

COURSE CONTENT – ENGINEERING AND TECHNOLOGY TRACK

(updated 9.9.2022)

Orientation to Academic Studies, 2 ECTS

Description

This course is designed for helping you to get started with the Pathway to Finland program and higher education studies. The course introduces you to study skills that are essential for academic success, including time management, independent study, goal setting, and working in teams. During the course, you will get familiar with the digital learning platform, Claned, as well as other tools that are commonly used in studies at Finnish higher education institutions. You will also prepare your personal study plan and set learning goals for the upcoming semester.

Dates

1s period

Learning Outcomes

After completing the course, you are expected to know what academic study skills are and how to improve them know how to manage independent study and how to stay motivated be able to use the online learning platform and other tools commonly used in higher education studies know how to set personal learning goals understand different learning strategies and how to apply them.

Modes of study

Zoom classes, self-study and course assignments.

Assessment - Grading scale: pass-fail

To pass the course, you need to go through all materials on Claned, complete the course assignments, and participate in the online classes (minimum attendance is 80 % unless agreed otherwise).

Preparatory Mathematics, 5 ECTS

Description



- Recap, revision and review of the key concepts of secondary and high school mathematics needed in university studies in engineering and technology.
- The main topics are mathematical operations, fractions, decimals and percentages, algebra, statistics and probability and mathematical models.

Dates

1s period

Learning Outcomes

After completing the course, the student is expected to

- have an intermediate understanding of the following: mathematical operations, fractions, decimals and percentages, algebra, basic statistics and probability and mathematical models.
- have mathematical skills equivalent to the level of high school / upper secondary graduates in the destination country.

Modes of study

Videos and study materials.

Assessment and Grading scale

pass – fail based on course work and exam

Academic Communication: Reading and Writing, 5 ETCS

Description

The course is for intermediate ESL students and focuses on improving students' ability to read and write academic texts in English. It is designed to build writing skills through authentic readings and a multi-drafting process approach to writing, in order to prepare for academic work in English. Reading exercises in this course focus on comprehension, vocabulary development, and study skills. Writing exercises review paragraph organization and focus on essay construction as well as the use of formal English grammar. During the course, students will become familiar with different types of academic texts and learn how to summarize and critically evaluate them. Students will learn the basic elements of academic writing, and how to produce structured academic texts, using academic referencing. During the course, students will attend interactive online classes, and complete different reading and writing exercises. Students will also



have an opportunity to learn from each other as they will be giving and receiving peer feedback on their writing.

Dates

1st period

Mode of study

Real-time online classes, reading comprehension exercises, short written assignments, peer feedback.

Assessment

Grading scale: 1-5

Academic Communication: Speaking and Listening, 5 ETCS

Description

The course focuses on developing English speaking and listening skills needed for academic study in a higher education setting. During the course, students will improve their communication skills through different activities, such as group discussions, debates and presentations. Students will also complete different listening comprehension exercises and learn how to apply different listening strategies. Self-assessment is used during the course to help students to track their progress. Students will identify their personal challenges and reflect their learning on a learning diary.

Dates

2nd period

Mode of study

Real-time online classes, online discussions, listening comprehension exercises, presentation

Assessment

Grading scale: 1-5

Physics for Engineering, 4 ECTS

Description



This course is an introduction course to engineering physics. The course is designed to provide students with a basic understanding of core topics in physics that are essential for further studies in different engineering fields. During the course, students will learn about the following: Mechanics, Electricity and Magnetism, Thermal Physics, and Waves and Optics. The course focuses on developing students' problem-solving skills and teaches them to apply knowledge of physics to practical real-world situations. This course emphasizes peer learning and encourages students to working groups. The course also aims to develop required working skills like the use of internet to find useful information, formulate questions and help, and return assignments within deadlines.

Dates

2nd period

Modes of study

Online classes, individual assignments, group work assignment, exercises, quizzes, final exam.

Assessment

Grading scale: 0-5

Introduction to Computer Science, 3 ECTS

Description

This course is an entry-level introduction course to computer science. The course aims to orientate students to computational approaches to thinking and problem-solving. The course introduces students to the following concepts: computers and applications, data structures, algorithms, programming, cloud computing, robotics, and artificial intelligence. During the course, students will also work on a hands-on Python project. This course emphasizes peer learning and encourages students to working groups. The course also aims to develop required working skills like the use of internet to find useful information, formulate questions and help, and return assignments within deadlines.

Dates

2nd period



Content

1. Introduction and Python language
2. Version control
3. Project (Python)
4. Review and final exam

Modes of study

Online classes, individual assignments, group work assignment, exercises, quizzes, final exam.

Assessment

Grading scale: 0 - 5

Mathematics for Engineering, 6 ECTS

Description

This course covers some of the mathematical topics that are common for all engineering disciplines. Students will learn about the following topics: functions, complex numbers, vectors, matrices, linear transformations, systems of linear equations, differential calculus and integral calculus. The course focuses on developing students' problem-solving skills and teaches them to apply knowledge of mathematics to practical real-world situations. This course emphasizes peer learning and encourages students to working groups. The course also aims to develop required working skills like the use of internet to find useful information, formulate questions and help, and return assignments within deadlines.

Dates

2nd period

Modes of study


Online classes, video lectures, exercises, online conversations with peers, final exam.




Course material

- Material delivered within the online platform; classroom notes; Internet sources





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Climate Action – Solutions for Carbon Neutral Transport (LUT students), 2 ECTS

This course is a MOOC organized by LUT, students progressing to LUT are to take this course.

