

Course

ELEC-A7151

Course materials

Your points

Code

Code Vault

Course Pages

MyCourses

Teams Channel

This course has already ended.
The latest instance of the course can be found at: [Object oriented programming with C++: 2023 Autumn](#)

In this course, the principles and concepts of the object oriented programming in C++ programming language are covered.

- The course is mainly conducted as self-study, and the students are required to go over the the following material, and do the defined exercises, and submit their solutions into this system.
- Recommended books for additional information:**
 - Stanley B. Lippman, Josée Lajoie, Barbara E. Moo: **C++ Primer** (5th edition). Addison-Wesley (2013)
 - Bjarne Stroustrup: **The C++ Programming Language** (4th edition). Addison-Wesley (2013)
- Additional resources**
 - Online C++ reference: <http://www.cplusplus.com/>
- The students will also be assigned a C++ programming project that will be done in a group.
- Assistance is available in exercise sessions on the Exercise Channel of Course Teams.
- Click on the links below to access the module contents, and see the exercises.

Getting Started

Friday, 10 September 2021, 07:59 – Friday, 31 December 2021, 19:59

- Development environment
- Exercises
- Common problems

Module 1: Basics

Tuesday, 14 September 2021, 07:59 – Friday, 8 October 2021, 19:59

- Introduction
- Namespaces
- I/O streams 15 / 15
- Strings and vectors 25 / 25
- Classes and objects 55 / 55
- Round feedback 5 / 5

Module 2: Containers

Tuesday, 14 September 2021, 08:00 – Friday, 8 October 2021, 19:59

- Introduction
- Sequential containers
- Iterators 65 / 65
- Associative Containers
- Summary on containers
- Algorithms 30 / 30
- Round feedback 5 / 5

Module 3: Classes and Object-oriented Programming

Friday, 24 September 2021, 19:59 – Friday, 8 October 2021, 19:59

- Introduction
- Object-oriented programming
- Object relationships in C++ 15 / 15
- Operator Overloading 30 / 30
- Dynamic Memory in C++ 25 / 25
- More about dynamic memory 25 / 25
- Round feedback 5 / 5

Module 4: Organization and Utility Constructs

Friday, 1 October 2021, 19:59 – Friday, 15 October 2021, 19:59

- Introduction
- I/O in C++ 50 / 50
- Generic programming using templates 20 / 20
- Smart pointers and resource management 25 / 25
- Round feedback 5 / 5

Module 5: Advanced Topics

Monday, 4 October 2021, 19:59 – Friday, 22 October 2021, 19:59

- Introduction
- Exception handling 70 / 70
- Lambda expressions 20 / 20
- Learning environment survey 5 / 5
- Round feedback 5 / 5

Module 6: Software Projects

Monday, 18 October 2021, 07:59 – Friday, 17 December 2021, 19:59

- Introduction
- Project guidelines
- Project topics and descriptions
- Recommended libraries

Software development tools

Tuesday, 14 September 2021, 08:00 – Friday, 17 December 2021, 19:59

- Built automation tools
- Software libraries
- Git
- Valgrind

The course grade will be a weighted average from the following:

- Exercises (45%):** max. 500 points out of the five modules (max. 100 points each), min. 250 points, at least three modules must have 50 points or more
- Software project (45%):** Project is done as a group. Group will share the project grading, but individual adjustments may be done based on individual contribution within the group.
- Peer evaluations (10%):** Group members will conduct peer evaluations of each others’ work, and peer evaluation of own group’s individual effort.

All three of the above components need to be passed at an acceptable level. When computing the grade, a normalized subgrade between 0 and 5.5 will be calculated from each of the above three categories. The final grade will be a weighted average of the three subgrades, rounded to the nearest integer. The exact equation for calculating the grade is provided in the course syllabus.

questionnaire

30 / 30

submit

470 / 470