



Faculty of Economic Sciences, Communication and IT

Programme Study Plan

Study Programme in Web and Multimedia

Programme Code:	SGWOM
Programme Title:	Study Programme in Web and Multimedia
ECTS Credits:	120/180
Programme Approval	The programme study plan was approved by the Faculty Board for the Faculty of Economic Sciences, Communication and IT on 20 January 2012 and is valid for students accepted to the programme the autumn term of 2012 or later. It replaces the earlier version of the study plan approved on 24 February 2011.
Language of Instruction:	The languages of instruction are Swedish and English
Degree Level:	Bachelor
Degree Qualifications:	General
Prerequisites	General admission requirements, plus either - field-specific eligibility A4 (Mathematics 3b or 3c, Social Science 1b or 1a1 + 1a2) with Mathematics 2a or 2b or 2c instead of 3b or 3c, or - field-specific eligibility 4 (English B, Mathematics C and Social Science A) with Mathematics B instead of C.

General Information

The programme centers on web development and web maintenance and interaction design with a special focus on web multimedia, that is, interactive products based on the communication forms of text, graphics, animation, sound and image/video. Students can complete

their studies after two years with a University Diploma in Information Systems, or move on to earn a Bachelor's degree in Information Systems after a third year, which is a specialization in interaction design.

Aims and Objectives

The aim of the programme is that students acquire knowledge and understanding of the approaches, theories and methods of information technology and communication studies related to the web, multimedia and interaction design areas.

For a **University Diploma**, students should be able to:

Knowledge and understanding

- explain the meaning of different information systems and their structure, organization and means of control, and
- demonstrate knowledge of systems development methodology, programming, database design, implementation tools, and projects, as well as an understanding of how to apply this knowledge in solving problems.

Skills and abilities

- demonstrate ability to identify, structure, describe and present problems, as well as to analyze and assess alternative solutions and their consequences in terms of technical, human, and organizational perspectives,
- demonstrate ability to work professionally with web design in organizations and companies, and
- demonstrate ability to use image, text and sound appropriately in different types of multimedia products, especially for web based products.

Judgement and approach

- demonstrate understanding of the need to cooperate across disciplines to integrate knowledge of technology, organization and people,
- demonstrate ability to follow and analyze the development trends in the web design area regarding, for instance, IT systems with open source code, component-based IT architecture and tools for web production.

For a **Degree of Bachelor**, students should, in addition to the University Diploma requirements, be able to:

Knowledge and understanding

- explain the meaning of the design concept as used in the areas of multimedia and human-computer interaction, and
- demonstrate understanding of the importance of interdisciplinary approaches in creating web services and other interactive systems designed to aid and support people at work and at home.

Skills and abilities

- demonstrate ability to assess web and multimedia products based on usability,
- demonstrate ability to apply user-centered interaction design methods including different types of prototyping,
- demonstrate ability to work professionally with systems design in corporations and organizations from a user and client-centered perspective.

Judgement and approach

- demonstrate ability to act professionally in the role of interaction designer, making, for instance, ethical judgements in designing user-centred development activities, and
- demonstrate ability to assess and argue for the needs of clients and users of websites and to balance needs against budget.

Programme Structure

The programme comprises 120 or 180 ECTS cr, which means two or three years full-time study respectively. In the first term students study basic courses in information systems, and in the second term web and multimedia courses. The third term is a web development course, which includes web development, database design, object-oriented modeling and software development.

Students who plan to complete their studies after the second year choose optional courses of 22.5 ECTS cr and carry out an independent project of 7.5 ECTS cr for their diploma. Students who want to continue towards a Bachelor's degree study optional courses of 30 ECTS cr in the fourth term, or take the opportunity to study a full term of 3D animation. All students also have the opportunity of studying abroad in the fourth term. University diploma students will then be offered distance supervision for the completion of their independent projects.

In the third year students first specialize in interaction design 15 ECTS cr, take optional courses 15 ECTS cr and conclude the programme in term 6 with optional courses 15 ECTS cr and a degree project 15 ECTS cr.

Bachelor degree students can continue towards a one-year Master (60 ECTS cr.) or a two-year Master (120 ECTS cr.) in Information Systems.

Programme Curriculum

Required courses in terms 1-3:

Term 1

Prototyping: Testing and Communicating Design Concepts, 7.5 ECTS cr.

Introduction to the development of user-friendly computer systems.

Focus on the user-system interaction.

Enterprise and IT, 7.5 ECTS cr.

Methods and models for developing business systems. Basic concepts such as business, information systems, IT, business process, method and modeling are treated theoretically and practically.

Acquisition of Information Systems, 7.5 ECTS cr.

The course deals with different description/modeling techniques and interaction principles for a requirement specification. It also addresses how requirement specifications can be used in the different stages of the acquisition process and their role in the procurement of IT-solutions and business systems linked to agreements.

Introductory Programming, 7.5 ECTS cr.

The basic principles and techniques of a modern programming language are treated along with how to solve problems in the programming phase of fulfilling requirement specifications.

Term 2

Interactive Flash-Animation, 5 ECTS cr.

Introduction to the potentials of animation techniques. Laboratory work and students' own experiments.

HTML and CSS for Web Development, 5 ECTS cr

The course deals with how to structure a web page with Hypertext Markup Language (HTML) and how to present the content of the HTML-page with Cascading Style Sheets (CSS).

Systems Implementation Techniques, 5 ECTS cr.

The differences between traditional software development for desktop environments and software development for web environments are treated with an emphasis on distinguishing features and unique challenges.

JavaScript for Web Development, 5 ECTS cr

The course deals with how to create interactive and dynamic web pages for web browser interpretation.

Portable Formats, 5 ECTS cr.

How to structure and organize information for the purpose of information systems exchange.

Multimedia for the Web, 5 ECTS cr

The course deals with how to create and include multimedia on a web page, for instance how to handle video, sound, image and 2D with canvas and Scalable Graphics (SVG).

Term 3

Web Development Project, 30 ECTS cr.

The course is in the form of a project, including the separately assessed components database design, web development principles (client script, web server, 3D solutions) object-oriented modeling and software development.

University Diploma

Term 4 (final term)

The required course Information Systems: Diploma Project, 7.5 ECTS cr plus optional courses of 22.5 ECTS cr (see Bachelor degree term 4).

Information Systems: Diploma Project, 7.5 ECTS cr

Students practice and demonstrate ability to integrate and apply knowledge and skills independently to a project in a chosen specialization area.

Bachelor's Degree

Students have the opportunity to study abroad in term 4. Karlstad University has exchange agreements with universities around the world. Students are also encouraged to consider courses offered at Karlstad University or at any other institution of higher education in Sweden.

Term 4

Optional courses totaling 30 ECTS cr.

Recommended courses: Graphic Form and Photo, 15 ECTS cr, Graphical Interface Design 7.5 ECTS cr and C#NET, 7.5 ECTS cr, or 3D-Animation: Theory, Technique and Production I, 30 ECTS cr.

Graphic Form and Photo, 15 ECTS cr

Graphic design in a wide sense based is treated and students develop their communication skills based on communication theories, typographical rules and design principles.

Graphical Interface Design 7.5 ECTS cr

The course treats so called event management and window management systems as well as the coding of graphic screen images and dialogue windows.

C#NET, 7.5 ECTS cr,

The primary focus is on C# as a development language and a secondary focus as NET technology and structure. Basic integration in BizTalk is introduced.

3D Animation: Theory, Techniques and Production I, 30 ECTS cr.

There are four components: Introduction to the 3D medium and 3D modeling, animation, texturing, and lighting, and production.

*Term 5**Required courses:*

User Tests, Prototyping and Evaluation, 7.5 ECTS cr. and Interaction Design 7.5 ECTS cr.

User Tests, Prototyping and Evaluation, 7.5 ECTS cr.

User test methodology is developed: evaluating design proposals through prototyping and user tests, and formulating credible evaluation reports.

Interaction Design, 7.5 ECTS cr.

Students have the opportunity to deal with different problems and learn about different theories on Human-Computer Interaction (HCI) and their applications to systems development.

Optional courses:

Recommended courses: Information Systems: Practical Placement, 7.5 ECTS cr, and Business by Web and Web Analytics, 7.5 ECTS cr.

Information Systems: Practical Placement, 7.5 ECTS cr

Practical placement in the web and multimedia area performed in public or private organisations. The training must encompass a variety of tasks in a workplace. The training can also be carried out in a research project at the university.

Business by Web and Web Analytics, 7.5 ECTS cr.

The course is based on a series of seminars conducted by representatives of industry and academia. Different ways of conducting business on the web are treated. Every student writes a number of short reports on topics treated in the seminars: one on web usability, one on web analytics based on traffic data from a website and one on marketing in relation to digital media.

*Term 6**Required course*

Information Systems: Bachelor's Degree Project, 15 ECTS cr.

Students practise and demonstrate their ability to integrate and apply knowledge and skills independently to a qualified project in a chosen area.

Optional courses

Recommended courses: Software Test Design, 7.5 ECTS cr and Systems Integration 7.5 ECTS cr.

Software Test Design, 7.5 ECTS cr

Students acquire knowledge of software testing procedures, especially of test design, test models, test methods, test levels and test case retrieval.

Systems Integration 7.5 ECTS cr

Jointly studied with students on the IT Design programme. Students work on a major project to which they contribute with their different specialization skills.

Degree Titles

Upon successful completion of terms 1-4, students who leave the programme are awarded:

University Diploma

Major: Information Systems

Upon successful completion of terms 1-6, students are awarded:

Degree of Bachelor of Science

Major: Information Systems

Credit Transfer

According to the *Higher Education Ordinance* (Ch 6, § 12-14), students may transfer credits from previously completed university courses, subject to approval. Transfer of credits for a course module, or university studies generally, is subject to the approval of the course examiner. Transfer of credits for a full course is subject to the approval of Student Centre personnel.

Additional Information

The local regulations for undergraduate studies at Karlstad University stipulate the obligations and rights of students and staff.