

**"ATTENTION! The ECTS credits and "Basic Science and Engineering" distribution of the courses may change depending on the semester the course is taken. This list shows the current version. Please check your credits achievements via the degree evaluation form. "**

Subject	No	Code	Title	Faculty	First Admit Term			PreviousC ode	First Admit Term		
					After 2013- 2014	After 2013-2014 ECTS Engineering	After 2013-2014 ECTS Basic Science		Before 2013- 2014 ECTS TOTAL	Before 2013-2014 ECTS Engineering	Before 2013-2014 ECTS Basic Science
					ECTS TOTAL						
BIO	301	BIO301	Introduction to Molecular Biology	FENS	7,0	0,0	7,0	-	8	0,0	8,0
BIO	302	BIO302	Techniques in Molecular Bio.	FENS	0,0	0,0	0,0	-	0	0,0	0,0
BIO	303	BIO303	Genetics	FENS	7,0	2,0	5,0	-	6	1,7	4,3
BIO	304	BIO304	Biological Function and Structure	FENS	6,0	1,0	5,0	-	6	1,0	5,0
BIO	306	BIO306	Microbiology	FENS	7,0	0,0	7,0	-	8	0,0	8,0
BIO	308	BIO308	Plant Physiology	FENS	7,0	0,0	7,0	-	6	0,0	6,0
BIO	310	BIO310	Introduction to Bioinformatics	FENS	6,0	0,0	6,0	-	6	0,0	6,0
BIO	321	BIO321	Biochemistry I	FENS	7,0	0,0	7,0	-	8	0,0	8,0
BIO	322	BIO322	Biochemistry II	FENS	5,0	0,0	5,0	-	6	0,0	6,0
BIO	330	BIO330	Environmental Plant Biology	FENS	5,0	0,0	5,0	-	6	0,0	6,0
BIO	332	BIO332	Cell Biology	FENS	7,0	0,0	7,0	-	6	0,0	6,0
BIO	335	BIO335	Analytical Techniques	FENS	6,0	1,0	5,0	-	6	1,0	5,0
BIO	363	BIO363	Ecology	FENS	6,0	0,0	6,0	-	6	0,0	6,0
BIO	366	BIO366	Biophysics: Molecules and Sys.	FENS	0,0	0,0	0,0	-	0	0,0	0,0
BIO	370	BIO370	Mammalian Cell Culture	FENS	7,0	0,0	7,0	-	6	0,0	6,0
BIO	395	BIO395	Internship Project	FENS	5,0	5,0	0,0	-	2,0	2,0	0,0
BIO	401	BIO401	General Biotechnology	FENS	0,0	0,0	0,0	-	0	0,0	0,0
BIO	403	BIO403	Plant Pathology	FENS	5,0	0,0	5,0	-	6	0,0	6,0
BIO	404	BIO404	Plant Biotechnology	FENS	5,0	2,0	3,0	-	6	2,4	3,6
BIO	406	BIO406	Protein Engineering	FENS	6,0	3,0	3,0	-	8	4,0	4,0
BIO	407	BIO407	Multicellular Organization	FENS	5,0	0,0	5,0	-	6	0,0	6,0
BIO	409	BIO409	Mod&Simul. of Biomolecular Proc	FENS	5,0	2,5	2,5	-	6	3,0	3,0
BIO	410	BIO410	Evolution and Ecology	FENS	6,0	0,0	6,0	-	6	0,0	6,0
BIO	415	BIO415	Plant Nutrition	FENS	5,0	0,0	5,0	-	6	0,0	6,0
BIO	421	BIO421	Tissue Engineering	FENS	6,0	6,0	0,0	-	6	6,0	0,0
BIO	423	BIO423	Neurobiology	FENS	6,0	2,0	4,0	-	6	2,0	4,0
BIO	432	BIO432	Analytical Techniques	FENS	6,0	0,0	0,0	-	0	0,0	0,0
BIO	436	BIO436	Cancer Biology	FENS	6,0	2,0	4,0	-	6	2,0	4,0
BIO	444	BIO444	Bioengineering	FENS	6,0	4,0	2,0	-	6	4,0	2,0
BIO	445	BIO445	Plant Tissue Culture Techniques	FENS	7,0	3,0	4,0	-	6	2,6	3,4
BIO	446	BIO446	Biology of Aging	FENS	6,0	1,0	5,0	-	6	1,0	5,0
BIO	447	BIO447	Plant Breeding	FENS	5,0	0,0	5,0	-	6	0,0	6,0
BIO	452	BIO452	Immunology	FENS	6,0	0,0	6,0	-	6	0,0	6,0
BIO	466	BIO466	Biophysics: Molecules and Systems	FENS	6,0	1,0	5,0	-	6	1,0	5,0
BIO	467	BIO467	Signal Transduction	FENS	6,0	1,0	5,0	-	6	1,0	5,0
BIO	468	BIO468	Gene Regulation and Disease	FENS	6,0	2,0	4,0	-	6	2,0	4,0
BIO	480	BIO480	Spc.Top.in Bio.Sci.& Bioeng.	FENS	5,0	0,0	5,0	-	6	0,0	6,0
BIO	481	BIO481	Spc.Top.in Bio.Sci.& Bioeng. II	FENS	5,0	2,5	2,5	-	6	3,0	3,0
BIO	48006	BIO48006	Special Topics in BIO: Gene Regulation and Disease	FENS	6,0	2,0	4,0	-	6	2,0	4,0
CHEM	202	CHEM202	Chemical Kinetics	FENS	7,0	2,0	5,0	MAT202	7	2,0	5,0
CHEM	301	CHEM301	Inorganic Chemistry	FENS	6,0	1,0	5,0	-	6	1,0	5,0
CHEM	302	CHEM302	Analytical Chemistry	FENS	7,0	2,0	5,0	-	8	2,3	5,7
CHEM	369	CHEM369	Chem. of Transformable Mtrl.	FENS	6,0	3,0	3,0	-	6	3,0	3,0
CHEM	405	CHEM405	Electrochemistry	FENS	6,0	2,0	4,0	-	6	2,0	4,0
CS	201	CS201	Introduction to Computing	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	202	CS202	Data Structures	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	204	CS204	Advanced Programming	FENS	6,0	6,0	0,0	-	6	6,0	0,0
DSA	210	DSA210	Introduction to Data Science	FENS	6,0	4,0	2,0	-	6	4,0	2,0
CS	300	CS300	Data Structures	FENS	6,0	5,0	1,0	-	6	5,0	1,0
CS	301	CS301	Algorithms	FENS	6,0	5,0	1,0	-	6	5,0	1,0
CS	302	CS302	Formal Languages and Automata Theory	FENS	6,0	4,0	2,0	-	6	4,0	2,0
CS	303	CS303	Logic and Digital System Design	FENS	7,0	6,0	1,0	-	8	6,9	1,1
CS	305	CS305	Programming Languages	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	306	CS306	Database Systems	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	307	CS307	Operating Systems	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	308	CS308	Software Engineering	FENS	7,0	7,0	0,0	-	8	8,0	0,0
CS	395	CS395	Internship Project	FENS	5,0	5,0	0,0	-	2,0	2,0	0,0
CS	310	CS310	Mobile Computing	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	400	CS400	Logic in Computer Science	FENS	6,0	3,0	3,0	-	6	3,0	3,0
CS	401	CS401	Computer Architectures	FENS	6,0	6,0	0,0	-	8	8,0	0,0
CS	402	CS402	Compiler Design	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	403	CS403	Distributed Systems	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	404	CS404	Artificial Intelligence	FENS	6,0	4,0	2,0	-	6	4,0	2,0
CS	405	CS405	Computer Graphics	FENS	6,0	4,0	2,0	-	6	4,0	2,0
CS	406	CS406	Parallel Computing	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	407	CS407	Theory of Computation	FENS	6,0	4,0	2,0	-	6	4,0	2,0
CS	408	CS408	Computer Networks	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	411	CS411	Cryptography	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	412	CS412	Machine Learning	FENS	6,0	4,0	2,0	-	6	4,0	2,0
CS	414	CS414	Network Science	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	419	CS419	Digital Image and Video Analysis	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	432	CS432	Computer and Network Security	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	436	CS436	Cloud Computing	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	437	CS437	Cybersecurity Practices and Applications	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	438	CS438	Blockchain: Security and Applications	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	439	CS439	Software Verification and Validation	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	442	CS442	Software Design Patterns	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	445	CS445	Natural Language Processing	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	447	CS447	Immersive Systems Development	FENS	6,0	3,0	3,0	-	6	3,0	3,0
CS	449	CS449	Human Computer Interaction	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	450	CS450	Arts and Computing	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	48000	CS48000	Special Topics in CS: Software Design Patterns	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	48001	CS48001	Special Topics in CS: Blockchain: Security and Applications	FENS	6,0	6,0	0,0	-	6,0	6,0	0,0
CS	48002	CS48002	Special Topics in CS: Network Science	FENS	6,0	6,0	0,0	-	6,0	6,0	0,0
CS	48003	CS48003	Special Topics in CS: Parallel Computer Architectures	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	48004	CS48004	Special Topics in CS: Agile Software Development	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	48006	CS48006	Special Topics in CS: Decentralized Finance	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	48007	CS48007	Special Topics in CS: Internet of Things Sensing System	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	48008	CS48008	Special Topics in CS: Malware Analysis and Detection	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	48010	CS48010	Special Topics in CS: Performance Analysis and Engineering	FENS	6,0	6,0	0,0	-	6	6,0	0,0
CS	512	CS512	Machine Learning	FENS	10,0	6,0	0,0	-	10	6,0	0,0
DSA	201	DSA201	Advanced Programming for Data Science	FENS	6,0	3,0	3,0	-	6,0	3,0	3,0
DSA	301	DSA301	Data Visualization	FENS	6,0	3,0	0,0	-	6,0	3,0	0,0
DSA	428	DSA428	Big Data Processing	FENS	6,0	6,0	0,0	-	6,0	6,0	0,0
DSA	395	DSA395	Internship Project	FENS	5,0	5,0	0,0	-	5,0	5,0	0,0
DSA	440	DSA440	Data and Artificial Intelligence (AI) Ethics	FENS	6,0	6,0	0,0	-	6,0	6,0	0,0
DSA	473	DSA473	Time Series and Forecasting Models	FENS	6,0	4,0	2,0	-	6,0	4,0	2,0
DSA	492	DSA492	Graduation Project	FENS	5,0	0,0	0,0	-	5	0,0	0,0
EE	200	EE200	Electronic Circuit Implementations	FENS	2,0	2,0	0,0	-	2	2,0	0,0
EE	202	EE202	Electronic Circuits II	FENS	6,0	6,0	0,0	EL202	8	8,0	0,0
EE	301	EE301	Electromagnetics II	FENS	6,0	6,0	0,0	TE305	6	6,0	0,0
EE	302	EE302	Digital Integrated Circuits	FENS	6,0	6,0	0,0	EL302	8	8,0	0,0
EE	303	EE303	Analog Integrated Circuits	FENS	6,0	6,0	0,0	EL303	6	6,0	0,0
EE	306	EE306	Intr.to Radio Freq.&Microw.Des.	FENS	6,0	6,0	0,0	EL306	6	6,0	0,0
EE	307	EE307	Semiconductor Physics and Devices	FENS	6,0	4,0	2,0	EL204	6	4,0	2,0
EE	308	EE308	Microcomputer Based Sys Design	FENS	7,0	7,0	0,0	EL308	8	8,0	0,0
EE	310	EE310	HW Description Languages	FENS	6,0	6,0	0,0	EL310	8	8,0	0,0
EE	311	EE311	Introduction to Signal Processing and Information Systems	FENS	6,0	5,0	1,0	TE301	6	5,0	1,0
EE	312	EE312	Discrete Signals & Systems	FENS	6,0	5,0	1,0	TE302	6	5,0	1,0
EE	313	EE313	Introduction to Communication Systems	FENS	6,0	5,0	1,0	TE303	6	5,0	1,0
EE	314	EE314	Digital Communications	FENS	6,0	4,0	2,0	TE304	6	4,0	2,0
EE	395	EE395	Internship Project	FENS	5,0	5,0	0,0	-	2,0	2,0	0,0
EE	401	EE401	VLSI Systems Design I	FENS	6,0	6,0	0,0	EL401	8	8,0	0,0
EE	402	EE402	VLSI Systems Design II	FENS	6,0	6,0	0,0	EL402	6	6,0	0,0
EE	403	EE403	Optoelectronics	FENS	6,0	4,0	2,0	EL305	6	4,0	2,0
EE	404	EE404	Int. to Microelectromech. Sys.	FENS	6,0	6,0	0,0	EL404	6	6,0	0,0
EE	405	EE405	Communication Circuits Design	FENS	6,0	6,0	0,0	EL405	6	6,0	0,0
EE	406	EE406	Anten.&Propag.for Wireless Com	FENS	6,0	6,0	0,0	TE402	8	8,0	0,0

Subject	No	Code	Title	Faculty	First Admit Term			PreviousC ode	First Admit Term		
					After 2013- 2014 ECTS TOTAL	After 2013-2014 ECTS Engineering	After 2013-2014 ECTS Basic Science		Before 2013- 2014 ECTS TOTAL	Before 2013-2014 ECTS Engineering	Before 2013-2014 ECTS Basic Science
EE	407	EE407	Microelectronic Fabrication	FENS	6.0	6.0	0.0	EL407	6	6.0	0.0
EE	408	EE408	Modeling of Semicond. Devices	FENS	6.0	4.0	2.0	EL304	6	4.0	2.0
EE	409	EE409	Microwaves	FENS	6.0	6.0	0.0	TE401	6	6.0	0.0
EE	410	EE410	Information and Coding Theory	FENS	6.0	5.0	1.0	TE410	6	5.0	1.0
EE	411	EE411	RF Integrated Circuits	FENS	6.0	6.0	0.0	-	6	6.0	0.0
EE	413	EE413	Wireless Communications	FENS	6.0	4.0	2.0	TE412	6	4.0	2.0
EE	414	EE414	Multimedia Communication	FENS	6.0	6.0	0.0	TE404	6	6.0	0.0
EE	415	EE415	Digital Speech&Audio Process.	FENS	6.0	6.0	0.0	TE405	6	6.0	0.0
EE	417	EE417	Computer Vision	FENS	6.0	5.0	1.0	TE407	8	6.7	1.3
EE	419	EE419	Signal Processing Design and Implementation	FENS	6.0	4.0	2.0	TE409	8	5.3	2.7
EE	440	EE440	Mixed-Signal Integrated Circuits	FENS	6.0	6.0	0.0	-	6	6.0	0.0
EE	444	EE444	Optics	FENS	6.0	5.0	1.0	EL444	6	5.0	1.0
EE	473	EE473	Biomedical Instrumentation	FENS	6.0	4.0	2.0	EL473	6	4.0	2.0
EE	48001	EE48001	Special Topics in EE: Nanoscale Integrated Circuit Design	FENS	6.0	6.0	0.0	-	6	6.0	0.0
EE	48002	EE48002	Special Topics in EE: Sensor Networks	FENS	6.0	6.0	0.0	-	6	6.0	0.0
EE	48004	EE48004	Special Topics in EE: Power Systems Analysis	FENS	6.0	6.0	0.0	-	6	6.0	0.0
EE	48008	EE48008	Special Topics in EE: Heterogeneous Computing and System-on-Chip Design	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENRG	322	ENRG322	Battery Science and Engineering	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ENRG	420	ENRG420	Energy Systems Optimization	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENRG	423	ENRG423	Electric Power Systems: Operation, Technology and Economics	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENRG	424	ENRG424	Cell Design, Modelling and Battery Pack Development	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ENRG	426	ENRG426	Battery Management Systems	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ENS	201	ENS201	Electromagnetics I	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ENS	202	ENS202	Thermodynamics	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ENS	203	ENS203	Electronic Circuits I	FENS	6.0	6.0	0.0	-	8	8.0	0.0
ENS	204	ENS204	Mechanics	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ENS	205	ENS205	Introduction to Materials Science I	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ENS	206	ENS206	Systems Modeling and Control	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ENS	207	ENS207	Introduction to Energy Systems	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ENS	208	ENS208	Introduction to Manufacturing Systems	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENS	209	ENS209	Introduction to Computer Aided Drafting and Solid Modeling	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ENS	210	ENS210	Computational Biology	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ENS	211	ENS211	Signals	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ENS	214	ENS214	Dynamics	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ENS	216	ENS216	Information Systems: A Historical Perspective	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENS	222	ENS222	Intr.to Bio.Cir.&Molec.Machin	FENS	6.0	2.0	4.0	-	6	2.0	4.0
ENRG	301	ENRG301	Energy Sys&Environment	FENS	6.0	3.0	3.0	ENS 301	6	3.0	3.0
ENS	302	ENS302	Technology and Society	FENS	5.0	5.0	0.0	-	6	6.0	0.0
ENS	303	ENS303	Introduction to Space Technology	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ENS	309	ENS309	Computer Aided Engineering	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENRG	315	ENRG315	Energy	FENS	5.0	2.0	3.0	ENS 315	6	2.4	3.6
ENS	409	ENS409	Numerical Analysis	FENS	6.0	4.0	2.0	CS409	6	4.0	2.0
ENS	410	ENS410	Advanced Solid Modeling Techniques	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENS	413	ENS413	Experimental Methods in Nanoscience I	FENS	6.0	0.0	6.0	-	6	0.0	6.0
ENS	414	ENS414	Experimental Methods in Nanoscience II	FENS	6.0	0.0	6.0	-	6	0.0	6.0
ENS	416	ENS416	Intr.to Scanning Probe Microsc	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ENS	48000	ENS48000	Special Topics in FENS: Energy, Supply Chain, Economics ang Geopolitics	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENS	48001	ENS48001	Special Topics in FENS: Materials Selection in Product Design	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENS	48002	ENS48002	Special Topics in FENS: Analysis of Social Networks	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENS	4803	ENS4803	Special Topics in FENS: Nanobiotechnology	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ENS	491	ENS491	Graduation Project (Design)	FENS	2.0	2.0	0.0	-	2	2.0	0.0
ENS	492	ENS492	Graduation Project(Implement.)	FENS	5.0	5.0	0.0	-	2	2.0	0.0
IE	303	IE303	Decision Economics	FENS	6.0	6.0	0.0	MS303	6	6.0	0.0
IE	304	IE304	Product.& Serv.Sys Plan&Design	FENS	6.0	6.0	0.0	MS304	6	6.0	0.0
IE	305	IE305	Simulation	FENS	6.0	5.0	1.0	MS305	6	5.0	1.0
IE	306	IE306	Ergonomics	FENS	5.0	5.0	0.0	MS306	6	6.0	0.0
IE	307	IE307	Work Analysis & Design	FENS	5.0	5.0	0.0	MS307	6	6.0	0.0
IE	309	IE309	Manufacturing Processes I	FENS	6.0	5.0	1.0	MS309	6	5.0	1.0
IE	311	IE311	Operations Research I	FENS	6.0	4.0	2.0	IE301	8	5	3
IE	398	IE398	Integrated Manufacturing Systems- Special Studies	FENS	1.0	1.0	0.0	-	1.0	1.0	0.0
IE	395	IE395	Internship Project	FENS	5.0	5.0	0.0	-	2.0	2.0	0.0
ENS	511	ENS511	Engineering Optimization	FENS	10.0	4.0	2.0	-	10	4.0	2.0
IE	312	IE312	Operations Research II	FENS	6.0	5.0	1.0	-	6	5.0	1.0
IE	313	IE313	Operations Research III	FENS	6.0	4.0	2.0	IE302	8	5.0	3.0
IE	401	IE401	Produc.&Service Sys.Operations	FENS	6.0	6.0	0.0	MS401	6	6.0	0.0
IE	402	IE402	Integrated Manufacturing Sys.	FENS	6.0	6.0	0.0	MS402	8	8.0	0.0
IE	403	IE403	Quality Planning & Control	FENS	6.0	6.0	0.0	MS403	6	6.0	0.0
IE	404	IE404	Digital Transformation	FENS	6.0	5.0	1.0	-	6.0	5.0	1.0
IE	405	IE405	Decision Analysis	FENS	6.0	6.0	0.0	MS405	6	6.0	0.0
IE	407	IE407	Investment Decision Making	FENS	6.0	6.0	0.0	MS407	6	6.0	0.0
IE	408	IE408	Reliability&Maintenance Analy.	FENS	6.0	6.0	0.0	MS408	6	6.0	0.0
IE	409	IE409	Project Scheduling & Managemen	FENS	6.0	6.0	0.0	MS409	6	6.0	0.0
IE	411	IE411	Modeling&Analysis of Large Sys	FENS	6.0	6.0	0.0	MS411	6	6.0	0.0
IE	412	IE412	Financial Engineering	FENS	6.0	6.0	0.0	MS412	6	6.0	0.0
IE	413	IE413	Informations Systems	FENS	5.0	5.0	0.0	MS413	6	6.0	0.0
IE	414	IE414	Manufacturing Strategies	FENS	6.0	6.0	0.0	MS414	6	6.0	0.0

Subject	No	Code	Title	Faculty	First Admit Term			PreviousC ode	First Admit Term		
					After 2013- 2014 ECTS TOTAL	After 2013-2014 ECTS Engineering	After 2013-2014 ECTS Basic Science		Before 2013- 2014 ECTS TOTAL	Before 2013-2014 ECTS Engineering	Before 2013-2014 ECTS Basic Science
IE	415	IE415	Decision Support Systems	FENS	6.0	6.0	0.0	MS415	6	6.0	0.0
IE	416	IE416	Additive Manufacturing	FENS	7.0	7.0	0.0	-	6	6.0	0.0
IE	417	IE417	Facilit.&Material Handling Des	FENS	6.0	6.0	0.0	MS417	6	6.0	0.0
IE	418	IE418	Manufacturing Processes II	FENS	6.0	6.0	0.0	MS418	6	6.0	0.0
IE	419	IE419	Total Quality Management	FENS	5.0	5.0	0.0	MS419	6	6.0	0.0
IE	420	IE420	Storage & Distribution Systems	FENS	6.0	6.0	0.0	MS420	6	6.0	0.0
IE	430	IE430	Logistics Sys&Plan. and Design	FENS	6.0	6.0	0.0	MS430	6	6.0	0.0
IE	432	IE432	Stochastic Models in Finance	FENS	6.0	4.0	2.0	MS432	6	4.0	2.0
IE	436	IE436	Monte Carlo Methods in Finance	FENS	6.0	4.0	2.0	MS433	6	4.0	2.0
IE	451	IE451	Data Visualization&Analysis	FENS	6.0	6.0	0.0	MS451	6	6.0	0.0
IE	454	IE454	Supply Chain Analysis	FENS	6.0	6.0	0.0	MS454	6	6.0	0.0
IE	471	IE471	Supply Chain Practice	FENS	5.0	5.0	0.0	-	5	5.0	0.0
IE	472	IE472	Strategic Decision Making Practice	FENS	5.0	5.0	0.0	-	5	5.0	0.0
IE	480	IE480	Spc.Top.Industrial Eng.	FENS	5.0	5.0	0.0	MS480	6	6.0	0.0
IE	481	IE481	Spc.Top.Industrial Eng.II	FENS	5.0	5.0	0.0	MS481	6	6.0	0.0
IE	482	IE482	Spc.Top.Industrial Eng.III	FENS	5.0	5.0	0.0	MS482	6	6.0	0.0
IE	48001	IE48001	Special Topics in IE: Managing New Product Development	FENS	5.0	5.0	0.0	-	5	5.0	0.0
IE	48002	IE48002	Special Topics in IE: Advanced statistics with R	FENS	6.0	2.0	4.0	-	6	2.0	4.0
IE	48003	IE48003	Special Topics in IE: Multi-axis Machining	FENS	6.0	6.0	0.0	-	6	6.0	0.0
IE	48004	IE48004	Special Topics in IE: Computer-Aided Biomodeling and Fabrication	FENS	6.0	6.0	0.0	-	6	6.0	0.0
IE	48005	IE48005	Special Topics in IE: Digital Manufacturing	FENS	6.0	6.0	0.0	-	6	6.0	0.0
IF	100	IF100	Computational Approaches to Problem Solving	FENS	5.0	5.0	0.0	-	5	5.0	0.0
IF	200	IF200	Fantasy,Reality,Sci.&Society	FENS	6.0	0.0	0.0	-	6	0.0	0.0
ENRG	401	ENRG401	Energy: Supply Chain, Economics and Geopolitics	FENS	6.0	3.0	0.0	IF 401	6	3.0	0.0
IF	301	IF301	Gender in Science and Technology	FENS	6.0	0.0	0.0	-	6	0.0	0.0
IF	333	IF333	Creativity, Innovation and Entrepreneurship	FENS	6.0	0.0	0.0	-	6	0.0	0.0
IF	467	IF467	Decision, Psychology and Brain	FENS	6.0	5.0	1.0	-	6	5.0	1.0
IF	402	IF402	Sustainability and Circularity in Materials	FENS	6.0	2.0	0.0	-	6.0	2.0	0.0
MAT	204	MAT204	Electrical, Optical and Magnetic Properties of Materials	FENS	6.0	2.0	4.0	-	6	2.0	4.0
MAT	206	MAT206	Kinetics of Materials	FENS	6.0	5.0	1.0	-	6	5.0	1.0
MAT	302	MAT302	Polymer Synthesis	FENS	7.0	2.0	5.0	-	8	2.3	5.7
MAT	304	MAT304	Biopolymers	FENS	5.0	2.5	2.5	-	6	3.0	3.0
MAT	305	MAT305	Polymer Engineering I	FENS	5.0	4.0	1.0	-	6	4.8	1.2
MAT	306	MAT306	Computational Techniques for Materials Science	FENS	6.0	4.0	2.0	-	6	4.0	2.0
MAT	307	MAT307	Composite Materials	FENS	7.0	7.0	0.0	-	6	6.0	0.0
MAT	308	MAT308	Phase Equilibria	FENS	5.0	4.0	1.0	-	6	4.8	1.2
MAT	309	MAT309	Transport Phenomena in Materials Processing	FENS	6.0	6.0	0.0	-	6	6.0	0.0
MAT	310	MAT310	Chemical Processes for New Materials	FENS	5.0	4.0	1.0	-	6	4.8	1.2
MAT	312	MAT312	Materials Characterization	FENS	7.0	7.0	0.0	-	8	8.0	0.0
MAT	314	MAT314	Mechanical Properties of Materials	FENS	5.0	4.0	1.0	-	6	4.8	1.2
MAT	395	MAT395	Internship Project	FENS	5.0	5.0	0.0	-	2.0	2.0	0.0
MAT	401	MAT401	Surface Chemistry	FENS	6.0	2.0	4.0	-	6	2.0	4.0
MAT	402	MAT402	Polymer Engineering II	FENS	6.0	5.0	1.0	-	6	4.8	1.2
MAT	403	MAT403	Polymer Processes	FENS	5.0	4.0	1.0	-	6	4.8	1.2
MAT	404	MAT404	Polymer Physics	FENS	5.0	1.0	4.0	-	6	4.8	1.2
MAT	405	MAT405	Advanced Materials Characterization	FENS	7.0	2.0	5.0	-	8	2.3	5.7
MAT	406	MAT406	Introduction to Nanoscience	FENS	5.0	5.0	0.0	-	6	6.0	0.0
MAT	408	MAT408	Introduction to Ceramics	FENS	5.0	4.0	1.0	-	6	4.8	1.2
MAT	416	MAT416	Biomaterials Science and Biocompatibility	FENS	5.0	2.0	3.0	-	6	2.4	3.6
MAT	422	MAT422	Glass Science and Engineering	FENS	6.0	5.0	1.0	-	10	5.0	5.0
MAT	423	MAT423	Cement Chemistry and Technology	FENS	6.0	6.0	0.0	-	6	6.0	0.0
MAT	424	MAT424	Materials Selection in Product Design	FENS	6.0	6.0	0.0	-	6	6.0	0.0
MAT	480	MAT480	Spc.Top.in Mat.Sci&Eng.	FENS	5.0	5.0	0.0	-	6	6.0	0.0
MAT	481	MAT481	Spc.Top.in Mat.Sci&Eng.II	FENS	5.0	5.0	0.0	-	6	6.0	0.0
MAT	48000	MAT48000	Special Topics in Materials Science and Nanoengineering: Adhesion Science and Engineering	FENS	6.0	6.0	0.0	-	6	6.0	0.0
MAT	48003	MAT48003	Special Topics in MAT: Failure Analysis	FENS	6.0	6.0	0.0	-	6	6.0	0.0
MAT	48004	MAT48004	Special Topics in MAT: Polymer Matrix Composites	FENS	6.0	6.0	0.0	-	6	6.0	0.0
MAT	48005	MAT48005	Special Topics in MAT: Polymer Engineering/ Processing Fundamentals	FENS	6.0	6.0	0.0	-	6	6.0	0.0
MATH	101	MATH101	Calculus I	FENS	6.0	0.0	6.0	-	5	0.0	5.0
MATH	102	MATH102	Calculus II	FENS	6.0	0.0	6.0	-	5	0.0	5.0
MATH	201	MATH201	Linear Algebra	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	202	MATH202	Differential Equations	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	203	MATH203	Introduction to Probability	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	204	MATH204	Discrete Mathematics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	206	MATH206	Vector Calculus	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	221	MATH221	History of Mathematics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	301	MATH301	Introduction to Mathematical Analysis	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	302	MATH302	Integration	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	305	MATH305	Complex Calculus	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	306	MATH306	Statistical Modelling	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	307	MATH307	Dynamical Systems	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	311	MATH311	Introduction to Algebra	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	317	MATH317	Elementary Number Theory	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	318	MATH318	Introduction to Combinatorics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	322	MATH322	Partial Differential Equations	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	401	MATH401	Introduction to Functional Analysis	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	402	MATH402	Hilbert Space Techniques	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	405	MATH405	Numerical Methods	FENS	6.0	3.0	3.0	-	6	3.0	3.0
MATH	409	MATH409	Proofs from the Notebook	FENS	6.0	0.0	6.0	-	10	0.0	10.0
MATH	410	MATH410	Introduction to Stochastic Calculus	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	414	MATH414	Finite Fields and Applications	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	479	MATH479	Calculus of Variations	FENS	6.0	0.0	6.0	-	6	0.0	6.0
MATH	480	MATH480	Spc.Top.in Mathematics	FENS	6.0	3.0	3.0	-	6	3.0	3.0
MATH	481	MATH481	Special Topics in Advanced Linear Algebra	FENS	6.0	0.0	6.0	-	6	0.0	6.0
ME	301	ME301	Mechanical Systems I	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ME	302	ME302	Mechanical Systems II	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	303	ME303	Control System Design	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	304	ME304	Motion Control Systems	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	305	ME305	Power Electronics	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	307	ME307	Fluid Dynamics	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ME	308	ME308	Industrial Control	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	309	ME309	Heat and Mass Transfer	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ME	310	ME310	Computer Aided Design	FENS	0.0	0.0	0.0	-	0	0.0	0.0
ME	312	ME312	Analysis and Synthesis of Mechanisms	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	395	ME395	Internship Project	FENS	5.0	5.0	0.0	-	2.0	2.0	0.0
ME	402	ME402	Plasmonics	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ME	403	ME403	Introduction to Robotics	FENS	7.0	6.0	1.0	-	7	6.0	1.0
ME	405	ME405	Mechanical Vibrations	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	406	ME406	Robotics Systems Application	FENS	0.0	0.0	0.0	-	0	0.0	0.0
ME	407	ME407	Embedded Systems	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ME	408	ME408	Mechatronics System Design	FENS	6.0	6.0	0.0	-	8	8.0	0.0
ME	409	ME409	Foundations of Microsystems	FENS	7.0	5.0	2.0	-	6	4.3	1.7
ME	410	ME410	Computer Aided Engineering	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ME	411	ME411	Mechanical System Design	FENS	6.0	5.0	1.0	-	8	6.7	1.3
ME	412	ME412	Introduction to the Finite Element Method	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ME	415	ME415	Computational Analysis and Simulation	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ME	420	ME420	Renewable and Sustainable Energy Systems	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ME	425	ME425	Autonomous Mobile Robotics	FENS	6.0	5.0	1.0	-	6	5.0	1.0
ME	435	ME435	Scaling in Engineering Systems	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ME	437	ME437	Biomechatronics	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ME	441	ME441	Advanced Vehicle Systems	FENS	6.0	6.0	0.0	-	6	6.0	0.0
ME	480	ME480	Spc.Top.Manufact.Sys.Eng.	FENS	5.0	5.0	0.0	-	6	6.0	0.0
ME	480	ME480	Spc.Top.in Mechatronics I	FENS	6.0	4.0	2.0	-	6	4.0	2.0
ME	481	ME481	Spc.Top.Manufact.Sys.Eng.II	FENS	5.0	5.0	0.0	-	6	6.0	0.0
ME	481	ME481	Spc.Top.in Mechatronics II	FENS	6.0	3.0	3.0	-	6	3.0	3.0
ME	482	ME482	Spc.Top.Manufact.Sys.Eng.III	FENS	5.0	5.0	0.0	-	6	6.0	0.0
NS	101	NS101	Science of Nature I	FENS	6.0	0.0	6.0	-	6	0.0	6.0
NS	102	NS102	Science of Nature II	FENS	6.0	0.0	6.0	-	6	0.0	6.0
NS	200	NS200	Einstein's Relativity	FENS	5.0	0.0	5.0	-	6	0.0	6.0
NS	201	NS201	Discovering Life	FENS	6.0	1.0	5.0	-	6	1.0	5.0

Subject	No	Code	Title	Faculty	First Admit Term			PreviousC ode	First Admit Term		
					After 2013- 2014 ECTS TOTAL	After 2013-2014 ECTS Engineering	After 2013-2014 ECTS Basic Science		Before 2013- 2014 ECTS TOTAL	Before 2013-2014 ECTS Engineering	Before 2013-2014 ECTS Basic Science
NS	202	NS202	Biochemistry I	FENS	0.0	0.0	0.0	-	0	0.0	0.0
NS	204	NS204	Quantum Physics	FENS	0.0	0.0	0.0	-	0	0.0	0.0
NS	205	NS205	Dynamics of the Cell	FENS	0.0	0.0	0.0	-	0	0.0	0.0
NS	206	NS206	What is There in the Universe: Inside the Milky Way?	FENS	5.0	0.0	5.0	-	6	0.0	6.0
NS	207	NS207	Organic Chemistry	FENS	7.0	2.0	5.0	-	8	2.7	5.3
NS	208	NS208	General Biotechnology	FENS	5.0	2.0	3.0	-	6	2.4	3.6
NS	209	NS209	What is there in the Universe: "Beyond the Milky Way"	FENS	5.0	0.0	5.0	-	6	0.0	6.0
NS	210	NS210	Water: Its Physics, Nanophysics, Chemistry and Geopolitics	FENS	5.0	0.0	5.0	-	6	0.0	6.0
NS	212	NS212	Volcanoes, Earthquakes, Rocks ( Understanding the Earth)	FENS	5.0	0.0	5.0	-	5	0.0	5.0
NS	213	NS213	Basic Concepts of Physics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
NS	214	NS214	Oscillations, Waves and Optics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
NS	216	NS216	Life on Earth	FENS	6.0	1.0	5.0	-	6	1.0	5.0
NS	218	NS218	Fundamentals of Nanoscience	FENS	6.0	2.0	4.0	-	6	2.0	4.0
ENRG	220	ENRG220	World Energy Outlook: The Coming Year	FENS	6.0	3.0	0.0	NS 220	6	3.0	0.0
NS	222	NS222	Planetary Systems and Extrasolar Planets	FENS	5.0	0.0	5.0	-	6	0.0	6.0
NS	223	NS223	Environmental Science	FENS	6.0	0.0	6.0	-	6	0.0	6.0
NS	224	NS224	Urban Agriculture	FENS	6.0	2.0	4.0	-	6	2.0	4.0
NS	48000	NS48000	Special Topics in NS: Astrobiology Fundamentals and Contemporary Research Topics	FENS	6.0	2.0	4.0	-	6	2.0	4.0
PHYS	211	PHYS211	Modern Physics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	302	PHYS302	Solid State Physics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	303	PHYS303	Quantum Mechanics I	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	304	PHYS304	Quantum Mechanics II	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	312	PHYS312	Classical Mechanics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	313	PHYS313	Quantum Mechanics Laboratory	FENS	6.0	3.0	3.0	-	6	3.0	3.0
PHYS	322	PHYS322	Concepts of Modern Physics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	401	PHYS401	Classical Mechanics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	411	PHYS411	Electromagnetic Theory I	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	412	PHYS412	Statistical Mechanics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	438	PHYS438	Phase Transitions and Renormalization-Group Theory	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PHYS	484	PHYS484	Quantum Computation and Quantum Information	FENS	6.0	1.0	5.0	-	6	1.0	5.0
PHYS	492	PHYS492	Modern Topics in Condensed Matter Physics	FENS	6.0	0.0	6.0	-	6	0.0	6.0
PROJ	102	PROJ102	Project Course	FENS	2.0	1.0	1.0	-	6	3.0	3.0
PROJ	201	PROJ201	Project Course	FENS	1.0	1.0	0.0	-	1	1.0	0.0
PROJ	302	PROJ302	Summer Project	FENS	5.0	5.0	0.0	-	2	2.0	0.0