



One year study programme: Software System Development

Available as: Open Distance Learning courses in English (ca 60 ECTS credits) <http://itfag.hist.no/public/fag/alleEngFag.jsp>

No	Name	ECTS credits	Prequalifications	Status
LO173D	Programming with Java	6		Operative in Norw., Eng. and Greek as ODL
LO192D	Intermediate Programming	6	LO173D	Operative in Norw., Eng. and Greek as ODL
LV198D	Web-programming with JSP	6	(LO173D or LV196D) and HTML-experience	Operative in Norw. and Eng. as ODL
LV517D	XML technology	6	Basic ICT. Some programming and HTML experience	Operative in Norw. and Eng. as ODL
LV248D	Practical Linux	6		Operative in Norw. and Eng. as ODL.
LO325D	Databases	6		Operative in Norw., Eng. and Greek as ODL
LV339D	Object-Oriented Software Engineering	6	Background in programming and system development	Operative in Norw. as ODL
LO117D	Algorithmic methods	6	LO192D or LV196D	Operative in Norw. as ODL
SO332D	Software Quality	6	Background in object oriented programming	Operative as Campus course in Norw. Transl to Eng started
LV196D	Object oriented programming with C++	12	Basic knowledge in C/C++	Operative in Norw and Eng. as ODL
LV337D	Database Management	6	LO325D	Operative in Norw. as ODL. Transl. to Eng started
LO176D	Database server programming	6	LO325D	Operative in Norw. as ODL. Transl. to Eng started
LV379D	Digital image processing	6	Basic ICT experience. Some interest in math.	Operative in Norw. and Eng. as ODL

Status: **Green:** Operativ in Eng. **Yellow:** To be translated to Eng. 2006-2007

Suggested study plans:

Alternative 1: Java as programming language Prequalifications: minor Total ECTS credits: 60				Alternative 2: C++ as programming language Prequalifications: Basic knowledge in C/C++ Total ECTS credits: 60			
1.sem	2.sem	3.sem	4.sem	1.sem	2.sem	3.sem	4.sem
LO173D	LO192D	LO117D	LO176D	LV196D	LO117D	LO176D	LV517D
LO325D	LV338D	SO332D	LV517D	LO325D	LV337D	SO332D	LV379D
LV248D	LV198D	LV339D	LV379D	LV248D	LV198D	LV339D	

LV517D XML technology and LV379D Digital Image Analysis could be used as optional courses in both study plan alternatives.

Also available in English but not as part of the Software Syst. Development programme:

LV463D Lan Management, LV374D Internet publishing

LO464D Linux Server Management (6 ECTS-credit points each, totally 18 ECTS-credit points)



Software System Development

Course description:

LO173D Programming with Java

6 ECTS credit pts.

Content: Theory of object-orientation: classes, class hierarchies, objects, encapsulation etc. Java syntax: Data types, conditions, iterations, expressions. Input and output. Arrays. Collaboration between objects.

Literature: Else Lervik and Vegard B. Havdal: "Programming with Java" (the last edition).

LO192D Intermediate Programming

6 ECTS credit pts.

Content: UML class diagrams with associations and generalisation. How to implement these things in Java. Inheritance and polymorphism. Array-lists. Data files and streams. The event model. GUI(Swing)-components. Layout Managers. User dialogues.

Literature: Lervik & Havdal: Java the UML Way, Wiley 2002.

LV198D Web-programming with JSP

6 ECTS credit pts.

Content: Getting and installing a web-server. Client vs. server programming. Client side validation with JavaScript. HTML forms. GET/POST. Processing HTML form information. JSP: Expressions, scriptlets, servlets, declarations, predefined variables, handling exceptions. Storing state information in cookies or by session objects. Data files at the server side. Databases. Working with the Recordset object. Using SQL from a JSP program. Use of Java classes. Comparing JSP to servlets.

LV517D XML technology

6 ECTS credit pts.

Content: What is XML and practical use of XML. XML in browsers, XHTML, DTD, XML Schema, CSS, XSLT, DOM, SVG and XML together with other technics

Literature: Lessons and a textbook

LV248D Practical Linux

6 ECTS credit pts.

Content: Use of programs and commands, and adaption of these to user level. Install and configure Linux on own PC. Partition of disk for several operating systems. Installation of X Windows and applications as Emacs, C-compiler, TCP/IP. Configuration av network connections and printers. Shell-programming and configuration on user and system level. Create users and groups. Processes, administration of processes. Files and catalogues, links, access rights. Distributed filesystems via NFS. Configuration of X Windows. Simple system administration of own workstation: diskett-drive, CD-ROM, run-level, booting of Linux. Security, password. User-id, superuser, setuid etc.

Literature: Learning materials delivered through the Internet.

LO325D Databases

6 ECTS credit pts.

Content: After accomplishing this course, the student should be able to implement a database on the basis of data models, to use a relevant database management system, to use SQL, to have knowledge about client/server - architecture and concurrency control.

Literature: DATABASE SYSTEMS, A Practical Approach to Design, Implementation, and Management, Third Edition, Thomas Connolly, Carolyn Begg, Addison Wesley, ISBN 0-201-70857-4

LV339D Object Oriented Software Engineering

6 ECTS credit pts.

Content: Development processes. Modelling. UML. Tools. Object-oriented analysis and design. Components. Design patterns. Software architecture. Implementation and testing.

Literature: Craig Larman: Applying UML and Patterns, ISBN 0-13-148906-2 3rd edition.

LO117D Algorithmic methods

6 ECTS credit pts.

Norwegian title: Algoritmske metoder.

Content: Algorithms, complexity, sorting, graphs, various data structures

Literature: Hafting & Ljosland: "Algoritmer og datastrukturer"

SO332D Software Quality

6 ECTS credit pts.

Content: Quality. TQM. Strategy to obtain quality standards, ISO 9000 for software. Quality certification. Best practices for software development. Validation and verification. Measurements and metrics. Configuration management. Quality planning.

Literature: Tore Berg Hansen and Greta Hjertø: Kvalitet og programvareutvikling, ISBN 82-05-31143-9 (in norwegian)

LV196D Object Oriented Programming in C++

12 ECTS credit pts.

Norwegian title: Object Oriented Programming in C++.

Content: Constructors. Destructors. Pointers as data members. Operator overloading. Inheritance and polymorphism. Data files. Templates. Intro. to STL. Exceptions. How to implement a UML class diagram in C++.

Literature: Deitel & Deitel: C++ How to Program, 5.Ed. Prentice Hall 2005.

LV337D Database Management

6 ECTS credit pts.

Content: Installing a MySQL database server, system catalog, distributed systems, privileges, backup, performance, transactions

Literature: Paul DuBois: MySQL, The definitive guide to using, programming, and administering MySQL 4.1 and 5.0, Third Edition, Developer's Library, ISBN 0-672-32673-6

LO176D Database server programming

6 ECTS credit pts.

Content: Declarations, blocks, IF-statements, loops, stored procedures, triggers, exceptions, cursors, userdefined functions, packages, objecttypes, objecttables, varray, nested tables, references, abstract datatypes, methods.

LV379D Digital Image Processing

6 ECTS credit pts.

Content: Introduction to visual perception, image formation and optical parameters, image acquisition and image output. Image processing: image enhancement, image restoration, image manipulation and image compression. Introduction to image analysis: segmentation, image representation and description. Short introduction to Computer graphics. Applications. Some practical use of two Software packages, Adobe PhotoShop, AP, and DynamicImager, DI, in connection with exercises given, will be necessary.

Literature: Ketil Bø., 2005. Compendium: Introduction to digital imaging. Gonzalez and Woods: Digital Image Processing, Addison-Wesley Publishing Company (2002).

LV463D LAN Management

6 ECTS credit pts.

Content: The course will consider the following topics: 1. Communication media in use with LAN 2. LAN design 3. Network components - hubs, switches, routers, etc 4. General information about different kinds of 5. Network Operating Systems 6. Novell NetWare and Windows 2000/2003. Configuration, installation and administration 8. Security 9. The printing environment

Literature: Arne B. Mikalsen: Local Area Network - Management, design and security, Wiley & Sons, 2002.

LO464D Linux Server Management

6 ECTS credit pts.

Content: This course will consider services like WWW (Apache), e-mail, FTP, Samba, DNS (Bind), news and other services. Service administration on a more general level and administration of security are also important topics. LINUX multi-user environment will also be considered.