

## **Bachelor of Engineering, Automation Engineering 240 ECTS**

### **BASIC STUDIES COMMON TO ALL IN SEAMK 20 ECTS**

#### **Building competence 10**

Studying at a University of Applied Sciences 2 ECTS

Career planning and internationalisation 2 ECTS

Communication Skills 3 ECTS

ICT Skills 3 ECTS

#### **Business and entrepreneurship competence 5**

Business and Entrepreneurship 3 ECTS

SeAMK Innovation Week 2 ECTS

#### **Research and Project Work Skills 5 ECTS**

Introduction to Research and Development 2 ECTS

Introduction to Project Work 3 ECTS

### **BASIC STUDIES FOR ENGINEERING STUDENTS 35 ECTS**

#### **Mathematics 14 ECTS**

Algebra and geometry 4 ECTS

Vectors and matrices 3 ECTS

Differential and integral calculus 3 ECTS

Automation technology mathematics 4 ECTS

#### **Physics 12 ECTS**

Mechanics 3 ECTS

Electrical and thermal physics 3 ECTS

Physics laboratory works 3 ECTS

Wave motion and modern physics 3 ECTS

Language Studies 9-18

For All Students 6 ECTS

Working Life English 3 ECTS

Professional English 3 ECTS

For Non Finnish students 12 ECTS

Finnish 1, 3 ECTS

Finnish 2, 3 ECTS

Finnish 3, 3 ECTS

Finnish 4, 3 ECTS

For Finnish students 3 ECTS

KL00CG76 Swedish 3 ECTS

COMMON PROFESSIONAL STUDIES 130 – 136 ECTS

Basics of Professional Studies 32 ECTS

Basics of Automation 3ECTS

Sensor Technology 3ECTS

Programmable Logic Controllers 3ECTS

Electrical Engineering 4ECTS

Electrical Safety and Standards 3ECTS

Data Communication and Security 4ECTS

Micro Computer Technology 3ECTS

Basics of Programming 1 3ECTS

Basics of Digital Technology 3ECTS

Basics of Electronics 3ECTS

Professional Studies Modules Select 98 – 104 ECTS

Production automation 19 ECTS

Machine automation 1 4ECTS

Laboratory Assignments in automation 1 4ECTS

Robotics 4ECTS

Production Management 4 ECTS

3D-CAD 3ECTS

Design of Electrical System 12 ECTS

Design of Electrical and Automation system 4ECTS

Laboratory Assignments in Control Systems 3ECTS

Safety in Electrical Installation 2ECTS

Electric Drives 3 ECTS

Process automation 11 ECTS

Measuring Technology and Instrumentation 3 ECTS

Control Engineering 3 ECTS

Hydraulics and Pneumatics 2 ECTS

Components of Control Systems 3 ECTS

Industrial Internet of Things 15 ECTS

Databases 3ECTS

Network Programming 3ECTS

Basics of Industrial Internet of Things 3ECTS

Cloud Computing 3ECTS

Introduction to Artificial Intelligence 3 ECTS

Electronics 10 ECTS

Advanced Electronics 3 ECTS

Laboratory Assignments in Electronics 3ECTS

Embedded Systems 4ECTS

Information Technology 23 ECTS

Data Structures and Algorithms 4ECTS

Virtual Environments 3ECTS

Software Engineering 3 ECTS

Client-side Programming 3ECTS

Server-side Programming 3ECTS

Object-oriented Programming 4ECTS

User interface Design 3ECTS

Elective Professional Studies 8 – 14 ECTS

C++ Programming 3 ECTS

Digital Signal Processing 3 ECTS

Machine Automation 2, 4 ECTS

Laboratory Assignments in Automation 2, 4 ECTS

+ other courses

PRACTICAL TRAINING 30 ECTS

Practical Training 1, 15ECTS

Practical Training 2, 15ECTS

BACHELOR'S THESIS 15ECTS

Thesis 15ECTS

ELECTIVE STUDIES 10 ECTS