


 **Location:** Campus Villach
Europastraße 4, 9524 Villach


 **Duration:** 4 semesters

 **Schedule:**
Tue., Thu., Sat.

 **Academic Degree:**
Master of Science in Engineering (MSc)

 **ECTS Credits:** 120

 **Language:** English

 **Study places per year:** 20



Today's engineers deal less with single components that can be clearly assigned to the areas of mechanics or electronics, but more and more with complex and cross-curricular systems. Coping with such complex systems likewise requires an interdisciplinary training that enables graduates to systemically solve problems. The degree programme Systems Design allows students to gain in-depth technical knowledge in the areas of specialization listed below.

COURSE INFORMATION

Systems Design is dedicated to designing and implementing complex technical systems with special regards to a holistic design in an earlier phase of planning and conceptualizing. The focus of the degree programme is the training of self-dependent engineers who have special knowledge in areas such as Embedded Systems, Mechatronics, IT or Control Engineering. A common in-depth training in system theory, mathematics, computer science, signal analysis and control technology is followed by one of five specializations:

- Control Systems (COS)
- Embedded Systems (EMS)
- Mechatronic Systems (MES)
- Remote Systems (RES)
- Sensor Systems (SSY)

JOBS AND CAREER

Graduates work as planning, development, system, plant and production engineers as well as in management and leading positions. Occupational areas cover all the respective technological applications. Their areas of activities include:

- Automation technology
- Industrial engineering
- Automotive technology
- Communications and computer technology
- Microelectronics
- Medicine and environment technology
- Electrical engineering
- Mechatronics/robotics

CURRICULUM

1 st Semester	SCH	ECTS
Scientific English	2	2
Data Science Experimental Lab	2	2
Advanced Mathematics	3	4,5
Control Systems 1	2,5	3,5
Control Systems Lab 1	2	3
System Theory	3	4
Signal Analysis Lab	2,5	3,5
Computer Engineering	3	5
Nonlinear Systems	2	2,5
Total	22	39

2 nd Semester	SCH	ECTS
Data Science Analysis Lab	2	2
Applied Statistics	2,5	4
Applied Signal Processing	2	3
DAQ and Transmission	1,5	2
Modern Sensor Applications	1,5	2
Sensor Models	1,5	3
Control Systems:	SCH	ECTS
Control Systems Lab 2	3	4
Control Systems 2	2	3
Process Identification	2	3
Mechanical Principles	3	4
Embedded Systems:	SCH	ECTS
Peripheral Interfacing	1	3
Partial Differential Equations	2	2,5
Field Numerics	2	3
Electromagnetic Fields	1	1,5
Microcontroller Special Topics	2	2
Filter Design	2	2

3 rd Semester	SCH	ECTS
Control Systems:		
Control Systems Special Topics 1	2	3
Computational Aspects of CSD	1	2
Computer Process Control	1	2
Control Systems Special Topics 2	2	3
Dynamic Models and Simulation	2	3
Embedded Control Systems Special Topics	2	3
Motion Control	1	2
Drive Control	2	2
Robot Dynamics	2	3
Robot Control	2	2
Robotics Lab	1	2
Nonlinear Control Systems	2	3
Embedded Systems:	SCH	ECTS
Embedded Software Systems	1	2
DSP Applications	2	3
High-Speed Board Design	2	2,5
PCB Simulation	2	2,5
RF Measurements	1	2
Discrete and Integrated Power Electronics	2	3
Real-Time Systems Special Topics	3	5
Wireless Communication Principles	3	4
Advanced Communication Systems	2	3
Digital Design	2	3

4 th Semester	SCH	ECTS
Master Thesis	0	25
Master Thesis – Seminar	2	2
Master Exam	0	3
Total	2	30

1 st Semester	SCH	ECTS
Data Science Analysis Lab	2	2
Applied Statistics	2,5	4
Applied Signal Processing	2	3
DAQ and Transmission	1,5	2
Modern Sensor Applications	1,5	2
Sensor Models	1,5	3
Control Systems:	SCH	ECTS
Control Systems Lab 2	3	4
Control Systems 2	2	3
Process Identification	2	3
Mechanical Principles	3	4
Embedded Systems:	SCH	ECTS
Peripheral Interfacing	1	3
Partial Differential Equations	2	2,5
Field Numerics	2	3
Electromagnetic Fields	1	1,5
Microcontroller Special Topics	2	2
Filter Design	2	2
Mechatronic Systems:	SCH	ECTS
Numerical Methods Basics	1	2
Computational Physics	2	2,5
Finite Elements	2	2,5
Mechanical Principles	3	4
Physics (Selected Topics)	2	3
Remote Systems:	SCH	ECTS
Internet Technologies	2	3
Digital Image Processing	2	3
Remote Applications and Trends	1	1
Databases and Networks	2	2,5
Design of Electronic Documents	1	2
Human Machine Interfaces	2	2,5
Sensor Systems:	SCH	ECTS
Data Evaluation	1,5	3
Sensor Networks	1,5	2
Process Analytical Technology	2,5	4
Filter Design	2	2
Physics (Selected Topics)	2	3
Total	21	39

2 nd Semester	SCH	ECTS
Control Systems:		
Control Systems Special Topics 1	2	3
Computational Aspects of CSD	1	2
Computer Process Control	1	2
Control Systems Special Topics 2	2	3
Dynamic Models and Simulation	2	3
Embedded Control Systems Special Topics	2	3
Motion Control	1	2
Drive Control	2	2
Robot Dynamics	2	3
Robot Control	2	2
Robotics Lab	1	2
Nonlinear Control Systems	2	3
Embedded Systems:	SCH	ECTS
Embedded Software Systems	1	2
DSP Applications	2	3
High-Speed Board Design	2	2,5
PCB Simulation	2	2,5
RF Measurements	1	2
Discrete and Integrated Power Electronics	2	3
Real-Time Systems Special Topics	3	5
Wireless Communication Principles	3	4
Advanced Communication Systems	2	3
Digital Design	2	3

3 rd Semester	SCH	ECTS
Control Systems:		
Control Systems Special Topics 1	2	3
Computational Aspects of CSD	1	2
Computer Process Control	1	2
Control Systems Special Topics 2	2	3
Dynamic Models and Simulation	2	3
Embedded Control Systems Special Topics	2	3
Motion Control	1	2
Drive Control	2	2
Robot Dynamics	2	3
Robot Control	2	2
Robotics Lab	1	2
Nonlinear Control Systems	2	3
Embedded Systems:	SCH	ECTS
Embedded Software Systems	1	2
DSP Applications	2	3
High-Speed Board Design	2	2,5
PCB Simulation	2	2,5
RF Measurements	1	2
Discrete and Integrated Power Electronics	2	3
Real-Time Systems Special Topics	3	5
Wireless Communication Principles	3	4
Advanced Communication Systems	2	3
Digital Design	2	3

4 th Semester	SCH	ECTS
Master Thesis	0	25
Master Thesis – Seminar	2	2
Master Exam	0	3
Total	2	30

1 st Semester	SCH	ECTS
Data Science Analysis Lab	2	2
Applied Statistics	2,5	4
Applied Signal Processing	2	3
DAQ and Transmission	1,5	2
Modern Sensor Applications	1,5	2
Sensor Models	1,5	3
Control Systems:	SCH	ECTS
Control Systems Lab 2	3	4
Control Systems 2	2	3
Process Identification	2	3
Mechanical Principles	3	4
Embedded Systems:	SCH	ECTS
Peripheral Interfacing	1	3
Partial Differential Equations	2	2,5
Field Numerics	2	3
Electromagnetic Fields	1	1,5
Microcontroller Special Topics	2	2
Filter Design	2	2
Mechatronic Systems:	SCH	ECTS
Numerical Methods Basics	1	2
Computational Physics	2	2,5
Finite Elements	2	2,5
Mechanical Principles	3	4
Physics (Selected Topics)	2	3
Remote Systems:	SCH	ECTS
Internet Technologies	2	3
Digital Image Processing	2	3
Remote Applications and Trends	1	1
Databases and Networks	2	2,5
Design of Electronic Documents	1	2
Human Machine Interfaces	2	2,5
Sensor Systems:	SCH	ECTS
Data Evaluation	1,5	3
Sensor Networks	1,5	2
Process Analytical Technology	2,5	4
Filter Design	2	2
Physics (Selected Topics)	2	3
Total	21	39

2 nd Semester	SCH	ECTS
Control Systems:		
Control Systems Special Topics 1	2	3
Computational Aspects of CSD	1	2
Computer Process Control	1	2
Control Systems Special Topics 2	2	3
Dynamic Models and Simulation	2	3
Embedded Control Systems Special Topics	2	3
Motion Control	1	2
Drive Control	2	2
Robot Dynamics	2	3
Robot Control	2	2
Robotics Lab	1	2
Nonlinear Control Systems	2	3
Embedded Systems:	SCH	ECTS
Embedded Software Systems	1	2
DSP Applications	2	3
High-Speed Board Design	2	2,5
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RF Measurements	1	2
Discrete and Integrated Power Electronics	2	3
Real-Time Systems Special Topics	3	5
Wireless Communication Principles	3	4
Advanced Communication Systems	2	3
Digital Design	2	3

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Control Systems:		
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Dynamic Models and Simulation	2	3
Embedded Control Systems Special Topics	2	3
Motion Control	1	2
Drive Control	2	2
Robot Dynamics	2	3
Robot Control	2	2
Robotics Lab	1	2
Nonlinear Control Systems	2	3
Embedded Systems:	SCH	ECTS
Embedded Software Systems	1	2
DSP Applications	2	3
High-Speed Board Design	2	2,5
PCB Simulation	2	2,5
RF Measurements	1	2
Discrete and Integrated Power Electronics	2	3
Real-Time Systems Special Topics	3	5
Wireless Communication Principles	3	4
Advanced Communication Systems	2	3
Digital Design	2	3

4 th Semester	SCH	ECTS
Advanced Process Control	2	3
Sensor Data Fusion	1,5	2
Sensor Implementation	1,5	2
Chemical Sensors	1,5	2,5
Mechanical, Electrical and Thermal Sensors	2	3
Optical Sensors	1,5	2,5
Applied Image Processing	2	3
Optical Sensors Systems Design	3	5
Reliability and Security of Sensor Systems	2	3
Packaging of Sensors	1,5	2
System Optimization	1,5	2
Total	20	30

4 th Semester	SCH	ECTS
Master Thesis	0	25
Master Thesis – Seminar	2	2
Master Exam	0	3
Total	2	30

Total SCH: 65 ECTS: 120

SCH = Semester Credit Hour
ECTS = European Credit Transfer System

DATES

Start: October 2021

Study Info Lounge: always on the second Tuesday of the month from 2 to 6 o'clock p.m. - ONLINE

FH Days and information events:
all dates at www.fh-kaernten.at/fhday

COSTS

Tuition fee: € 363.36 per semester

Student Union Fee: around € 20, annual adjustment

CONTACT

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