Field of study: Automatic Control and Robotics

Contact persons:

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Institute of Automatic Control and Robotics

Automatic control and robotics, 1st degree studies – BSc

Descriptions of modules (ECTS cards) available by clicking on the course name

No.	Code	Name of Module	ECTS
Semester 1 (winter semester)			
1	S1AiR1E>MatI	Mathematics I (E)	8
2	S1AiR1E>MatII	Mathematics II (E)	6
3	S1AiR1E>PTI	The elements of computer science techniques	3
4	S1AiR1E>Inf1	Information engineering (E)	8
Semester 2 (summer semester)			
1	S1AiR1E>Inf2	Information engineering [cont.]	2
2	S1AiR1E>TO1	Electrical engineering (circuits theory) (E)	7
3	S1AiR1E>WDMI	Selected topics in mathematics I	2
4	S1AiR1E>WDMII	Selected topics in mathematics II	2
5	S1AiR1E>Fiz1	Physics (E)	3
6	S1AiR1E>MiWM	Theoretical mechanics and mechanics of materials (E)	5
7	S1AiR1E>SiSD1	Signals and dynamic systems (E)	4
Semester 3 (winter semester)			
1	S1AiR1E>TO2	Electrical engineering (circuits theory) [cont.]	2
2	S1AiR1E>Fiz2	Physics [cont.]	2
3	S1AiR1E>SiSD2	Signals and dynamic systems [cont.]	2
4	S1AiR1E>Elektr1	Electronics	5
5	S1AiR1E>PO5-ASysSter	Analysis of control systems	5
6	S1AiR1E>SCR1	Real-time systems (E)	3
7	S1AiR1E>MiNEwA1	Electrical machines and drives in control engineering (E)	3
Semester 4 (summer semester)			
1	S1AiR1E>Elektr2	Electronics (E) [cont.]	4
2	S1AiR1E>PO5-ASysSter	Analysis of control systems	5
3	S1AiR1E>SCR2	Real-time systems [cont.]	2
4	S1AiR1E>MiNEwA2	Electrical machines and drives in control engineering [cont.]	2
5	S1AiR1E>Rob1	Robotics	2
6	S1AiR1E>SM1	Microprocessor systems	4
7	S1AiR1E>ANE1	Control of electrical drives (E)	3
8	S1AiR1E>Metr	Metrology	4
Semester 5 (winter semester)			
1	S1AiR1E>Rob2	Robotics (E) [cont.]	5
2	S1AiR1E>SM2	Microprocessor systems (E) [cont.]	5

3	S1AiR1E>ANE2	Control of electrical drives [cont.]	2
4	S1AiR1E>EiUA	Devices of automation and actuators (E)	5
5	S1AiR1E>IOS	System identification (E)	5
6	S1AiR1E>TSPCiD1	Control theory of the continuous and discrete events processes	1
7	S1AiR1E>PUEiE	Electronical and electrical circuits designing	2
8	S1AiR1E>PO1-AwBI	EC1: Intelligent buildings and building automation	5
9	S1AiR1E>PO1-PRiPZ	EC1: Robot programming and task planning	5
Semester 6 (summer semester)			
1	S1AiR1E>TSPCiD2	Control theory of the continuous and discrete events processes (E) [cont.]	5
2	S1AiR1E>SPiRC	Digital controllers and PLC (E)	6
3	S1AiR1E>PP	Term design	6
4	S1AiR1E>PO2-SUiPE	EC2: Control of motion and electrical vehicles (E)	5
5	S1AiR1E>PO2-KM	EC2: Mechanical constructions (E)	5
6	S1AiR1E>PO3-SiRSS	EC3: Networks and distributed control systems	5
	S1AiR1E>PO3-RL	Flying robots	5
Semester 7 (winter semester)			
1	S1AiR1E>PO4-ZSW	EC4: Flexible manufacturing systems (E)	5
2	S1AiR1E>PO4-WdSI	EC4: Foundation of artifical inteligence (E)	5
3	S1AiR1E>PO5-ASysSter	EC5: Analysis of control systems	5
4	S1AiR1E>PO5-NiOdSR	EC5: Tools and software for robotic systems	5

Automatic control and robotics, 2nd degree studies – MSc

Descriptions of modules (ECTS cards) available by clicking on the course name

No.	Code	Name of Module	ECTS
Semester 1 (summer semester)			
1	S2AiR1E-ISLiSA>SA	Adaptive control	4
2	S2AiR1E-ISLiSA>UN	Nonlinear systems	4
3	S2AiR2-ISA>SB	Sensorless systems	4
4	S2AiR2-SiiB>SiTK	Spaceships and space technologies	4
5	S2AiR2-ISA>NwPMUiR	Drives in processes, machines, plants and robots	4
6	S2AiR2-ISA>FPGA	FPGA control system algorithm implementation	3
7	S2AiR1E-ISLiSA>IS	Sensor integration	3
8	S2AiR2-ISAiR>SW	Vision Systems	3
9	S2AiR2-RiSA>MiAPR	Motion planning methods and algorithms	4
10	S2AiR1E-ISLiSA>PSA	Fundamentals of autonomous systems	4
11	S2AiR2-ISA>TMiCH	Mobile and cloud technologies	4
12	S2AiR2-ISA>SwiSwA	Vision and spectral systems in automation	2
Semester 2 (winter semester)			
1	S2AiR1E-ISLiSA>RL	Aerial robots	3
2	S2AiR1E-ISLiSA>NUS	Nonlinear control systems	4
3	S2AiR1E-ISLiSA>ASRL	Control of flying robots	4
4	S2AiR2-ISA>FPGA	FPGA control system algorithm implementation	3
5	S2AiR1E-ISLiSA>APL	Flight planning	3
6	S2AiR2-RiSA>ARL	Autonomous aerial robots	3
7	S2AiR2-RiSA>ARM	Autonomous mobile robots	4

8	S2AiR2-ISA>PO2-PZI	Designing advanced HMI and M2M interfaces	3
9	S2AiR2-ISA>TIS	Intelligent control engineering design	3
10	S2AiR2-ISA>SAIO	Adaptive and robust control	4
11	S2AiR2-RiSA>PO1-KSS	Computer Control Systems	3
12	S2AiR2-RiSA>ZPO	Advanced computer vision	4
13	S2AiR2-ISA>PBP	Research and Problem Laboratory	2
14	S2AiR2-ISA>PO1-SPN	Elective course 1:Control of nonlinear processes	4
15	S2AiR2-ISA>PO1-ZMISA	Elective course 1:Advanced identification methods for control systems	4
16	S2AiR2-RiSA>PO2-WZG	Elective course 2:3D grapfics and visualization	3
17	S2AiR2-RiSA>PO2-MPB	Elective course 2:Business process modeling	3
18	S2AiR2-ISA>PO3-MPB	Elective course 3:Business process modeling	2
19	S2AiR2-ISA>PO3-PSRUE	Elective course 3:Precise motion control of electromechanical systems	2
Semester 3 (summer semester)			
1	S2AiR2-RiSA>AS	Autonomous cars	3
2	S2AiR2-ISA>FPGA	FPGA control system algorithm implementation	3
3	S2AiR2-ISA>SB	Sensorless systems	4
4	S2AiR2-ISA>ISPiS	Intelligent measurement and control systems	3
	S2AiR2-ISA>SSTU	Fault-tolerant control systems	3
	S2AiR2-ISA>PPM	Preparation of the thesis	20
	S2AiR2-ISA>SD	Diploma seminar	2
	S2AiR1E-ISLiSA>O1-PS	Elective course 1: Design of multi-agent systems	4
	S2AiR1E-ISLiSA>O1-SU	Elective course 1: Control of under-actuated systems	4
	S2AiR2-RiSA>PO3-ICM	Elective course 2: Human-Machine Interfaces in Robotics	3
	S2AiR2-RiSA>PO3-SW	Elective course 2: Embedded systems and edge computing	3

Field of study: Electrical Engineering

Contact person:

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Institute of Electrical Engineering and Electronics

Electrical Engineering, 1st degree studies – BSc

Descriptions of modules (ECTS cards) available by clicking on the course name

No.	Code	Name of Module	ECTS
Semester 1 (winter semester)			
1	S1Eltech1>TO1	Circuits theory (E) (Teoria obwodów)	6
2	S1Eltech1>GiGI	Geometry and engineering graphics (Geometria i grafika inżynierska)	3
3	S1Eltech1>Inf1	Information Engineering (Informatyka)	2
Semester 2 (summer semester)			
1	S1Eltech1>Inf2	Information technology (E) (Informatyka)	4

2	S1Eltech1>MN	Numerical methods (Metody numeryczne)	3
3	S1Eltech1>TO2	Circuits theory (E) (Teoria obwodów)	8
4	S1Eltech1>Metr1	Metrology (Metrologia)	2
Semester 3 (winter semester)			
1	S1Eltech1>ME1	Electrical machines (Maszyny elektryczne)	2
2	S1Eltech1>Inf3	Information engineering (Informatyka)	1
3	S1Eltech1>Metr2	Metrology (E) (Metrologia)	4
4	S1Eltech1>TPE	Electromagnetic field theory (E) (Teoria pola elektromagnetycznego)	5
5	S1Eltech1>MiM1	Mechanics and mechatronics (Mechanika i mechatronika)	2
Semester 4 (summer semester)			
1	S1Eltech1>ME2	Electrical machines (E) (Maszyny elektryczne)	6
2	S1Eltech1>EiE2	Electronics and power electronics (E) (Elektronika i energoelektronika)	4
3	S1Eltech1>MiM2	Mechanics and mechatronics (Mechanika i mechatronika)	1
4	S1Eltech1>KPwE1	Computerization of the designing in the electrical engineering (E) (Komputeryzacja projektowania w elektrotechnice)	2
Semester 5 (winter semester)			
1	S1Eltech1>TM	Microprocessor technology (E) (Technika mikroprocesorowa)	4
2	S1Eltech1>OZE	Renewable energy sources (Odnawialne źródła energii)	2
3	S1Eltech1>EiE3	Electronics and power electronics (Elektronika i energoelektronika)	2
4	S1Eltech1>WdT	Introduction to telecommunications (Wprowadzenie do telekomunikacji)	3
5	S1Eltech1>Optoel1	Optoelectronics (Optoelektronika)	1
6	S1Eltech1>KPwE2	Computerization of the designing in the electronics (Komputeryzacja projektowania w elektrotechnice)	1
Semester 6 (summer semester – regular courses)			
1	S1Eltech1>Optoel2	Optoelectronics (Optoelektronika)	1
2	S1Eltech1>ET	Technical electrodynamics (Elektrodynamika techniczna)	3
Semester 6 (summer semester – elective courses)			
1	S1Eltech1>A-UEiEwP	Elective course A: Electrical and electronic systems in vehicles (E) (Przedmiot obieralny A:Układy elektryczne I elektroniczne w pojazdach)	4
2	S1Eltech1>A-PPO	Elective course A: Fundamentals of lighting design (E) (Przedmiot obieralny A:Podstawy projektowania oświetlenia)	4
3	S1Eltech1>A-AiCUE	Elective course A: Analog and digital electronic circuits (E) (Przedmiot obieralny A: Analogowe i cyfrowe układy elektroniczne)	4
4	S1Eltech1>B-PLCwPiS	Elective course B: PLC controllers and SCADA systems in measurement and control (Przedmiot obieralny B: Sterowniki PLC i systemy SCADA w pomiarach i sterowaniu)	3

5	S1Eltech1>B-CADwPCOT	Elective course B: CAD systems in digital prototyping of technical objects (Przedmiot obieralny B: Systemy CAD w prototypowaniu cyfrowym obiektów technicznych)	3
6	S1Eltech1>C-SCADAwP	Elective course C: SCADA systems and PLCs in industry (Przedmiot obieralny C: Systemy SCADA i sterowniki PLC w przemyśle)	3
7	S1Eltech1>C-KMPiSSM	Elective course C: Computer methods of designing and controlling mechatronic systems (Przedmiot obieralny C: Komputerowe metody projektowania i sterowania systemów mechatronicznych)	3
8	S1Eltech1>C-SiO	Elective course C: Light and Lighting (Światło I oświetlenie)	3
Semester 7 (winter semester – elective courses)			
1	S1Eltech1>D-CADiKE	Elective course D: CAD systems and electromagnetic compatibility (E) (Przedmiot obieralny D: Systemy CAD i kompatybilność elektromagnetyczna)	6
2	S1Eltech1>D-PLCiPLD	Elective course D: PLC logic controllers and PLD programmable systems (E) (Przedmiot obieralny D: Sterowniki logiczne PLC oraz układy programowalne PLD)	6
3	S1Eltech1>E-EiME	Elective course E: Electromobility and energy storage (Przedmiot obieralny E:Elektromobilność i magazyny energii)	5
4	S1Eltech1>E-UEwP	Elective course E: Electronic circuits in practice (Przedmiot obieralny E: Układy elektroniczne w praktyce)	5
5	S1Eltech1>E-EiIUM	Elective course E: Electrical and computer systems of mechatronics (Przedmiot obieralny E: Elektryczne i informatyczne układy mechatroniki)	5
6	S1Eltech1>F-BI	Elective subject F: Intelligent building (Przedmiot obieralny F:Budynek inteligentny)	4
7	S1Eltech1>F-UPEwOZE	Elective subject F: Energy conversion systems in renewable energy sources and electric vehicles (Przedmiot obieralny F: Układy przetwarzania energii w systemach OZE i pojazdach elektrycznych)	4

Electrical Engineering, 2nd degree studies – MSc

Descriptions of modules (ECTS cards) available by clicking on the course name

No.	Code	Name of Module	ECTS
Semester 1 (summer semester)			
1	S2Eltech2>Eltech	Electrical Engineering (Elektrotechnika)	5
2	S2Eltech2>ESN1	Electromechanical propulsion systems (Elektromechaniczne systemy napędowe)	3
3	S2Eltech2>EiE	Electronics and power electronics (E) (Elektronika i energoelektronika)	4
4	S2Eltech2>OZE	Renewable energy sources (Odnawialne źródła energii)	4

5	S2Eltech2-MSSwE>SUE1	Control of power electronic systems (E) (Sterowanie układów energoelektronicznych)	2
6	S2Eltech2-UEPP>BI	Intelligent building (Budynek inteligentny)	2
Semester 2 (winter semester)			
1	S2Eltech2-SNPE>MPiO	Optimisation methods in electromagnetic devices design (Metody projektowania i optymalizacj)	2
2	S2Eltech2>MNwT	Numerical methods in techniques (Metody numeryczne w technice)	2
3	S2Eltech2>TM	Microprocessor technology (Technika mikroprocesorowa)	2
4	S2Eltech2>KE	Electromagnetic compatibility (Kompatybilność elektromagnetyczna)	2
5	S2Eltech2>WZPS	Selected problems of signal processing (Wybrane zagadnienia przetwarzania sygnałów)	2
6	S2Eltech2>ESN2	Electromechanical propulsion systems (E) (Elektromechaniczne systemy napędowe)	2
7	S2Eltech2-MSSwE>SUE2	Control of power electronics systems (Sterowanie układów energoelektronicznych)	1
Semester 3 (summer semester)			
1	S2Eltech2-SNPE>PD	Diploma project (Projekt dyplomowy)	1
2	S2Eltech2-UEPP>TZM	Property security techniques (Techniki zabezpieczenia mienia)	1

Field of study: Mathematics in technology

Contact person:
dr Alina Gleska Institute of Mathematics

Mathematics in technology, 1st degree studies – BSc

Descriptions of modules (ECTS cards) available by clicking on the course name

No.	Code	Name of Module	ECTS
Semester 1 (winter semester)			
1	S1MNT1>ALzGA1	Linear algebra with analitic geometry I	5
2	S1MNT1>AM1	Mathematical Analysis I	9
3	S1MNT1>WdLiTM	Introduction to logic and set theory	3
4	S1MNT1>TI1	Information Technology I	2
5	S1MNT1>WdP	Introduction to programming	4
6	S1MNT1>OM	Math software	4
Semester 2 (summer semester)			
1	S1MNT1>ALzGA2	Linear algebra with analitic geometry II	5
2	S1MNT1>AM2	Mathematical Analysis II	9
3	S1MNT1>PzEUM	Programming with elements of machine learning	5
4	S1MNT1>TI2	Information Technology II	2
Semester 3 (winter semester)			
1	S1MNT1>MN	Numerical methods	6
2	S1MNT1>RP	Theory of probability	5

3	S1MNT1>RRZ	Ordinary differential equations	5
4	S1MNT1>SO	Descriptive statistics	2
Semester 4 (summer semester)			
1	S1MNT1>AA	Abstract algebra	5
2	S1MNT1>ET	Elements of topology	3
3	S1MNT1>SdI	Statistics for Engineers	5