in the programme specialisations. The Social Science Programme, for instance, can be oriented to social entrepreneurship, such as starting and running a social activity where the driving force initially is making a contribution to a better society.



Technology Programme (TE)

DIPLOMA GOALS FOR THE TECHNOLOGY PROGRAMME

The Technology Programme is a higher education preparatory programme. With a diploma from the programme, students should have the knowledge needed for higher education studies primarily in technology and the natural sciences, as well as other areas.

The education should develop students' knowledge of and skills in technology and technological development. It should also highlight the role of technology in the interaction between people and nature with regard to sustainable development. In addition, the education should develop students' knowledge of physics, chemistry and mathematics with a focus on technological processes. In technology, students should investigate, describe and systematise the different properties of technological objects and processes. In physics and chemistry, students should investigate, describe and systematise different phenomena in nature, and relate these to technological processes. Mathematics in the technology area is a language and a tool for understanding, expressing and analysing contexts. The knowledge area deals with both existing technology and the development of new technology.

The education should show the relationship between the different components of technological development processes, and contribute to students understanding the whole chain in the development of technology in a sustainable society. Technological development involves analysing needs, developing an idea, designing, constructing, producing, using, selling and recycling.

The education should build on ethical and responsible approaches to technology, and critical, creative and constructive thinking should be encouraged. In the education, students should be given the opportunity to develop the ability to search for, select and process information with critical awareness of their source material. The education should also contain creative and problem-solving work forms, and give students opportunities to develop an interdisciplinary approach. Theory and practical application should work together, and the education should give students knowledge about and skills in cooperating with others. Since the development of technology often takes place through projects, the education should give knowledge of project work, and skills in working in projects both individually and in groups. The core of technological development is analysing, modelling, simulating, feasibility assessment, developing, seeing interrelationships, drawing conclusions and reasoning on the basis of results. The education should thus develop students' ability to analyse and understand technical systems.

The education should further develop students' communicative skills in speech, writing and visualisation. This involves, amongst other things, communicating views, explaining contexts, and documenting and using forms of expression adapted to different target groups, and understanding the specific role of communication in the area of technology. The education should give knowledge about interactive and digital media so that students are able to present technical contents and demonstrate models. The education should give students knowledge of and skills in English in a technical context, so that they can develop their communicative skills and thus their understanding of technology and technological development.

Entrepreneurship and business are parts of processes where technologies are developed, and this should therefore be covered in the education. The education should encourage students to develop new and creative solutions in order to create and deal with change. It should clarify how the development of products and services, locally and globally, can take place in a sustainable way.

The education should be based on the experiences of women and men in relation to technology, and should provide knowledge about how ideas and traditions steer our views of masculinity and femininity. Students should also develop an understanding of the different conditions people face in relation to technology and technological development. The education should give an understanding of how the development of technology and society have influenced and influence each other. It should also explain how earlier technologies have affected our era, and how contemporary technologies will affect the future.

Orientations

The Technology Programme has five orientations.

The orientation design and product development should give knowledge about and skills in design and product development where computer-aided design and construction are central. It should also cover design processes and design methods.

The orientation information and media technology should give knowledge about and skills in information, communication and media technologies. It should cover computer communication, programming, digital media, web development, and computers and ICT.

The orientation production technology should give knowledge about and skills in production and business. It should cover automation and how production lines are managed, and also give production knowledge in different areas.

The orientation community building and environment should give knowledge about and skills in building communities, the environment and architecture. It should cover building and environmental questions from a broad perspective, technically, ecologically, aesthetically and socially.

The orientation technology sciences should give knowledge about and skills in the working methods of technology sciences and tools for mathematical modelling, simulation, control and regulation. It should deepen knowledge about technology, mathematics and physics.

Goals of the diploma project

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the technology area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported either as a written report or by some other appropriate means using relevant tools and media based on the contents of the project, and should be supplemented with a shorter written account. The report or the written description should contain a brief summary in English. Students should present and discuss their work, and also give responses to the diploma projects of others.

COMMENTARIES ON DIPLOMA GOALS

The diploma goals state that the Technology Programme is a higher education preparatory programme. This should give students opportunities to develop knowledge for higher education studies in primarily technology and science, and also in other areas. The Technology Programme has a clear interdisciplinary nature. One example is that students in physics and chemistry should investigate, describe and systematise different phenomena in nature, and make connections to technical processes.

The diploma goals emphasise technological development in a sustainable society. The concept sustainable society contains three perspectives: the economic, social and ecological. The economic perspective, amongst other things, deals with clarifying how the development of products and services locally and globally can take place through effective allocation of resources. The social perspective involves, amongst other things, the different conditions people face in relation to technology and technological development. The ecological perspective, amongst other things, deals with the interaction between people and nature.

Entrepreneurship is included in all education programmes. The diploma goals for the Technology Programme refer to technological development processes that define the nature of the programme. They are also stated in the formulations about entrepreneurship, creativity and innovation.

The diploma goals emphasise that theory and practical application should be a part of the education, which means that students should work with problem-solving, both theoretically and practically. For example, this could take place in the form of projects carried out together with a company, an organisation or a university college, or in the form of study visits and work placement. Use of projects as a working form is common in technological development processes and as a result has been emphasised in the diploma goals.

Technology is in itself gender neutral, but its use is not always neutral. Technology has, in addition, often been developed by men. For students to become aware of technology and technological development from a gender perspective, the diploma goals emphasise that the education should take as its starting point the experiences of women and men in relation to the technology area. The diploma goals emphasise also that the education should show how attitudes and traditions affect views of what is regarded as masculine and feminine.

Technology according to the diploma goals should be looked at from earlier, current and future perspectives, and students should be given the opportunity of developing an ethical approach to technology and technological development. This also includes the ability to reflect on whether all technology that can be developed is beneficial. In addition to being familiar with existing technology and developing new technology, the ability to communicate about technology and technical information is essential. Communicative skills in speech, writing and visualisation are emphasised in the diploma goals.

The diploma goals take as their starting point the internationally used CDIO concept (conceive – design – implement – operate) to emphasise an engineering approach in the programme. CDIO is used by many international universities and university colleges in Sweden as well. The starting point is a desire to modernise education for engineers based on a number of principles of how education should be planned, carried out and assessed. Since the aim of the Technology Programme is to lead to eligibility for higher education in the technological sector, the approach taken by CDIO is covered in the education.

One example of this is how CDIO is expressed in the diploma goals, where it is stated that students should develop the ability to analyse and understand technical systems. This means that students in a given situation can see the different parts in a broader context and understand their importance for the whole. This also means that students understand the interaction between the components of the system, can prioritise and focus on relevant questions, and can make compromises and adjustments when choosing solutions.

Commentaries on the goals of the diploma project

The goals of the diploma project in the Technology Programme state the following:

The diploma project should demonstrate that students are prepared for studies in higher education, in the first instance in the technology area. It should be carried out in such a way that students formulate their starting questions, plan, carry out and assess a larger task based on core knowledge areas in the programme. The diploma project should be reported either as a written report or by some other appropriate means using relevant tools and media based on the contents of the project, and should be supplemented with a shorter written account. The report or the written description should contain a brief summary in English. Students should present and discuss their work and also give responses to the diploma projects of others.

The diploma project should take as its starting point the key knowledge areas described in the diploma goals of the Technology Programme. These are technology, technological development, the role of technology in the interaction between man and nature taking into account sustainable development, and physics, chemistry and mathematics with a focus on technological processes.

The diploma project should be reported either as a written report or by some other appropriate means using relevant tools and media based on the contents of the project, and should be supplemented with a shorter written account. The report or the written description should contain a brief summary in English. The Technology Programme provides preparation mainly for higher education studies in the technology area. This is a broad area which is represented by the five orientations of the programme. For this reason, a written report or depending on the contents, a report using relevant tools and media are appropriate forms of reporting. Here there is a clear connection to the contents of the work, and it is thus the content that determines the reporting form. A student attending technology sciences, which mainly provides preparation for engineering education, should report their work in the form of a written report as in the Natural Science Programme, in order to be prepared for this education. When students report their work using relevant tools and media, this should be supplemented with a shorter written description since emphasis should be put on the Technology Programme as preparatory for higher education. The shorter written report should cover the questions, relevant knowledge of the chosen area, examination of questions from different perspectives, and assessment and conclusions regarding results. In addition, students should use a technical language, and mathematics can be both a language and a tool.

See also the section The diploma project in programmes preparatory for higher education on page 44.

As an aid in assessing whether a student is prepared for higher education studies, in the first instance in the technological area, the points listed below can be used. The points are divided into three subheadings – Facts and understanding, Skills, and Assessment ability and approaches – in order to indicate a broad view of knowledge (see further the section Goals on page 47).

Facts and understanding

In the diploma project, students should demonstrate

- relevant knowledge about the chosen knowledge area with a starting point in specific questions,
- knowledge of relevant terms, theories, models and methods in the chosen knowledge area, and
- knowledge of relevant sources and how their relevance and credibility can be assessed.

Skills

In the diploma project, students should demonstrate

- skills in defining their questions,
- skills in using relevant terms, theories, models and methods to deal with their questions,
- skills in using appropriate techniques and methods to search for and gather information, and process the material,
- skills in presenting results in a written report or a shorter account which fulfils the fundamental requirements of the genre in terms of language correctness and formal structures,
- skills in orally summarising and presenting diploma projects in a way that is adapted to the situation and the target group, and also
- skills in briefly summarising results in written English in appropriate language.

Assessment ability and approaches

In the diploma project, students should demonstrate

- the ability to take initiatives and responsibility for adapting planning and working methods to the situations and requirements that occur during the work,
- the ability to critically assess and work independently with selected sources,
- the ability to examine questions from different perspectives,
- the ability to assess and draw conclusions from their results based on choice of methods and sources, and also their own working methods and input, and
- the ability to give, consider and assess objective responses.

PROGRAMME STRUCTURE

Foundation subjects — 1 100 credits

English
English 5 100
English 6 100

History
History 1a1 50

Physical education and health
Physical education and health 1 100

Mathematics
Mathematics 1c 100
Mathematics 2c 100
Mathematics 3c 100

Religion
Religion 1 50

Social studies
Social studies 1b 100

Swedish
Swedish 1 100
Swedish 2 100
Swedish 3 100
or

Swedish as a second language
Swedish as a second language 1 100
Swedish as a second language 2 100
Swedish as a second language 3 100

Programme specific subjects — 400 credits

Physics
Physics 1 150

Chemistry
Chemistry 1 100

Technology
Technology 1 150

Programme specialisations are available at www.skolverket.se, under the tab Förskola och skola (Preschool and school)

Orientations — 300 credits

Design- and product development **300**

Art
Art and design 1a1 50

CAD
CAD 1 50

Design
Design 1 100

Construction
Construction 1 100

Information and media technology **300**

Computers and ICT
Computer technology 1a 100

Programming
Programming 1 100

Web technology
Web development 1 100

Production technology **300**
Mechatronics
Mechatronics 1 100

Production knowledge
Production knowledge 1 100

Production equipment
Production equipment 1 100

Community building and environment **300**

Architecture
Architecture – house 100

Sustainable society
Building a sustainable society 100
Environment and energy knowledge 100

Technology sciences **300**

Physics
Physics 2 100

Mathematics
Mathematics 4 100

Technology
Technology 2 100

Diploma project — 100 credits

Individual options — 200 credits

COMMENTARIES ON THE PROGRAMME STRUCTURE

The upper secondary foundation subjects

The upper secondary foundation subjects are studied by all students in varying degrees and sometimes in different courses for different programs, see the section Upper secondary foundation subjects on page 36. They play a key role in students developing knowledge not only vocationally, but also for further studies, personal development and active participation in the life of society. The upper secondary foundation subjects are not alone in having this task, but students' knowledge is developed in interaction with all subjects in the programme. For this reason, it is important to treat the foundation subjects not only in relation to the general goals of the curriculum, but also in relation to the diploma goals of the programme. The diploma goals of the Technology Programme should thus permeate the foundation courses, and the other courses studied in the programme.

The subject *history* has the smallest scope in the Technology Programme in relation to the other higher education preparatory programmes. Students' historical knowledge can be developed in conjunction with the history of technology which is a part of the programme specific course technology 1. Technological development is linked to general historical development, and thus the subject of history can provide a basis for understanding how technology has developed over time.

The diploma goals emphasise an ethical approach to technology. The subject *religion* covers ethical questions and also provides a basis for developing ethical standpoints in subjects typical of the programme.

The diploma goals state that the education should develop students' communicative abilities in speech, writing and visualisation, and also that students should understand the specific role of communication in the area of technology. The subject *Swedish* or *Swedish as a second language* has a special role to play in strengthening students' language skills, even though all subjects contribute to students' language development. In the third course in Swedish or Swedish as a second language, emphasis is placed on the ability to deal with large quantities of text and to analyse, assess and draw conclusions from different texts. Students are given the opportunity to develop the language skills needed for studies in higher education.

The diploma goals emphasise that the education should give skills in English in a technical context so that students can develop their communicative ability and thus understand technology and technological development. This is developed both in the subject *English* and in the subjects typical of the programme.

The subject *science studies* is not a foundation subject in the Technology Programme since a part of the subject's contents are covered in the subjects of physics and chemistry. The parts which are not taken up in the subjects of physics and chemistry, are covered in the subject sustainable society, which i.a. emphasises environmental knowledge and environmental technology. The subject sustainable society is compulsory in the orientation community building and environment, and can be studied as a programme specialisation in the different orientations. The interaction between people and nature can also be examined in subjects typical of the programme, such as technology, design and architecture, and also in foundation subjects such as social studies and religion. In addition, the subject of biology is one of the programme specialisations.

Subjects specific to the programme

The subjects which are common to the Technology Programme are *technology, physics, chemistry* and *mathematics*.

The subject *technology* covers the history of technology, existing technology, technological development and new technologies. The history of technology provides a foundation for understanding how the technology of today has developed. Technological progress is taking place at a rapid rate with the development of new areas. Through knowledge of the new technologies, students are given the opportunity to participate in a concrete way in the debate on technology, have access to the latest research, and discover new areas of technology. In the subject, students should be given the opportunity to assess technological solutions with regard to a sustainable society. The subject also covers basic technical concepts, calculations and simulations. Students should be given the opportunity of exploring, describing and systematising different properties of technological objects and processes. The subject provides a foundation for technology studies in higher education in different areas of technology.

The subjects *physics, chemistry* and *mathematics* in the Technology Programme should emphasise technological processes. Mathematics should also be a language and a tool for understanding, expressing and analysing contexts.

Orientations

The orientations in the Technology Programme are *design and product development, information and media technology, production technology, community building and environment* and *technology sciences*. All orientations cover 300 credits. The reason the orientations are limited is that the programme specialisations are correspondingly larger in scope. This provides opportunities for local and regional profiling in different technological areas with implications for higher education studies, and makes it possible for the organiser to add courses providing eligibility in the programme specialisations.

The orientation design and product development

The orientation gives knowledge about and skills in design and product development where computer-aided design and construction are central. This covers the design process and design methodology. The name of the orientation broadly corresponds to the name of many of the programs for engineers in higher education. The orientation includes the subjects CAD, art, construction and design, which gives the orientation a distinctive technical profile. The subject art provides the foundations for colour and form, whilst CAD provides the technical tool in the design process.

The orientation information and media technology

The orientation gives knowledge about and skills in information, communication and media technologies. This covers data communication, programming, digital media, web development, and computers and ICT. The orientation can be of interest to students with both an interest in programming and the media, and in the programme specialisations students can deepen their knowledge in different areas of interest.

The orientation production technology

The orientation gives knowledge about and skills in production and business. This covers automation and how production lines are controlled, and gives production knowledge in different areas. With additional courses from the programme specialisations, the orientation provides a basis for engineering education in the area.

The orientation community building and environment

The orientation gives knowledge about and skills in building society, the environment and architecture. This covers building and environmental questions from a broad perspective, technically, ecologically and aesthetically, and economically and socially.

The orientation technology sciences

The orientation gives knowledge about and skills in the working methods and tools of technology for mathematical modelling, simulation, control and regulation. This provides advanced knowledge about technology, mathematics and physics, and prepares for engineering studies.

Programme specialisations

Programme specialisations contain courses within the framework of the diploma goals and the nature of the Technology Programme, see further the section Programme specialisations on page 39. The National Agency for Education decides on the courses to be offered as programme specialisations. A current listing of which courses are included as programme specialisations in the Technology Programme is published on the Agency's web site. There are a large number of courses to allow students to gain experience of different technological areas, to make possible local and regional profiles in relation to future higher education interests, and for students to have the opportunity of obtaining specific eligibility for primarily technological and natural scientific higher education programs. Examples of subjects which reflect different technological areas in programme specialisations are *photographic images, aviation technology, interface design* and *medical technology.* The course *technology – specialisation* makes possible in-depth studies in the technology areas the school chooses.

The subject *natural science specialisation* enables in-depth studies in the knowledge areas which the school chooses. Examples of specialisation areas can be sustainable society, biotechnology and effective use of energy. The subject imposes clear demands on a scientific approach, management of sources, practical applications and relevant types of presentations. Entry knowledge requirements specify not only when in the education the course can be studied, but also at what level of knowledge.

Sustainable development is emphasised in the diploma goals and thus includes the subject *sustainable society* as a programme specialisation. The subject *biology* is included so that, in interaction with the subjects typical of the programme, it further highlights the role of technology in the interaction between people and nature.

The programme specialisations contain certain subjects linked to industrial production, electricity and energy. These subjects make possible adaptation of the education to local and regional needs.

The subject *modern languages* and the course *English 7* are included as programme specialisations to facilitate further international studies and the increasing internationalisation of working life.

In addition, programme specialisation courses are included which provide preparation for studies in higher education in non-technical areas. One example is the course *history 1a2* which provides eligibility for certain higher education programs.

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