

# Bachelor of Engineering in MECHANICAL ENGINEERING, specialization in SUSTAINABLE DESIGN ENGINEERING

## PMECES25

Structure of studies	ECTS
Basic studies	90
Professional studies	75
Optional studies	30
Practical training	30
Thesis	15
<b>Sum</b>	<b>240</b>

### 1st Academic Year

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

##### Autumn 2025

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 2026

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

Fundamentals of Sustainable Development	1
Occupational Safety	1
Hot work safety education and training	1
Finnish A2	5

##### Summer 2026

Basic Training	10
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### 2nd Academic Year

#### "DEEPENING MECHANICAL ENGINEERING SKILLS & INTRODUCTION TO SUSTAINABLE DEVELOPMENT"

##### Autumn 2026

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 2027

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 2027

Field-Specific Training	10
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### 3rd Academic Year

#### "SPECIALIZING IN ENGINEERING AND SUSTAINABLE DESIGN INNOVATION"

##### Autumn 2027

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 2028

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 2028

Professional Training	10
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### 4th Academic Year

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

##### Autumn 2028

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

##### Spring 2029

Optional Studies etc. if left

Thesis	15
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