BUSINESS ACADEMY
AARHUS

Curriculum 2014 – Joint national part

Bachelor's Degree Programme in Web Development

Professionsbachelor i Webudvikling

Version 1.0
Revised August 2015

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1. Programme structure

This is the national section of the curriculum for the Bachelor's Degree Programme in Web Development ('Professionsbachelor i webudvikling'), under Ministerial Order no. 353 of 7 April 2015 on the Bachelor's Degree Programme in Web Development. Link to the Ministerial Order (in Danish):
https://www.retsinformation.dk/forms/R0710.aspx?id=169171

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The overview shows the interrelation of the core areas, optional programme elements, internship and the main exam project.

2. Core areas of the programme

The study programme covers the following core areas of study

- Web development (bridging course),
  - Back end programming (10 ECTS) or
  - Front end programming (10 ECTS)

- Development environments (10 ECTS)
- Databases (10 ECTS)
- Interface design (10 ECTS)

40 ECTS credits total

2.1. Content and learning objectives for the core area: Web programming (bridging course) – backend programming

Contents
The purpose of this core area is to develop students' competencies to develop contemporary web applications using programming paradigms and taking advantage of current, standardised protocols and the possibilities of the client/server model.

ECTS credits
10 ECTS

Learning outcomes

Knowledge
Upon completion of the course, students should have acquired knowledge about:

- design patterns
- fundamental protocols of the World Wide Web
- the advantages and limitations of client/server architecture.

Skills
Upon completion of the course, students should have acquired the skills to:

- create web-based programs
- apply basic programming principles
- use web APIs
- document program structures.

Competencies
Upon completion of the course, students should have acquired the competencies to:

- analyse a development request with a view to constructing a web-based application
- select and apply suitable programming technologies for developing web-based applications — mainly focusing on the server side.

2.2. Content and learning objective for the core area: Web programming (bridging course) – frontend programming

Contents
The purpose of this core area is to develop students' competencies to develop contemporary web applications using programming paradigms and taking advantage of current, standardised protocols and the possibilities of the client/server model. Furthermore, students should develop an understanding of basic design and visual communication. This core area should also enable students to design simple user interfaces using aesthetic and communicative principles.

ECTS credits
10 ECTS

Learning outcomes

Knowledge
Upon completion of the course, students should have acquired knowledge about:

- fundamental protocols of the World Wide Web
- advantages and limitations of client/server architecture
- particular characteristics, weaknesses and strengths of different media
- communication strategies.

Skills
Upon completion of the course, students should have acquired the skills to:

- program and implement a dynamic web application
- master basic design principles
- apply theories on user friendliness and the skills to plan and conduct user tests
- document program structures.

Competencies
Upon completion of the course, students should have acquired the competencies to:

- analyse a development request with a view to constructing a web-based application
- select and apply suitable programming technologies for developing web-based applications — mainly focusing on the client side.

2.3. Content and learning objectives for the core area: Development Environments

Contents
The purpose of this core area is to develop students' competencies in making a qualified choice of and applying a given development environment.

ECTS credits
10 ECTS

Learning outcomes

Knowledge
Upon completion of the course, students should have acquired knowledge about:

- integrated development environments (IDE) and their advantages and limitations

- common programming languages in a web context
- quality assurance and version control of applications in a web context
- types of content management systems and frameworks and their suitability in a web context
- criteria for selection of Content Management Systems or frameworks
- selection of relevant database technology for developing applications in a web context.

Skills
Upon completion of the course, students should have acquired the skills to:

- apply Content Management Systems or frameworks for developing applications in a web context
- use an integrated development environment when developing applications in a web context.

Competencies
Upon completion of the course, students should have acquired the competencies to:

- select a Content Management System or framework for developing applications for a given development assignment.

2.4. Content and learning objectives for the core area: Databases

Contents
The purpose of this core area is to develop students' competencies in analysing and applying relevant data-processing models.

ECTS credits
10 ECTS

Learning outcomes

Knowledge
Upon completion of the course, students should have acquired knowledge about:

- at least one widely-used modelling language for data modelling
- distributed databases and their prevalence and use in web contexts
- describing problems concerning data exchange and the use of data formats in developing in web contexts.

Skills
Upon completion of the course, students should have acquired the skills to:

- apply data models for development and maintenance in web contexts
- apply complex database queries

- apply transactions
- embed business logic in the database layer
- use data formats for data integration.

Competencies
Upon completion of the course, students should have acquired the competencies to:

- analyse and select the tasks that would be suitably placed in the database layer and those that should be placed in the application layer
- analyse and select a database technology/technologies that will resolve a given development task in a web context suitably.

2.5. Content and learning objectives for the core area: Interface Design

Contents
The purpose of this core area is to develop students' competencies to enter complex usage scenarios and independently take part in the design process concerning the design of complex user interfaces.

ECTS credits
10 ECTS

Learning outcomes

Knowledge
Upon completion of the course, students should have acquired knowledge about:

- common interface design development methods
- human-computer interaction
- communication theory.

Skills
Upon completion of the course, students should have acquired the skills to:

- create convenient user interfaces adapted to relevant target groups based on the theory and methods of the relevant subject area
- apply design methods pertaining to visual design, interaction design and information architecture when designing user interfaces, including prototyping
- work on the development of communications solutions across platforms and media.

Competencies
Upon completion of the course, students should have acquired the competencies to:

- analyse choices of devices and effects in user interfaces and situate these choices in a context
- manage design processes based on analysis and planning
- take part in complex usage situations and independently manage
- the design process when designing complex user interfaces.

3. Compulsory proeducational components within the core areas of the study programme

The study programme's compulsory educational elements

1. Web development (bridging course),
    a. Back end programming (10 ECTS) or
    b. Front end programming (10 ECTS)
2. Development environments (10 ECTS)
3. Databases (10 ECTS)
4. Interface design (10 ECTS)

40 ECTS credits total

The four compulsory educational components are equivalent to the four core areas of study, have the same name, contents, are worth the same number of ECTS credits and have the same learning objectives.

The four compulsory educational components are all finalised by examination.

Assessment
Each examination is assessed and graded according to the 7-point grading scale and is worth 10 ECTS credits.

The learning objectives for the educational component are identical to the learning objectives for the examination.

For the examination type and exam procedure, please see the institutional section of this Curriculum.

3.1. Number of examinations for the compulsory educationsl components

The four compulsory educational components are each finalised by a single examination. See the examinations for the study programme in the "Examination schedule" section.

ECTS credits for the core areas and the compulsory educational components are shown in the schedule below.

Compulsory educational components	**Web development (bridging course), Back end programming or back Front end programming**	**Development environments**	**Databases**	**Interface design**	
Core areas of study					
Web development (bridging course), back end programming or front end programming	10 ECTS				**10 ECTS**
Development environments		10 ECTS			**10 ECTS**
Databases			10 ECTS		**10 ECTS**
Interface design				10 ECTS	**10 ECTS**
Total ECTS credits	**10 ECTS**	**10 ECTS**	**10 ECTS**	**10 ECTS**	**40 ECTS**

4. Internship

The internship is organised in order to contributes, in combination with the other elements of the study programme, to the student's development of practical competencies. The purpose of the internship is to enable the student to apply the methods, theories and tools acquired during the course of the study programme in the solution of specific, practical tasks in web development.

ECTS credits
15 ECTS

Learning outcomes
Knowledge
Upon completion of the course, students should have acquired knowledge about:

- daily operations in the whole of the internship host company.

Skills
Upon completion of the course, students should have acquired the skills to:

- apply versatile technical and analytical working methods related to the occupation
- evaluate practical problems and propose possible solutions
- structure and plan daily tasks relevant to the occupation
- communicate and convey practical problems and issues and well-argued solution proposals.

Competencies
Upon completion of the course, students should have acquired the competencies to:

- manage the practical and discipline-related situations of the occupation
- acquire new knowledge, skills and competencies related to the occupation
- take a professional approach to professional and multidisciplinary collaboration with others.

The internship is finalised by examination.

The learning objectives for the educational component are identical to the learning objectives for the examination.

For the examination type and exam procedure, please see the institutional section of this Curriculum.

5. Bachelor's degree project

ECTS credits
15 ECTS

Requirements for the bachelor's degree project

In the bachelor's degree project, the student must demonstrate the ability to process a complex, practise-related problem related to a specific web development task in an analytical and methodical way. The problem statement, which must be central to the education and the profession, must be formulated by the student, in collaboration with a private or public company or business if possible. The educational institution must approve the problem statement.

The student must submit a project report and in some cases also a product.
The project report, which makes up the written element of the examination, must as a minimum contain the following:

- cover page with title
- contents
- introduction including problem statement
- research method
- analysis
- solution proposals

- conclusion
- reference list (including all sources that are referred to in the project)
- appendix (only including appendices that are central to the report).

The maximum allowed length of the report is 20 standard pages + 20 standard pages per student.

The cover page, table of contents, reference list and appendices are not included in the required number of pages. Appendices are not assessed.
One standard page is 2,400 characters including spaces and foot notes.

Writing and spelling skills
Writing and spelling skills will be assessed as part of the assessment and grading of the final degree project. The assessment is expressed as an overall assessment of the professional and academic content as well as the student's spelling and writing skills.

Students may apply for an exemption from the requirement that spelling and writing skills form part of the assessment criteria if the application is supported by documentary evidence of a specific, relevant physical or mental impairment The application should be submitted to the study programme and directed to the attention of the programme director not later than 4 weeks before the exam is to be held.

Learning outcomes
The bachelor's degree project is to demonstrate that the student has achieved the expected level of graduate competence, please see Schedule 1 to Ministerial Order no. 353 of 7 April 2015 on the Bachelor's Degree Programme in Web Development.

Knowledge
Upon completion of the course, graduates should have acquired knowledge of:

- the formal and de facto standardisation of the World Wide Web
- the Word Wide Web's standards as a platform for applications
- development environments for web development
- Content Management Systems
- the role of web applications in society and its development, and
- common development methods in web development, and graduates should be able to reflect on the suitability of such methods for different development scenarios.

Skills
Upon completion of the course, students should have acquired the skills to:

- plan and develop applications based on specific development requests
- evaluate and select a suitable programming language for the performance of development requests
- evaluate and select a suitable database system to ensure data and application persistence
- create user interfaces adapted to relevant target groups based on the theory and methods of the relevant subject area

- create user interfaces that make use of the World Wide Web's particular possibilities in terms of design and aesthetics
- prepare documentation – adapted to the target audience and to the extent of the project – of the functionality and development process of a project, and
- use a suitable development environment to perform the development process.

Competencies
Upon completion of the course, students should have acquired the competencies to:

- handle complex situations aimed for progression in web development
- take a professional approach to disciplinary and multidisciplinary collaboration with others.
- identify their learning needs and structure their learning in different learning environments.

Assessment
The examination is externally assessed and will be graded according to the 7-point grading scale.
The exam is made up of a project and an oral examination. The student will receive a single, joint grade for the written project and the oral examination. The exam cannot take place until the internship exam and the other exams of the study programme have been passed.
For the examination type and exam procedure, please see the institutional section of this Curriculum.

6. Overview of examinations and their timing

Overview of all examinations and their timing:

Examination	90 ECTS credits distributed across exams	Assessment
1. Possible academic aptitude examination[1]	-	Pass/fail
2. Web development (bridging course), Back end programming (10 ECTS) or Front end programming (10 ECTS)	10	7-point grading scale
3. Development environments (10 ECTS)	10	7-point grading scale
4. Databases (10 ECTS)	10	7-point grading scale
5. Interface design (10 ECTS)	10	7-point grading scale

1. If an academic aptitude examination is held, the examination will be described in the institutional section of this Curriculum.

6. Elective component examination(s)[2]	20	7-point grading scale
7. Internship examination	15	7-point grading scale
8. Bachelor's degree project	15	7-point grading scale

7. Credit

Programme elements that have been passed are equivalent to similar programme elements at other educational institutions where the programme is offered.

Students are obligated to supply information about programme elements they have passed at other Danish or foreign institutions of higher education and any employment assumed to give credits. The educational institution approves credits individually on the basis of passed programme elements and employment that equals the subjects, programme parts and internship elements. The decision is based on an academic evaluation.

7.1. Credit for elective programme elements

Elective elements that have been passed are equivalent to similar programme elements at other educational institutions that offer the programme as well as other programmes.

7.2. Prior credit approval

Students can apply for prior credit approval. With prior credit approval of studies in Denmark or abroad, students are required to document each approved and completed programme element. In connection with applying for prior credit approval, the students give the institution permission to obtain the necessary information after completion.

Upon approval of the prior credit approval, the programme element is considered completed if it is passed according to the rules of the programme.

7.3. Credit schemes

See the institution website.

8. Admission to the programme

If all applicants applying for the education cannot be admitted for reasons of capacity, one or more of the following criteria will be considered important (not listed in order of priority):

2. The elective component(s) and the related examination(s) are described in the institutional section of this Curriculum.

- the grade average from the completed education that allows the applicant to apply for admission to the study programme
- the applicant's previous experience relevant to the study programme
- a personal talk where the applicant's motivation and academic ability will be identified.

9. Rules of exemption

The educational institution may grant exemption from those rules in the national section of this Curriculum that were laid down solely by the educational institutions, when exemption is substantiated by exceptional circumstances. The educational institutions co-operate on a uniform exemption practice.

10. Effective date and transition regulations

This institutional section of this Curriculum comes into effect on 01 August 2015 and applies to all students who are and will be registered for the programme and to all examinations commenced on said date or thereafter.

Any transition regulations applying to students registered for studies prior to August 2015 can be found in the institutional section of this Curriculum.