SUSTAINABLE DESIGN ENGINEERING

Bachelor of Engineering in MECHANICAL ENGINEERING

Structure of studies	ECTS
Basic studies	90
Professional studies	75
Optional studies	30
Practical training	30
Thesis	15
Sum	**240**

1st Academic Year

"GETTING ENGINEERING BASIC SKILLS AND TOOLS & DESIGNER-ATTITUDE"

Autumn 2024

Engineering Tools 1	**15**
Introduction to Mathematical Sciences	5
Physics	5
ICT-tools	5

Working Life Skills for Engineers	**15**
Finnish A1	5
English Professional Skills B2	5
Introduction to Higher Education Studies	5

Spring 2025

Engineering Tools 2 - 15 ECTS	**15**
Engineering Precalculus	5
Technical Drawing and 3D Modelling	5
Heat and Electricity	5

Design Skills 1 - 15 ECTS	**15**
User-centered Design Approach	5
Visualization, Prototyping and Ideation	7
Designer CAD 1	3

Recommended optional studies	
Occupational Safety	1
Hot work safety education and training	1
Finnish A2	5

Summer 2025

Basic Training	**10**

2nd Academic Year

"DEEPENING MECHANICAL ENGINEERING SKILLS & INTRODUCTION TO SUSTAINABLE DEVELOPMENT"

Autumn 2025

Sustainable Perspective in Engineering	**15**
SUSTIS Sustainable Development Project	3
Introduction to Life Cycle Assessment	2
Material science for mechanical engineering	5
Production Technology	5

Engineering Tools 3 - 15 ECTS	**15**
Calculus	5
Engineering Mechanics	5
Product documentation	5

Spring 2026

Working Life Skills for Engineers 2	**15**
Finnish for engineers A2 / B2	5
Design of Machine Elements	5
Strength of Materials	5

Optional module, includes Finnish language	**15**
Finnish B1	5

Summer 2026

Field-Specific Training	**10**

3rd Academic Year

"SPECIALIZING IN ENGINEERING AND SUSTAINABLE DESIGN INNOVATION"

Autumn 2026

Optimal Design and Control - 15 ECTS	**15**
Computational Design of Structures and Fluid-thermal Systems	6
Robust and Optimal Control	4
Optimal Design and Control Project	5

Project Skills and Entrepreneurship	**15**
Innovation project	10
Entrepreneurship and Sustainable Business	5

Spring 2027

Design Skills 2 - 15 ECTS	**15**
Digital Visualization	5
Designer CAD 2	5
Prototyping	5

Optional module, includes Finnish language	**15**
Finnish B2	5
Finnish C1	5

Summer 2027

Professional Training	**10**

4th Academic Year

"CO-CREATING SUSTAINABLE DESIGN ENGINEERING FOR THE FUTURE TRANSITIONS"

Autumn 2027

Future Co-Design	**15**
Service Design	5
Design for Circular Economy	5
Future Co-design Project	5

Spring 2028

Optional Studies etc. if left

Thesis	**15**