

**SPECIALISATION COURSES**

Aeronautics (AERO)			
Core specialisation courses		EC	Quarter
201900091	Advanced Topics in Finite Element Methods	5	1B
202300225	Basics of Acoustics & Aero-acoustics	5	2B
202000244	Aircraft & Wind Turbine Aerodynamics	5	2A
191121710	Composites	5	1A+1B
191154731	Computational Fluid Dynamics	5	2B
201500235	Design for Maintenance Operations	5	2A
202000245	Experimental methods in Fluid and Thermal Engin	5	1A
201900074	Fundamentals of Numerical Methods	5	1A
202000246	Frontiers in Aeronautics	5	2B
191154340	Gasdynamics	5	2B
201400037	Linear Solid Mechanics	5	2A
201300039	Structural Health and Condition Monitoring	5	2A
Elective subjects		EC	Quarter
191121700	Composites Forming	5	2B
202200127	Computational Optimization	5	1B
201700173	Control for UAVs	5	2B
201900037	Flexible Multibody Dynamics	5	1B
201500036	Fluid Mechanics II	5	1A
201900097	Machine Learning in Engineering	5	2A
201400042	Nonlinear Solid Mechanics	5	2B
201600101	Theory of ODE	5	2A
201700024	Wind Energy	5	2B

Design & Manufacturing (DM)			
Core specialisation courses		EC	Quarter
201400103	3D printing	5	1A
201200133	Biomechatronics	5	2B
191121710	Composites	5	1A+1B
191121720	Design, Production and Materials	5	1A+1B
191124720	Design of Production & Inventory Systems	5	2A
201000159	Durability of Consumer products	5	2A
202000033	Frontiers in Design and Manufacturing	5	2A
191137400	Laser Materials Processing	5	1B
201200146	Maintenance Engineering & Management	5	1A
191102041	Manufacturing Facility Design	5	1B
201600018	Modelling of Technical Design Processes	5	1A
202200100	Systems Engineering	5	1A
Elective subjects		EC	Quarter
202100228	Adhesion and Bonding Technology	5	2B
201900091	Advanced Topics in Finite Element Methods	5	1B
201800156	Biomechanics of Human Movement	5	2A
202300210	Capita Selecta Design & Manufacturing	5	Y
191121700	Composites Forming	5	2B
202200127	Computational Optimization	5	1B
201400244	Cost Management & Engineering	5	1B
202100128	Design for Additive Manufacturing	5	2A
191131360	Design Principles for Precision Mechanisms 2	5	2A
201900037	Flexible Multibody Dynamics	5	1B
192850730	Governing Product Development	5	1A
191150700	Integrative Design of Biomedical Products	5	1A
191127520	Lean Six Sigma Green Belt	5	2B
191102010	Life-Cycle Strategy	5	2B
202000035	Multiscale Functional Materials	5	2A
201900097	Machine Learning in Engineering	5	2A
201800003	Operations Research Techniques 1	5	1A&2A
202300064	Simulation	5	1A
191530881	Stochastic Models in Operations Management	5	2A
191531830	Stochastic Models in Production and Logistics	5	2B

Energy & Flow (EF)			
Core specialisation courses		EC	Quarter
201500024	Advanced Thermodynamics	5	1B
191121710	Composites	5	1A+1B
191154731	Computational Fluid Dynamics	5	2B
201600019	Energy Conversion Technology	5	1A
201500136	Fluid Mechanics II	5	1A
191154720	Fluid Mechanics of Turbomachines 1	5	1B
202000036	Frontiers in Energy and Flow	5	2B
201900074	Fundamentals of Numerical Methods	5	1A
201400300	Multiphase Flows	5	2B
202000035	Multiscale Functional Materials	5	2A
201300039	Structural Health and Condition Monitoring	5	2A
191141700	Transport Phenomena	5	1A
Elective subjects		EC	Quarter
201900091	Advanced Topics in Finite Element Methods	5	1B
202300225	Basics of Acoustics & Aero-acoustics	5	2B
202000244	Aircraft & Wind Turbine Aerodynamics	5	2A
202001436	Biofluid Dynamics	5	2A
191121700	Composites Forming	5	2B
202200127	Computational Optimization	5	1B
201500235	Design for Maintenance Operations	5	2A
201700023	Energy from Biomass	5	1B
201600252	Energy Storage	5	2A
191157750	Engineering Acoustics	5	1A
202000245	Experimental methods in Fluid and Thermal Engin	5	1A
191154340	Gasdynamics	5	2B
201400194	Granular Matter	5	2A
201600266	Hydrogen Technology	5	1B
201400037	Linear Solid Mechanics	5	2A
201300155	Process Equipment Design	5	2A
191158510	Programming in Engineering	-	Y
201700218	Turbulent Combustion	5	2A
201700024	Wind Energy	5	2B

High-Tech Systems and Materials (HTSM)			
Core specialisation courses		EC	Quarter
201900091	Advanced Topics in Finite Element Methods	5	1B
202200104	Control System Design for Robotics	5	1B
191131360	Design Principles for Precision Mechanisms 2	5	2A
191121720	Design, Production and Materials	5	1A+1B
201400046	Experimental Methods	5	2A+2B
201900037	Flexible Multibody Dynamics	5	1B
201500136	Fluid Mechanics II	5	1A
202000247	Frontiers in High-Tech Systems and Materials	5	Y
201400037	Linear Solid Mechanics	5	2A
201400042	Nonlinear Solid Mechanics	5	2B
201400044	Plastic & Elastomer Engineering	5	1B
191155700	Solids & Surfaces	5	1A
Elective subjects		EC	Quarter
202001392	Active Sound and Vibration Control	5	2A
202100228	Adhesion and Bonding Technology	5	2B
201500024	Advanced Thermodynamics	5	1B
191121700	Composites Forming	5	2B
191121710	Composites	5	1A+1B
202200127	Computational Optimization	5	1B
201500344	Elastomer Science & Engineering	5	2A+2B
191157750	Engineering Acoustics	5	1A
201900074	Fundamentals of Numerical Methods	5	1A
191137400	Laser Materials Processing	5	1B
202000256	Learning and Adaptive Control	5	2A
201900097	Machine Learning in Engineering	5	2A
202100319	Phase Transformations in Manufacturing	5	2B
202300266	Rheology & Processing of Thermoplastics	5	2A+2B
202100226	Reinforcement learning in Engineering	5	2B
202000037	Structural Dynamics	5	1A
201300039	Structural Health and Condition Monitoring	5	2A
191155710	Surface Technology	5	2A
202200111	System Identification and Parameter Estimation	5	2B
201600101	Theory of ODE	5	2A
191141700	Transport Phenomena	5	1A
191155730	Tribology	5	2A
201900098	Uncertainty Quantification & Model Reduction	5	2B

Maintenance Engineering & Operations (MEO)			
Core specialisation courses		EC	Quarter
201800008	After-Sales Service Logistics	5	1B
201500235	Design for Maintenance Operations	5	2A
201300038	Failure Mechanisms & Life Prediction	5	1B
202000039	Frontiers in Maintenance	5	2B
201800034	Infrastructure Asset Management	5	2B
191102010	Life-Cycle Strategy	5	2B
201200146	Maintenance Engineering & Management	5	1A
191852630	Reliability Engineering and Maintenance Manager	5	2A
202000037	Structural Dynamics	5	1A
201300039	Structural Health and Condition Monitoring	5	2A
191155730	Tribology	5	2A
Elective subjects		EC	Quarter
202100228	Adhesion and Bonding Technology	5	2B
201900091	Advanced Topics in Finite Element Methods	5	1B
201200145	Capita Selecta - Maintenance Engineering & Oper	5	2B
202200104	Control System Design for Robotics	5	1B
191121720	Design, Production and Materials	5	1A+1B
201700294	Engineering Project Management	5	2B
201900037	Flexible Multibody Dynamics	5	1B
191102041	Manufacturing Facility Design	5	1B
191531830	Stochastic Models in Production and Logistics	5	2B
191155710	Surface Technology	5	2A
202200100	Systems Engineering	5	1A
191820120	Warehousing	5	2B

Personalized Health Technology (PHT)			
Core specialisation courses		EC	Quarter
201800156	Biomechanics of Human Movement	5	2A
191121720	Design, Production and Materials	5	1A+1B
201900037	Flexible Multibody Dynamics	5	1B
201500136	Fluid Mechanics II	5	1A
202000034	Frontiers in Personal Health Technology	5	1B
201900074	Fundamentals of Numerical Methods	5	1A
191150480	Human Movement Control	5	2A
191150700	Integrative Design of Biomedical Products	5	1A
201400037	Linear Solid Mechanics	5	2A
191155700	Solids & Surfaces	5	1A
202200111	System Identification and Parameter Estimation a	5	2B
191141700	Transport Phenomena	5	1A
Elective subjects		EC	Quarter
201400103	3D Printing	5	1A
202100080	3D Bioprinting	5	2B
201500024	Advanced Thermodynamics	5	1B
201900091	Advanced Topics in Finite Element Methods	5	1B
191154740	Biophysical Fluid Dynamics	5	1A
201200133	Biomechatronics	5	2B
202001436	Biofluid Dynamics	5	2A
191154731	Computational Fluid Dynamics	5	2B
202200104	Control System Design for Robotics	5	1B
202300256	Development of Artificial Internal Organs	5	2A
202000040	Design of Flexible and Soft Robotic Systems	5	2B
191131360	Design Principles for Precision Mechanisms 2	5	2A
201700071	Identification of Human Physiological Systems	5	2B
202300030	Imaging Techniques	6	1A
202200070	Medical Certification & Human Factors	5	1B
202200100	Systems Engineering	5	1A
201600327	Tissue Engineering	5	2B
191155730	Tribology	5	2A

Smart and Sustainable Industry (SSI)			
Core specialisation courses		EC	Quarter
201500518	Advanced 3D Modelling	5	2A
202000030	Automated Production Systems	5	1B
191124720	Design of Production & Inventory Systems	5	2A
202400341	Digital Twin for Smart Industry	5	1B
201600019	Energy Conversion Technology	5	1A
202400340	Frontiers in Smart & Sustainable Industries	5	1A
202000032	Industrial Robotic Systems	5	1A
191102010	Life-cycle Strategy	5	2B
201900097	Machine Learning in Engineering	5	2A
202000028	Smart Industry Systems	5	2B
202400342	Sustainability in Manufacturing	5	1B
202200111	System Identification with Parameter Estimation a	5	2B
Elective subjects		EC	Quarter
201400103	3D Printing	5	1A
201700365	Business Models for Sustainable Energy	5	1A
201700026	Electrical Power Engineering & System Integration	5	1B
202400343	Energy System Integration	5	1A
201700075	Internet of Things	5	1A
191137400	Laser Materials Processing	5	1B
201200146	Maintenance Engineering & Management	5	1A
191102041	Manufacturing Facility Design	5	1B
192850750	Product Life Cycle Management	5	2A
202100226	Reinforcement learning in Engineering	5	2B
202400344	Smart and Sustainable Design and Packaging	5	2A
191531830	Stochastic Models in Production and Logistics	5	2B

General Electives			
General elective subjects		EC	Quarter
191158500	Advanced Programming in Engineering	-	Y
201800102	Basics for Process Simulation	5	1A
191124310	CAD/CAM - research	5	2A
192850960	Intellectual Property in Product Development	5	2A
202300338	Introduction Humanitarian Engineering	5	2B
201600241	Multigrid/Multilevel Scientific Computing	5	2B
201700025	Solar Energy	5	2A
192850840	Sources of Innovation	5	1A
202100082	Theory of Inventive Problem Solving (TRIZ)	5	S
201000201	Virtual Reality	5	2B

Glossary			
Y = all year			
S = summer period			
1A+1B = course will be spread over both quartiles			
I = Refers to latest course information			
Internship	202000250	(15 EC)	
Graduation	202000249	(45 EC)	