

Icelandic upper secondary schools follow the National Curriculum Guide published by the Ministry of Education, Science and Culture. The Curriculum Guide includes descriptions of the study programmes offered by the schools. It also contains descriptions of the contents of individual courses in all subjects. All study subjects are divided into courses, which give study credits. Each programme of study is comprised of courses and students must complete a minimum number of credits in individual subjects and in total. Courses are identified using a code system indicating the name of the subject, the placement of the course in order of study and the number of credits given for it. The name of the subject is indicated by a three-letter abbreviation (e.g. ENS for English) followed by three digits indicating the order, content and weighting (e.g. 103, where 1 indicates the first course in a subject, 0 means general content and 3 shows that it gives 3 credits). The following are translations of course descriptions for selected subjects in the National Curriculum Guide for Upper Secondary School in Iceland. Subjects are in alphabetical order. Further information on the Icelandic school system is available at postur@mrn.stjr.is

DANISH

DAN 102 Comprehension, expression, culture I

Course description

In this course emphasis is placed on students' being trained at understanding all ordinary spoken and written language of a general nature. There is emphasis on increasing the vocabulary and reading comprehension of students and on their receiving practice in oral and written expression. Students are trained in pronunciation and spelling and learn to apply the most common rules of grammar; also, they receive exercise in the use of helping tools and teaching programmes for their studies. Danish culture is introduced and interest is awakened in it.

DAN 202 Comprehension, expression, culture II

Prerequisite: DAN 102

Course description

The course emphasises students' being able to understand all normal spoken and written language of a general nature. Vocabulary and reading comprehension are emphasised so that students can express themselves freely both orally and in writing. Students are trained in pronunciation and spelling, and grammar and usage rules are practiced systematically. Moreover, students are trained in using various electronic helping tools, and there is an endeavour to introduce them to Danish culture.

DAN 212 Comprehension, expression, culture III

Prerequisite: DAN 202

Course description

Emphasis is placed in this course on the students' ability to understand the content of written and conversational language texts dealing with fairly specialised subjects which they know about and are interested in. Students receive exercise in using common words and expressions in speech and writing. The goal of speaking practice is that students learn to word their thoughts clearly and definitively when conversing and reporting. When writing texts, students are trained in the application of varied types of style. A presentation and comparison of Denmark and Iceland occurs in this course, in regard to the culture, society and characteristics of the countries.

DAN 103 Comprehension, expression, culture I

Course description

In this course emphasis is placed on students' being able to understand any ordinary spoken and written language of a general nature. Danish culture is introduced and interest in it is awakened. There is a focus on increasing the vocabulary and reading comprehension of students and on their becoming capable of skilful oral and written expression. Besides training

in pronunciation and spelling, students learn to apply the most common rules of grammar and receive training in the use of helping tools and teaching programmes in their education.

DAN 203 Comprehension, expression, culture II

Prerequisite: DAN 103

Course description

There is emphasis in this course on students' being able to understand the content of written and conversational language texts dealing with rather specialised subjects which they know about and have interest in. Students are trained in using common words and expressions in their speech and writing. Speaking practice aims at students' learning to word their thoughts clearly and precisely in conversations and narrations. Students are trained to apply varied types of style when writing texts.

ECONOMICS

ÞJÓ 103 General macroeconomics

Course description

The basic concepts and main subjects of economics are introduced, dealing with the primary components of the economy and their interplay in a market society. The economic cycle is explained, and the main dimensions of the national economy and their interrelationship are discussed. The leading factors in economic development are covered, while economic problems are analysed with examples from the Icelandic economy.

Numerous ways of presenting economic material are introduced. Students are trained at reading line graphs and gain insight into the use of proportional calculation, indexes, weighted averages and further common methods of processing economic data.

ÞJÓ 203 Economic management

Prerequisite: ÞJÓ 103

Course description

The aim of the course is for students to understand better the operation of the national economy and the dynamic forces of economic development. Internal relationships in the economic system are explained, as illuminated by the economic cycle and simple models. The objective of economic management and its principal instruments are discussed, while the main ideas and trends tied to national economic study are introduced. In addition to discussion of the market system and some of its basic characteristics, the behaviour of companies in different types of competition is examined, with attention to the effects of perfect and imperfect competition on consumer welfare. Theories of externalities and market failure are touched upon, with a focus on the environmental problems created by manufacture and consumption in industrialised societies.

ÞJÓ 303 International economics

Prerequisite: ÞJÓ 203

Course description

Concepts and theories on international trade are recapitulated in this course, discussing international cooperation and the "globalisation" of economic affairs. International institutions and organisations active in the field of economics are introduced and investigated, especially in light of the influence they have on the Icelandic employment sector. The traits of multinational companies are dealt with, as well as international currency exchange. The difficulties of Third World countries are to be touched upon, including their associations with affluent, industrialised nations.

EDUCATION

UPP 103 Introduction to education

Course description

This first course in educational sciences places emphasis on introducing education and schooling as a field of study. The roots of the subject field are discussed, along with its history and utilisation. The concept of education is brought up for discussion, as well as the value of education for individuals and society. Varied attitudes toward human nature are examined in the light of different attitudes toward education and schooling. There is an initial introduction to the development of education and schooling in the Europe of recent centuries. Students become acquainted with the ideologies and educational approaches of several known educational scientists who have influenced European work in education and schooling, among them Rousseau, Pestalozzi, Fröbel, Montessori and Dewey.

UPP 203 Educational affairs in Iceland

Prerequisite: UPP 103

Course description

Students become acquainted with the objectives of education in Iceland and the organised channels that are followed to achieve these objectives, examining the goals of preschools, compulsory schools and upper secondary schools as they are expressed in official documents. The ideology, setting of aims and organisation of selected educational and/or school institutions is explored. Furthermore, students may discover the ideology and educational procedures of parents, for example through interviews. There is a focus on student independence and cooperation when planning and seeking information, and the students are expected to present their results to each other.

UPP 303 Educational conditions, a project course

Prerequisite: UPP 203

Course description

In this course students work on one or two research projects or themes, with teachers and students having a rather unrestricted choice as to topics, although they must concern the educational conditions of children and young people. Examples of topics might be handicapped children, teenagers, or children's material in the media, while students might also deepen their understanding of subjects discussed in previous courses, such as educational policies in Icelandic preschool work or the impact of violence on children.

ENGLISH

ENS 102 Reading, listening, grammar I

Course description

Students are trained in the basic aspects of using the English language. There is emphasis on the students' reading varied texts and on systematic listening exercises as well as exercises in spoken English, for instance in connection with reading and listening material. Emphasis is placed on building up a practical, active vocabulary. Written skills are trained through varied exercises which fit with the defined ability and items of language use that are objectives of this course. The basics of dictionary use are taught.

ENS 202 Reading, listening, grammar II

Prerequisite: ENS 102

Course description

In this course, independent approaches to work are required. Students are trained at reading texts of many sorts and working with a dictionary where suitable. Emphasis is placed on training speaking and on listening exercises. Efforts are made to construct and increase a practical vocabulary through assorted exercises in every area of ability. English spoken language is practiced, partly in association with reading and listening material. Disciplined sentence structure, more precise vocabulary, and organised presentation are required in the writing component of the course.

ENS 212 Reading, listening, grammar III

Prerequisite: ENS 202

Course description

It is assumed in this course that students can work fairly independently, both in groups and on individual projects. General as well as specialised texts are read, for example texts touching students' subject fields. Students work with dictionaries and various helping tools, such as computer data banks, the Internet and reference works. Systematic listening and speaking exercises are a basis for augmenting the conversational ability of students and increasing their practical vocabulary for further education and occupations. Practical assignments are completed in the writing segment, putting emphasis on organised presentation, division into paragraphs and systematic language use.

ENS 103 Grammar and vocabulary

Course description

As a direct continuation of compulsory school education, the basic items of English grammar, particularly the ones proving difficult for Icelandic students, are reviewed in context with material in other segments of the course. Careful reading of texts is emphasised with the aim of building up an active, practical vocabulary. Material is chosen for quick reading that suits student abilities, and there are systematic listening exercises. English spoken language is practiced, for instance in connection with reading and listening material. The field of writing is trained through a variety of exercises related to the subject fields being worked on. Students are instructed in the use of dictionaries.

ENS 203 Reading, listening, vocabulary

Prerequisite: ENS 103

Course description

Greater demands are made for independent procedures than in ENG 103. Unsimplified texts, both general and specialised, are read, and dictionaries are applied where appropriate. There is added stress on students' expressing themselves freely and without restriction, and there are systematic listening exercises. Constructing and increasing a practical vocabulary receive a focus through varied exercises in every area of skill. Spoken English is practiced, partly in relation to reading and listening material, while the writing segment demands a more complex sentence structure, precise vocabulary, and organised presentation than in the previous course.

ENS 303 Complicated texts, literature

Prerequisite: ENS 203

Course description

There is concentration on students' becoming fluent in reading more complicated texts than before and being able to perceive their deeper meanings (being able to "read between the lines"). Works of literature are read and interpreted in a wider context, giving consideration to history and literary allusions. Emphasis is placed on students' becoming capable of expressing their thoughts clearly in speech and writing and of arguing for their opinions. Students are trained in working on more extensive projects in which material is sought out at libraries, on the Internet and in multimedia collections. The culture of English-speaking countries is introduced systematically, and emphasis is placed on all-around skill in the language.

ENS 403 Specialised vocabulary, obtaining information

Prerequisite: ENS 303

Where the number of students is sufficient, it is desirable to divide classes into language and social science programmes so that teaching will be more to the point and fitted to student needs.

Social sciences programme

Course description

Emphasis is placed on varied texts, for example on articles from books and journals in the field or on research reports, besides the reading of literary works discussing social subjects.

There is a special focus on technical vocabulary and on introducing the writing of social science reports. Emphasis is placed on students' becoming capable of expressing their thoughts clearly in speech and writing and their being able to argue for their opinions and to acquire a vocabulary in their subject. Independent student task procedures are emphasised, for instance when obtaining information from libraries, the Internet and multimedia materials.

Language programme

Course description

Emphasis is placed on added variety in reading material, for example literary works, magazines and newspapers. Increased skill in literary analysis is a centre of focus, along with a special concentration on the organised presentation of ideas through written and spoken language. The culture of English-speaking countries is introduced. There is increased emphasis on independent working methods among the students, for instance when obtaining information from libraries, the Internet and multimedia materials.

ENS 503 Writing, dissimilar varieties of English

Prerequisite: ENS 403

Course description

What has been done in earlier courses shall continue to serve as a basis, putting special emphasis on writing but in addition working on English as an international language and on its most common variations according to region, education and class. Reading texts as well as audio and video materials should reflect as closely as possible the culture and society of distinct language areas, demonstrating the variety in the English language. Possibly to be considered are short stories, newspaper articles, poems, music, movies etc. from different English-speaking countries. It is important to ensure that students be active during lessons.

FRENCH

FRA 103 Pronunciation, vocabulary, culture

Course description

The principal emphasis is on teaching students the basic points of the language. The four areas of skill are addressed equally, insofar as possible, and students receive practice in speaking and writing about themselves, their families, friends, fields of interest and closest environment, along with practicing communication under certain conditions of daily life. There is heavy concentration on pronunciation exercises supported by listening, since it is important for students to acquire good pronunciation right from the beginning of their schooling in French. Vocabulary is built up systematically, and grammar instruction is conducted with consideration for the communicative goals of the course.

In addition to direct language teaching, factors connected with French-speaking nations and with the French language and culture are illuminated. Furthermore, the origin of French, its distribution in the world, and how it is utilised as a language of international communication are treated briefly.

FRA 203 Speaking, the vocabulary of daily life, grammar

Prerequisite: FRA 103

Course description

Work continues on increasing student abilities in listening, speaking, reading and writing. Together with new material, the study matter of the previous course is reviewed. The subjects addressed are connected with, among other things, daily life, employment, travel, vacations, and events of the past. The emphasis on increased vocabulary, grammar and language comprehension is significant, and students are trained in speaking and writing in relation to the subject matter.

Along with the above study material, students are instructed on French national life, customs and habits.

FRA 303 Conversation, reading, writing

Prerequisite: FRA 203

Course description

There is continuing practice in listening, speaking, reading and writing, with a review of material from earlier courses along with new material. The subjects treated relate to pastimes, fields of interest, travel, memories and future plans.

Students use the language to collect knowledge on various matters, for example through reading student publications. Easy-reading books are read and students are trained to read and write longer, continuous texts and to report about past and future times through speaking and writing. As before, students are informed about francophone nations and culture, while there is particular treatment of French language areas outside Europe.

FRA 403 Easy literary and practical texts, narration

Prerequisite: FRA 303

Course description

Included in the topics are famous people, the media, arts, literature, various places of residence, and geographical introductions to countries. For the most part, the review of basic items in French grammar is completed, while vocabulary and language comprehension are significantly increased, as well as abilities in writing and expression. The reading material is of various sorts, such as short literary texts, newspaper and magazine articles, advertisements and materials describing countries. The subject matter is covered somewhat faster than before, adding substantially to quick-reading and listening material, which students discuss both orally and in writing, besides completing projects of a free nature.

Instruction is given, for instance through introductions and short lectures, on geographical and cultural aspects associated with the study material.

GEOGRAPHY

LAN 103 General geography

Course description

This course deals with geography as a science, its utility and its relationship to other fields of study. Lessons emphasise map reading and cartography along with various kinds of aerial photographs and their interpretation. Icelandic and global land use is discussed, as well as changes in the use of land and their consequences. There is identification of what is involved in land planning and of the basis for such planning. Explanations are provided for the foundations of the economy, the exploitation of natural resources, and the connections between these factors. The main concepts of demography are introduced along with problems regarding population increases and changes in residential patterns. Finally, the causes and effects of migration are introduced. The main emphasis is on students' completing several specialised, yet diverse assignments requiring them to gather information from various sources and assorted media.

LAN 203 Economic geography

Prerequisite: LAN 103

Course description

This course is an introduction to how people earn their livelihood. It discusses the main aspects of natural resources, production, trade and transportation, in addition to examples and theories on the organisation of finances, labour, transportation, and land use in time and space. There is a discussion of how products and services are distributed, of the geography characterising growth zones, and of the conditions for exploiting natural resources. Changes in employment practices and the division of employment are also considered, with a survey of how different parameters affect economic structure. Students are expected to work on several minor assignments, among other things perhaps on the economy of their home community, and to use widely varied sources and media when gathering information on Iceland and the outside world.

GEOLOGY

JAR 103 General geology – geomorphology

Prerequisites: NÁT 113 and 123

Course description

This course emphasises the main factors in Icelandic geology, i.e. the island's origin in relation to plate tectonics, and its morphology due to internal and external forces. In addition to discussion of the basic points of mineralogy and petrology, theories are aired on magma origin and the formation of different magma types under Iceland.

The course shall combine a theoretical and practical education by appropriately linking the academic aspect of studies to diverse field trips and to the application of up-to-date information and communications technology.

JAR 203 Earth history and plate tectonics

Prerequisite: JAR 103

Course description

This course discusses the plate tectonics of certain world regions, specific periods in geohistory, the creation of Iceland with respect for example to the theory of continental drift, and the changes that have occurred in the country's volcanism, biosphere and climate. Theories on the origin of the Earth are introduced as well as dating methods. It is considered significant that the student become acquainted with modern methods of research into Earth's history.

The evolution of life in general and within single groups is discussed, including human evolution. Addressing particular examples, theories on the extinction of taxa are introduced, possibly in connection with the treatment of climatic changes, ice ages and their causes. The discussion on the evolution of spreading centres, the origin of magma and hot spots is continued from GEO 103.

The course emphasises student assignments in relation to nature observation and field trips. Students practice interpreting geological cross sections, reading geological maps, and using the most recent computer programmes simulating conditions in the earth's crust, e.g. during earthquakes, volcanic eruptions and plate motion.

GERMAN

ÞÝS 103 Pronunciation and vocabulary

Course description

To begin with, a few significant points about German-speaking countries are presented (such as location, size and population), along with the countries' main connections with Iceland (e.g. commerce, tourism and further education) and the relationship between Icelandic and German. Subsequent work is on simple texts associated with the world of the students' experience. The principal focus is on practicing pronunciation, building up and using vocabulary about the nearby environment, oral and written expression, listening, and the basic items of grammar necessary for forming simple main clauses and questions.

ÞÝS 203 Vocabulary and grammar

Prerequisite: ÞÝS 103

Course description

Items of vocabulary and grammar which appeared in the precursor are reviewed and placed in a new context (i.e., both active and passive vocabulary are supplemented as well as grammar). There is special concentration on conversation exercises, working in pairs and/or groups, and students are now encouraged to create conversations themselves, both oral and written. In part, texts are worked with which throw light on the daily life of young people and

some of the main habits and customs among German-speaking nations. Students obtain insight into mnemonics and learn to associate related words grammatically and semantically.

ÞÝS 303 Vocabulary and conversation exercises

Prerequisite: ÞÝS 203

Course description

Vocabulary presented in precursor courses is slightly reviewed.

A focus continues on conversation exercises in pairs and/or groups; now students are to express their views on issues. It is emphasised that students attain insight into the situation of young people in German-speaking countries, as regards education and types of employment. The discussion about *Landeskunde* (geography) addresses the division and unification of Germany, since these are matters which are prerequisites to an understanding of current social conditions.

ÞÝS 403 Vocabulary of daily life

Prerequisite: ÞÝS 303

Course description

Vocabulary and rules of language use covered in precursor courses are reviewed somewhat and practiced as found necessary. Oral expression and written skill now receive equal emphasis, using general vocabulary about daily life in a broad sense. There is added concentration on discussing selected issues of the current moment which are in foreign and/or Icelandic news. The states in the German federation are addressed and material is chosen especially related to them.

ÞÝS 503 Contemporary issues

Prerequisite: ÞÝS 403

Course description

A wide variety is emphasised in the selection of texts and in the oral and written application of the language during exercises. To some extent, work addresses themes, that is, various types of texts and other teaching materials are used in which a certain issue, for instance the environment or problems and their solutions, is handled in assorted ways. A portion of the texts are chosen by students, so that the material will be close to them and in accordance with their fields of interest. In addition, current affairs in German-speaking countries are discussed somewhat.

HISTORY

SAG 103 Until circa 1800

Course description

History is followed sequentially in this course from antiquity until around 1800, although this does not comprise a chronological survey but rather a selection of salient topics. *Objectives must be chosen from at least three given subject categories, with attention to distribution and variety.* The subject categories and objectives within each of them comprise entities (themes) which should provide a context and sense of continuity. The teacher and students fit the aspects of the material into a still larger context and take note of the background, depending on how work proceeds and as found necessary. Other subject categories and objectives of equal value can be composed, if there are logical reasons and the objectives are explained in a manner similar to that below. In general, the objectives listed here under "A critical viewpoint" have to be attended to.

SAG 203: 1750 to the present

Course description

This course spans the period that has been called "modern times", from the Enlightenment to the present. This is an era of technological changes, ideals and concerns that have led to improved terms of employment, prosperity and cultural advances but also to major wars and destruction. It is impossible to trace this history completely, but the course will address

themes regarding several important aspects which overlap to some extent. Assorted factors in the field of human and national life are examined, such as standards of living, culture, ways of life, politics and currents of awareness. Chronology will serve as a foundation but will not be allowed to restrict enquiry. The history of Iceland and of the world will be interwoven, though with varying emphasis.

SAG 303 Cultural history

Prerequisites: SAG 103 and 203

Course description

In this course, periods and regions are selected for a cultural survey of numerous factors. This is project work in which students analyse subject matter in the light of many aspects, for example, painting, architecture, literature, philosophy, attitudes and social structure. The intention is for students to form a conception of what is achieved by gaining acquaintance with source texts, examining contemporary pictures and listening to music, along with assimilating academic and literary treatment of the subject. The goal of digestion and presentation by the students is that they communicate knowledge and understanding, as well as a feeling for the spirit of the times. In the process, they have to analyse material, organise work, connect facets of the material and choose perspectives. The intention is to pause often and speak in an organised fashion about methodology, the nature of sources, the relationships among factors in the material, and the potential for a comprehensive overview.

SAG 313 Twentieth century

Prerequisites: SAG 103 and 203

The two world wars are often used to divide the twentieth century into periods. This procedure is followed here, although the latter world war is for the most part taken for discussion in a former course (HIS 203) and in the ninth grade of compulsory school. The post-war era till around 1990 is associated with the cold war and is examined in the light of it now being considered concluded and with regard to particularly flourishing research on the era. It is assumed that every subject category will be attended to in this course, while a choice remains among objectives in each subject category.

These objectives are well suited to project work and independent study. Not only are some periods and events so little removed from us in time that it is possible to speak with those who were then alive, but these subjects are furthermore often handled in newspapers, TV and the Internet, and are frequently the subject matter of literature and movies as well. Since fresh information appears quickly and attitudes change abruptly, it will not be the least of the teacher's duties to instruct students in comprehensive, critical observation and comparison.

LIFE SKILLS

LKN 103 Life skills

Course description

The goal of the course comprises two factors. On the one hand, students are assisted in gaining greater awareness about directions of study at the school, realising where they lead and noticing more clearly the requirements of potential future schools and career life. In addition, students in the course receive an introduction to work at the school and student social life, and each of them becomes acquainted with his or her supervising teacher and that teacher's role. On the other hand, emphasis is placed on building up rapport among students and on strengthening their abilities of expression and self-confidence, so that they can present their own opinions and theories on varied topics, discussing together the grounds for them. Thus students can choose different projects connected with the course theme and introduce their projects to fellow students through assorted methods for communicating information, which means all students are not expected to work on the same subjects.

LKN 101 Studies in upper secondary school

Course description

It is desirable for students to take this course at the beginning of their upper secondary school studies. The course goal is to assist students in noticing more clearly the routes of study at the school, in understanding where they lead, in learning to prepare an organisational chart of the paths of study that seem interesting, and in better realising the requirements of possible later schools and career life. In addition, each student in the course receives an introduction to school activities and student social life and becomes acquainted with his or her supervising teacher and that teacher's role. There is a focus on developing a spirit of togetherness among students and on strengthening their abilities of expression and self-confidence when they present their own opinions and theories on varied subjects and discuss reasons for them with each other.

LKN 111 Individuals, society, culture

Course description

The tasks in this course should provide students with the opportunity to discuss the interaction of individuals, society and culture. The subjects dealt with can vary widely, relating to religion, the arts, politics, the status of women and men, consumer affairs, history, pastimes, philosophy, science and vocational culture.

LKN 121 Individuals, the environment, nature

Course description

The coursework involves discussing the interplay of individuals with the man-made and natural environment. The subjects studied can be of great variety and relate to environmental protection, nature observation, the preservation of animal life and ecosystems, utilisation of natural resources, pollution, and the man-made environment *vis-à-vis* the natural one.

MATHEMATICS

STÆ 103 Equations, geometry and ratios

Course description

A foundation is laid for such procedures in mathematics as precision in presentation, argumentation and the solution of assignments and problems. The main topics are in the field of geometry, but there is also a review of equations and numerical operations. A few concepts of Euclidian geometry and its role in Western civilization are addressed, along with the system of coordinates and equations of straight lines. A many-sided approach is stressed for elucidating the principle of ratio.

Besides shorter assignments, students are to prepare at least one cooperative project or brief essay, e.g. on geometry in a historical or cultural context.

STÆ 203 Algebra and functions

Prerequisite: STÆ 103

Course description

In this course the ground is prepared for understanding the system of real numbers and the concept of function, as well as for adequate algebraic skills. Several types of equations and inequations are treated, and algebra and decimal fractions are discussed in a historical perspective.

In addition to shorter exercises, students should finish at least one cooperative project or essay on material related to the content of the course, for example a historical subject.

STÆ 303 Trigonometrical functions, vectors and combinatorics

Prerequisite: STÆ 203

Course description

This course covers vectors and trigonometrical functions, the connection of algebra and geometry in a system of coordinates, and an introduction to combinatorics. Furthermore, the historical evolution of trigonometry and the practical knowledge of trigonometrical functions are addressed, for instance regarding geodetic surveys.

It is emphasised that students acquaint themselves with plane geometry in a coordinate system and learn to prove and apply the major theorems concerned. Certain proofs are selected for discussion. Besides shorter exercises students should complete at least one cooperative project or an essay on a topic associated with the content of the course.

STÆ 403 Functions, limits and differentiation

Prerequisite: STÆ 303

Course description

Dealing with exponential and logarithmic functions, limits and the differentiation of common functions, this course discusses differentiation and limits from a historical viewpoint, as well as practical problems where differential calculus provides the solution.

The stress is on students' gaining clear insight into differential calculus and being able to argue the most significant rules involved. Along with shorter exercises they should work on at least one cooperative project or essay about a subject related to the course content.

STÆ 503 Integration, sequences and series

Prerequisite: STÆ 403

Course description.

This course is about integration, differential equations, sequences and series. Several approaches to solving problems are taught, while underscoring utilisation in various scientific fields. Homework papers are expected to be turned in on a regular basis, and weight should be given to clear, concise presentation.

STÆ 603 Overview course

Prerequisite: STÆ 503

Course description

Various aspects of material from former courses are reconsidered in order to solve problems in this course, but are supplemented by fresh input, for example complex numbers, additional types of differential equations and further practical applications of integral calculus. Homework papers are expected to be regularly submitted and to require a dependable knowledge of subject matter from earlier courses. These assignments should combine newer and older lessons. There should be a focus on the clear presentation of solutions.

NATURAL SCIENCES

NÁT 103 Biology

Course description

This basic course introduces the particular nature of biology as a science subject, its relationship to other subjects and the development and purpose of biological research in an Icelandic context.

The course addresses various basic aspects of living nature, common characteristics of organisms, and processes which connect the life forms inside particular ecosystems. The structure and functions of the cell are discussed and its components are examined as regards composition and function. Also dealt with are the basics of genetics. Emphasising material

and energy transport, the nature and activity of ecosystems are described, along with the importance of diversity within these systems and the effects of man. The course also covers the main classes of life forms, focussing on microorganisms and ideas about the origins of life on earth.

The course stresses that students choose some specialised, varied projects which require the acquisition of information, field observation and nature study, besides processing and presenting the results in various ways. The projects shall have in common that they deal with the interaction of nature, technology and society; the interactive connection between nature and culture; and those factors or forces which mostly determine our treatment of nature and the earth's resources.

NÁT 113 Geology

Course description

This course introduces geology as a science subject and touches on the development of ideas within it, its relationship with other science subjects, and its relevance to Icelandic conditions.

Selected aspects of geology are treated which relate to applying technology for the exploitation of natural resources and for energy production. Firstly, some general features of the age and origin of the earth are treated, as well as its internal structure and layering. This is followed by geological history and a general treatment of changes to the earth, e.g. continental drift and the evolution of life and climate. The formation of the main rock types is introduced, along with the geological conditions for the formation of natural fuels. The course examines geological research, especially that connected with construction and power plants. Furthermore considered are the various energy sources in Iceland, in comparison to those in other parts of the world, and the research related to exploiting Icelandic resources and earth materials, noting as well their quality. The environmental impact of construction and energy utilisation is dealt with also, e.g. damage to outstanding features of nature, soil disturbance, and the risk of pollution.

The course concentrates on students themselves choosing several specific and diverse projects which demand the acquisition of data, field surveys and nature observation as well as presentation of the results in various ways. An aspect common to every project must be its treating the relationships among nature, technology and society; the interaction between nature and culture; and those factors or forces which are most influential in our dealings with nature and the world's resources.

NÁT 123 Physics and chemistry

Course description

The course addresses subject matter on nature and modern technology in which some basic principles and theories of physics and chemistry are intertwined. The energy principle is the core of the course and its various aspects are related to technology in the Icelandic context. The intention is to cover all the topics listed in the course objectives, though elucidating them to varying degrees depending on the school's focal points and the students' fields of interest. Thus the student can increase his or her understanding considerably in chosen course topics, integrate his or her project with other NSC courses and other subjects, and even cooperate with parties outside the school system. Courses are to have in common that they deal with the interrelationships among nature, technology and society; the mutual connections of nature and culture; and those factors or powers which are most decisive for our conduct in respect to nature and the earth's resources.

LÍF 103 Physiology

Prerequisites: NÁT103 and EFN 103

Course description

The course deals with the biological functions of animals and plants. Amongst the topics are food acquisition, digestion, respiration, material transport, excretion, immune responses, message transmission, movement, reproduction, embryo development, metabolic control and homeostasis. Each organ system is considered separately, comparing similar systems. Not only is healthy functioning dealt with but also the most common deviations.

Students should be introduced to the subject matter in as diverse a manner as possible, e.g. through the use of information and communications technology as well as practical lessons.

LÍF 113 Ecology

Prerequisites: NÁT 103 and LÍF 103

Course description

The course is intended to provide the student with a comprehensive overview of ecology as an academic subject, its methodology and subject matter. The uniqueness of Iceland is stressed, including its main types of ecosystems - marine as well as terrestrial - and ecological research in this country. The course assumes that students will carry out varied project work requiring field trips, visits, acquisition of information, and the presentation of various small and larger projects.

The course deals with the structure, energy flow and material cycles in an ecosystem and examines theories which concern the stability or unstable equilibrium of ecosystems. Also discussed are biological diversity and changes in the species composition of biocommunities, whether due to natural causes or man.

The stock concept is aired, and the most important means of measuring and studying stocks are examined. Also discussed are the self-sufficient utilisation of biological resources and the main stocks exploited in Iceland. Further topics to be spoken on are the adaptation and capability of organisms along with the impact of ecological factors on evolution and behaviour.

LÍF 203 Genetics

Prerequisite: LÍF 103

Course description

The course discusses the history of genetics and its importance within natural science. The key issues of genetics are handled: cell division, chromosomes and genes, the formation of gametes, and fertilisation. Also treated are the genetic makeup of organisms and the factors determining sex. Chromosomes are readdressed in more detail than in NSC 103; the manner in which they control protein synthesis in organisms is considered and the process of protein formation is traced. Modifications in genetic materials, mutations and chromosome changes are described along with peculiarities in the heredity of microorganisms, while there is also a discussion of the leading methods applied in genetic research and genetic engineering. Genetic frequency and equilibrium in dissimilar populations of organisms are studied. The course presumes that students perform varied project work.

LÍF 303 Project biology

Prerequisite: LÍF 203

Course description

In this course students combine their knowledge and skills from earlier biology courses and other school subjects with work on multi-faceted problems and assignments. The main aim of the course is thus to break down barriers between earlier courses and subject areas, revise their content and place it in a wider context than previously possible. A minimum entrance grade of 6 is recommended.

Each student chooses to prepare, for at least one unit, either website material or a reference paper necessitating at least to some extent translation from non-Icelandic scientific written works on a more specialised area within biology. Students work independently and in groups, learning to present their ideas and results in a clear manner.

Schools can offer diverse projects which in part mirror their special positions and the interest areas of students. Students utilise various equipment and take advantage of communications and information technology in their projects. Collaboration with institutions and various parties within the relevant scientific field is also expected.

It would be optimal for each school to plan a long-term project or projects in which successive years of students would each carry out one link in the work.

EFN 103 The atom and the mole concept

Prerequisite: NÁT 123

Course description

This course deals with the atom as a continuation of the course NSC 123. Emphasis is placed on using the periodic table to determine the number of particles in an atom and its electronic configuration, and to forecast the type of chemical bond between pairs of atoms. The foundations are laid for understanding the mole concept and its use in chemical equations. As before, major emphasis is placed on relating the course material to the students' own experience.

Students should be introduced to the subject matter in as varied a manner as possible, for instance through independent projects, group work, the use of information technology and practical exercises.

Examples of practical lessons include metals and non-metals, chemical bonds, molar concentration, oxidation and reduction, and the pH values of substances in everyday life.

EFN 203 The ideal gas law and chemical reactions

Prerequisite: EFN 103

Course description

The course deals with the relationship among heat, pressure and volume for gases. Also dealt with are the main types of chemical reactions, treating quantitative calculations in greater depth than was the case in CHE 103. The course also deals with such varied aspects of chemical reactions as heat change and rates of reaction. The foundations are laid for a student understanding of chemical equilibrium, followed up by discussing the solubility of salts. Later, in CHE 303, acid-base reactions and galvanic cells are discussed. As in previous courses students should be introduced to the subject in the most diverse manner possible, but practical exercises and report writing now carry more weight than previously.

The following are examples of practical exercises: mass and the volume of gases, heat of reaction, effect of temperature and mole concentration on rate of reaction, influence of external factors on the equilibrium of chemical reactions, and precipitation.

PHYSICS

EDL 103 Mechanics and light

Prerequisite: NÁT 123

Course description

By covering Newton's laws of motion, the conservation of momentum, the physical properties of matter, and optics, this course provides an introduction to basic mechanics, while also delving deeper into the conservation of energy than was done in NSC 123. This basic knowledge is presumed in subsequent physics courses.

Exercises assigned in the course focus on accuracy in presentation as well as on argumentation and the use of formulas. As a supplement to minor assignments, experiments should acquaint the students by experience with the principles of physics and introduce them to modern techniques of recording and processing data; furthermore, they should make entries in a workbook and be able to write reports on experiments. It is assumed that at least 1/6 of the lesson time will be dedicated to practical exercises in smaller study groups.

The following are examples of practical exercises: Newton's second law, frictional forces, air resistance, impulse and momentum, work and energy, Archimedes' principle, focal length and lenses, and the measurement of refractive index as well as of light intensity as a function of distance.

EDL 203 Thermodynamics, motion and waves

Prerequisites: EDL 103 and STÆ 303. Ideally STÆ 403 should be taught simultaneously.

Course description

This course deals with the ideal gas law, the thermodynamics of matter, and kinematics in two dimensions along with circular motion, oscillation and wave motion. Assignments carried out in the course concentrate on accuracy in presentation, on argumentation and on applying formulas. As in the previous course, it is considered significant that the student perform experiments by which he or she becomes acquainted through experience with the laws of physics, uses computers for measuring and processing, writes in a workbook, and applies knowledge of how to compose reports on experiments. The course objectives mention assignments which the student is intended to finish in connection with the course content.

PSYCHOLOGY

SÁL 103 General psychology

Course description

The subject matter, methods and trends of psychology are discussed in a historical context. Scientific procedures are introduced, academic as well as practical. Then educational psychology is treated both theoretically and practically, i.e., remembering, the three systems of memory, mnemonics, and various kinds of learning: in particular conditional learning but also cognitive learning. There is an introduction to specific learning difficulties, paying special attention to the applications of educational psychology for various factors besides learning, such as relationships, body language, behavioural formation and phobias. Students are introduced to psychological approaches for dealing with everyday problems. Examples of subjects might be conflict, decisiveness/indecisiveness, communicative ability, anger control, or whatever else is chosen jointly by students and their teacher. It is desirable that one-third of the course be spent on practical exercises and assignments. Students might for example perform research several times and hand in reports each time.

SÁL 203 Developmental psychology

Prerequisite SÁL 103

Course description

Developmental psychology and its concepts are introduced, along with such leading issues as the roles of heredity and the environment in human traits. The principal theories are presented, and there is a discussion of the overall course of development from conception to adolescence, especially physical and motor development, cognitive development, and personality and language development. While the focus is on normal development, aberrations and their causes receive slight attention. The development process from puberty to old age is outlined, and such matters of opinion as teenage pregnancy, abortions, retirement, etc. are addressed. The formative influence of the family is discussed, with students being encouraged to observe themselves and their own family "from the outside", in an effort to analyse the factors shaping them and the relationships within their family. Attention is given to the formation of sexual behaviour through peer relations. In addition to examining assorted problems of children and adolescents (e.g., mental, emotional, physical, educational and behavioural problems), stress reactions are discussed in relation to hospitalisation, bereavement, divorces, and so on. The topics may vary, determined by student and teacher interests.

The students carry out individual assignments, such as an experiment or an interview, turning in a detailed report on the results. Furthermore, groups of two or three prepare and deliver a lecture on a topic chosen by them or defined by the teacher, for instance on various problems of children and adolescents.