KURSPLANSUNDERLAG COURSE SYLLABUS

Applied Object Oriented Design

Tillämpad Objektorienterad Design

6 credits (6 högskolepoäng)

**Course code:** **PA1482**

**Main field of study:  
Disciplinary domain:**

**Education level:**

**Specialization:**

**Language of instruction:**

**Applies from:**

**Approved:**

**Discontinued:**

Only xx should be replaced with other text.

# **Decision**

# **Entry requirements**

For admission to the course 6 credits completed in programming are required.

# **Objective and content 3.1. Objective**

**The purpose of the course is to offer knowledge in object oriented design applied in an object oriented programming language, in part for further software engineering studies and in part to be able to solve generic programming tasks as an industry professional.**

# **3.2. Content**

* Object Oriented Programming in Java
* Overview of Object Oriented Programming in C++
* Basic Input and Output
* Basic Exception handling
* Object Oriented Analysis and Design
* Objects and Classes
* Methods and Constructors
* Interaction between Objects, Relations between Classes
* Collections of Objects
* Inheritance and Polymorphism
* Fundamental design principles such as low coupling, high cohesion, encapsulation.
* Structuring of Classes and Packages
* Object Oriented Design Patterns

# **Learning outcomes** The following learning outcomes are examined in the course:

# **4.1. Knowledge and understanding**

# On completion of the course, the student will be able to:

# **In depth explain basic concepts and techniques in object oriented programming and design.**

# **Understand and in depth explain design and program code for a simple object oriented system.**

# **4.2. Competence and skills**

# On completion of the course, the student will be able to:

# **Structure a problem solution for a smaller system witht he help of classes and present it in a class diagram.**

# **Apply design patterns to create a maintainable object oriented design.**

* **Implement a small object oriented system according to a specific design.**
* **Use the standard libraries for the programming language.**

# **4.3. Judgement and approach**

# On completion of the course, the student will be able to:

# **Analyse and discuss a design and program code for potential improvements.**

# **Learning activities**

**Teaching consists of lectures and lab sessions. The lectures cover central concepts, techniques, and methods within object oriented design and programming. The lab sessions intend to offer understanding of how concepts, techniques, and methods can be applied in practice.**

# **Assessment and grading** Modes of examinations for the course

# The names of the examination components are to comply with BTH’s approved document (located at the bottom of the page). If the examination step needs to be clarified, this can be done under the heading “5. Learning activities ".

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Module | Credit | Grade |
| XXX | sv. **xx**  eng. **Laboratory Session** | **5** credits | **A-F** |
| XXX | sv. **xx**  eng. **On-Campus Examination** | **1** credits | **A-F** |
| XXX | sv. **xx**  eng. **xx** | **x** credits | **A-F** or **G-U** |
| XXX | sv. **xx**  eng. **xx** | **x** credits | **A-F** or **G-U** |
| XXX | sv. **xx**  eng. **xx** | **x** credits | **A-F** or **G-U** |

Information about modules and grading can be specified here xx (can be excluded)

The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Insufficient, supplementation required, F Fail.

To get a passing grade for the course, all modules must be approved. The final grade for the course is calculated as the weighted average of the grades for all the modes of examination.

The information before a course occasion states the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

An examiner can, after consulting the Disability Advisor at BTH, decide on a customized examination form for a student with a long-term disability to be provided with an examination equivalent to one given to a student who is not disabled.

# **Course evaluation** The course evaluation should be carried out in line with BTH:s course evaluation template and process.

# **Restrictions regarding degree** The course can form part of a degree but not together with another course the content of which completely or partly corresponds with the contents of this course. *Or* The course cannot be included in the degree.

# **Course literature and other materials of instruction**

* **Barnes, Kolling "Objects First with Java", Sixth Edition, Pearson 2016. ISBN (Global Edition): 978-1-292-15904-1**
* **Freeman & Robson "Head First Design Patterns", 2nd Edition, O'Reilly 2020. ISBN: 9781492078005**

**Language of instruction**\*

Select one of the options below and delete the other option.

The language of instruction is English.

# **Additional information**

xx (can be excluded)

\* If learning materials or parts thereof may be in a language other than the stated language of instruction

it must be stated under the heading Additional information **or under the heading Learning activities**. The same applies if a guest lecture in a language other than the stated language of instruction may occur.

Kursplansunderlaget skickas till [institutionsstod@bth.se](mailto:institutionsstod@bth.se)

Former för bedömning och examinerande moment/Modes of Assessment and Assessed Components

Angivna examinationsmoment är de som ska användas i BTH:s kursplaner enligt beslut D364/21, BTH-4.6.4.1-0876-2021. The specified modes of assessment are those to be used in BTH's syllabuses according to decision D364/21, BTH-4.6.4.1-0876-2021.

Svensk benämning/In Swedish Engelsk benämning/In English

Basgruppsarbete PBL Group Work

Bebyggelseanalys Building Analysis

Flerfasexamination Multiphase Summative Assessment

Hemtentamen Take-home Examination

Inlämningsuppgift Written assignment

Klinisk examination Clinical Summative Assessment

Laboration Laboratory Session

Läkemedelsberäkning Pharmaceutical calculation

Muntlig tentamen Oral examination

Nationellt prov- del 1 - del 2 - praktiskt prov National examination Part 1, Part 2; Practical

Examination

Opposition Public Discussion and Examination

Portfölj Portfolio

Praktiskt moment Practical Component

Presentation Presentation

Projekt Project

Projektförslag Project Proposal

Projektplan Project Plan

Projektuppgift Project Assignment

Rapport Report

Salstentamen On-campus Examination

Seminarium Seminar

Självständigt arbete (examensarbete) Independent Project (Degree Project) Undersökning Investigation

Uppsats Essay/Thesis[1](#_bookmark0)

Verksamhetsförlagd utbildning (VFU) Placement

Workshop Workshop

Försvar Defence

Metod Method

Teori Theory

1 Essay: first-cycle; Thesis: second-cycle