# NATIONAL CURRICULUM

## for

# Bachelor in Web Development

Revised 01.08.2019

# Content

This national part of the curriculum for the Bachelor in Web Development has been released in accordance with §18, section 1 in the Ministerial Order for technical and commercial Academy Profession Programmes and Professional Bachelor Programmes. This curriculum is supplemented with an institutional part of the curriculum, which is provided by the individual institution that offers the programme.

It has been prepared by the Educational Committee for the Bachelor in Web Development and approved by the Board of Directors (or the Rectors) from the business academies who offer the programme, and after consultation with the institution's educational network and the chairmanship of external examiners.

# 1. The programme's goals for learning outcomes

**Knowledge**

The graduate has knowledge of:
- standards within web development
- development environments for web development,
- a broad range of development methods in web development and can reflect on their use in the practice of the profession

The student understands:
- the role of web applications in society

## Skills

The graduate will have the skills to:
- use methods and tools within web development to plan and develop applications based on concrete development needs,
- master a suitable programming language to implement development needs,
- evaluate and justify the choice of a suitable system for ensuring data and application persistence,
- use the domain theory and methodology to develop user experiences tailored to relevant target groups and evaluate user experiences based on domain theory and methodology,
- use methods to develop user interfaces that exploit the specific design and aesthetic capabilities of web technology, and evaluate and justify their value as a solution,
- apply and master a suitable development environment for the implementation of the development process,
- be able to communicate practice-orientated and academic problems and solutions to business partners and users, as well as peers and non-specialists.

**Competencies**

The graduate will be able to:
- handle complex and development-orientated situations within web development,
- independently engage in academic and interdisciplinary cooperation within web development in a professional manner and assume responsibility within the framework of professional ethics,
- identify and structure their own learning needs and develop their own knowledge, skills and competencies in relation to web development.

# 2. The programme includes 3 national subject elements

## 2.1. Content of web programming

The subject element includes the development and modelling of web applications, including architecture, robustness, Internet and web protocols, the use of debugging techniques, and techniques for implementation and maintenance. The subject area also includes data storage, data

modelling and the exchange of data sources based on recognised standards and data security.

**Learning objectives for Web programming**

**Knowledge**
The student has development-based knowledge of: practice, applied theory and methods of development within:

- relevant Internet and web protocols,
- data storage, data modelling, data exchange and data security
- quality assurance

The student can understand and reflect on:

- development methods in web development,
- web architecture and design patterns,

**Skills**
The student will get the skills to:

- master all stages of development including planning, developing and implementing web applications based on concrete development requests, as well as evaluating practice-orientated and theoretical issues and selecting and justifying relevant options in relation to the development of web applications
- evaluate and justify the choice of a suitable programming language and relevant methodologies for the implementation of web applications,
- master a suitable programming language to develop web applications
- use and model data sources, as well as justify and disseminate proposed solutions
- implement and evaluate web user interfaces, as well as justify and disseminate possible solutions to business partners and users
- use relevant theories and methods of quality assurance for all phases of development

**Competencies**
The student will learn to:

- manage complex web development and development-orientated situations in web development
- independently engage in academic and interdisciplinary cooperation in a professional manner and assume responsibility within the framework of professional ethics in relation to web programming
- identify and structure their own learning needs and develop their own knowledge, skills and competencies in relation to web programming

**ECTS weight**
This subject element is weighted 40 ECTS credits, this includes 20 ECTS from the national part and 20 ECTS from the institutional part.

The institutional subject elements on the programme are withing the subject element web programming. National and institutional subject elements can be examined in the same exam.

## 2.2. Development environments

**Content**
This subject element contains tools and platforms for the development of web-based applications, as well as the selection and justification for the selection. It focuses on commonly used development tools (IDE and other platforms) as well as versioning and quality assurance tools.

**Learning objectives for development environments**

**Knowledge**
The student will gain development-based knowledge and applied theory and methods:

- in development environments
- about the practice, methods, and systems for version control

The student can understand and reflect on:

- types and selection criteria for development platforms

**Skills**
The student will get the skills to:

- master version control in a development context
- use methods and tools for quality assurance in the development process, as well as evaluate and justify the choice of tools
- use methods and tools within development environments to release web applications
- communicate the choice of methodology and tools for use in the development process

**Competencies**
The student will learn to:

- methodically manage development platforms and development environments for any given task in complex development-orientated situations
- administer development platforms and development environments in the development process of advanced web applications
- independently engage in academic and interdisciplinary cooperation in a professional manner and assume responsibility within the framework of professional ethics in relation to development environments
- identify and structure their own learning needs and develop their own skills and

competencies in relation to web development.

**ECTS weight**
The subject element development environments is weighted 10 ECTS credits.

## 2.3. User experiences

**Content**
The subject element consists of analysis, understanding and reflection of the user's experiences and needs in different usage contexts.

The subject element includes design of user interfaces and usability. Reflections on information architecture and instruments and exploitation of the media's instruments.

The focus is on understanding and organising user experiences in relation to design and development.

**Learning objectives for user**

**experiences Knowledge**
The student has development-based knowledge of:

- practice, applied theory and method of designing user experiences, and can reflect on a web developer's practices for designing user experiences
- information architecture
- aesthetics and trends in interaction design

The student can understand and reflect on:
- the use of user-survey methods

**Skills**
The student will get the skills to:

- use methods and tools to design user experiences for relevant target groups by involving users
- evaluate practice-orientated and theoretical issues by designing user interfaces and selecting and justifying relevant solutions
- disseminate practice-orientated and professional issues about designing user experiences and communicate central issues for business partners and users

**Competencies**
The student will learn to:

- manage complex design processes based on analysis and planning
- independently and in groups, understand the design and organisation of user interfaces and user experiences for complex systems.
- identify and structure their own learning needs and develop their own skills and competencies in relation to design of user experiences.

**ECTS weight**

The subject element user experiences is weighted 10 ECTS credits.

**2.4. Exams in the national subject elements**

The national subject elements for the 1st academic year are weighted 40 ECTS. There are 2 exams in the national subject elements, as well as one further exam in the bachelor project.

For the number of exams in the internship, please refer to section 3.

For a comprehensive overview of all the programme's exams, please refer to the institutional part of the curriculum, as the national subject elements described in this curriculum can be examined together with the subject elements specified in the institutional part of the curriculum.

# 3. Internship

**Learning objectives for programme's internship**
**Knowledge**
The student will gain knowledge about:

- and be able to understand and reflect on the theory, method and practice.

**Skills**
The student will get the skills to:

- apply and use one or more key methodologies and tools within the subject areas which are related to employment within this industry or profession.
- evaluate theoretical and practical issues and justify and choose appropriate solutions.
- communicate academic problems and solutions to peers and non-specialists or business partners and users.

**Competencies**
The student will learn to:
- manage complex, development-orientated situations related to the profession
- identify their own learning needs and structure their own learning in different learning environments.
- independently take part in academic and interdisciplinary collaboration using a professional approach

**ECTS weight**
The internship is worth 15 ECTS credits.

**Number of exams**
The internship is completed with 1 exam.

# 4. Requirements for the Bachelor Project

The learning objectives for the final exam project are identical to the programme's learning objectives listed above under point 1.

The final exam project, which together with the
internship exam and the other exams on the programme, must document that the learning
objectives for the programme have been achieved.

In the Bachelor project, the students must demonstrate the ability, in an analytical and methodical
basis, to be able to process a complex and practice-orientated problem statement in relation to a
specific task within the web development sector. The problem statement that must be central to the
programme and profession, is formulated by the student, possibly in collaboration with a private or
public company. The educational institution approves the problem statement.

For specific form requirements for the bachelor project please refer to the institutional part of the
curriculum.

**Exams for the final exam project**
The final exam project completes the programme in the last semester once all the preceding exams
have been passed.

**ECTS weight**
The final exam project is weighted 15 ECTS credits.

**Examination form**
The exam is an oral and written examination with an external co-examiner, a combined mark is
given based on the 7-point scale for the written project and the oral presentation.

For information on exam form and organisation, please refer to the institutional part of the
curriculum.

# 5. Rules on credit

Passed programme elements are equivalent to similar programme elements taken at other
educational institutions offering this programme.
The students are obliged to inform us of any completed educational elements from another Danish
or foreign higher education programme or any jobs which are likely to provide credit. The
Academy approves, in each instance, credit on the basis of completed programme elements and
any jobs which meet the objectives of the subjects, the educational part and the internship parts.
The decision is taken according to an academic assessment.

For prior credit approval of studies in Denmark or abroad, students are required to document each
approved and completed programme element on the completion of these studies. In connection with
the application for prior credit approval, the students must give permission to the institution to
obtain any required information after the completion of their studies.
On approval according to the above, the programme element is deemed to be passed if it was
passed according to the rules of the programme in question.

# 6. Academic criteria for selecting candidates for           top-up programmes.

Please refer to the institutional part of the curriculum.

# 7. Commencement and transitional schemes

**Commencement**

This part of the national curriculum is valid from 01.08.2019 and is valid for students who are enrolled after 01.08.2019

**Transitional scheme**

Students who are admitted before 01.08.2019 must follow this curriculum from 01.08.2019, however students who were admitted under a previous curriculum, may complete the programme according to that one.