

**MASTER MECHANICAL ENGINEERING
CURRICULUM GROUP ENGINEERING FLUID DYNAMICS 2012/2013**

D) Master Track Research & Development

First Year: 60 EC in total

a. Track courses: choose 4 out of 6 (20 EC)

	Qrtr	EC	Rec	Lecturers
115771 Numerical Methods in Mechanical Engineering	s1	5	+++	TS/TM
115471 Fluid Dynamics	k1	5	+++	TS
115772 Solid Mechanics 1, Elasticity	s2	5	+++	TM
114170 Transport Phenomena	k1	5	++	ThW
113170 System Identification & Parameter Estimation	s2	5	++	WA
115570 Solids & Surfaces	s1	5	+	PT/OTR

b. Courses from other tracks: choose 1 (5 EC)

	Qrtr	EC	Rec	Lecturers
113136 Design Principles for precision mechanisms	k3	5	+++	WA
375003 Process Equipment Design	k3	5	+++	ThW/CT
110203 Product Design	s1	5	++	OPM
115070 Integrative Design of Biomedical Products	k4	5	+	BW
112172 Design, Production & Materials	k23	5		OPM
112472 Design Production & Inventory Systems	k3	5		OPM
113932 Engineering Project Management	s2	5		OPM
110212 Cost Management & Engineering	k2	3.6		OPM
110204 Manufacturing Facility Design	k2	5		OPM

c. Courses in Fluid Dynamics (≥15 EC)

	Qrtr	EC	Lecturers
115472 Fluid Mechanics of Turbomachines 1	k2	5	TS
115473 Computational Fluid Dynamics	k4	5	TS
115540 Aeroacoustics	k4	3.6	TS (1-week course)
115434 Gasdynamics	k3	5	TS
115474 Bio-physical Fluid Dynamics: The Respiratory System	k1	5	TS
115475 Capita Selecta TS	tbd	tbd	TS
115476 Fluid Mechanics of Turbomachines 2	k4	3.6	TS
115437 Aerodynamics	k2	6	TS-minorLVT
115477 Wave Motion	k2	5	TS
574012 Wind Energy	k3	4	TS-SET
358001 Turbulence	k2	5	TNW
358002 Experimental Techniques in Physics of Fluids	s2	5	TNW

d. Courses in Mathematics (minimal 1 course)

	Qrtr	EC	Rec	Lecturers
155010 Theory of Partial Differential Equations	k2	5		ETW
151044 Analyse C	k2	3		ETW
155115 Num. Techniques for Partial Diff. Equations	k2	5		ETW

e. Elective Courses (remaining EC)

	Qrtr	EC	Rec	Lecturers
11xxxx Not chosen track courses in Research & Development				
11/35xx Not chosen fluid dynamics courses				
112174 Rheology and Processing of Thermoplastics	s2	5		PT
114123 Practical exercises in Thermal Engineering	k2	2		ThW
114142 Transp. in Turb. Chem. Reacting Flows	s2	3.6		ThW
114143 Gas Technology	k4	3.6		ThW
115573 Tribology	s2	5		OTR
115539 Multi-Level Methods	tbd	3.6		TS
115850 Advanced Programming in Engineering	k23	5		MSM
115851 Programming in Engineering	summer	3		MSM

115776 Solid Mechanics 2, Plasticity	k4	5	TM
115775 Engineering Acoustics	k1	5	TM
115774 Advanced Dynamics	s1	5	TM
115773 Computational Structural Optimisation	k4	5	TM
115039 Biomechanics	k2	5	TS/BW
121096 Signal Processing in Acoustics & Audio	k2	5	EWI
121105 Micro Electro Mechanical Systems Technology	k3	5	EWI
141002 Statistical Physics	s2	5	TNW
357004 Theory of General Relativity	k4	5	TNW
144006 Electrodynamics	k1	5	TNW
146012 Introduction to Optics	k1	5	TNW
150630 Applied Functional Analysis	s1	6	EWI
150910 Advanced modeling	s2	6	EWI
152025 Theory of Complex Functions	k4	5	EWI
155109 Mathematical Theory of Finite Element Methods	k4	6	EWI
155116 Applied Finite Element Methods for PDE's	s2	6	EWINat.MSc Prog. Math
156037 Applied Analytical Methods	k4	5	EWI
157108 Random Signals and Systems	k3	5	EWI
340012 Nano-fluidics	k3	5	TNW
542090 Mathematical tools for Traffic Engineering	k3	7.5	WEM
541020 Morphology	k2	7.5	WEM
540090 Mathematical Physics of water systems	k3	7.5	WEM
574003 Energy from Biomass	k2	4	SET

Any other relevant course you find interesting!*E*

Second Year: 60 EC in total

- a internship: 20 EC
- b MSc Assignment: 40 EC

II) Master Track Design & Construction

First Year: 60 EC in total

a. Track courses: choose 4 out of 6 (20 EC)

	Qtr	EC	Rec	Lecturers
115771 Numerical Methods in Mechanical Engineering	s1	5	+++	TS/TM
113136 Design Principles for precision mechanisms	k3	5	+++	WA
375003 Process Equipment Design	k3	5	+++	ThW/CT
110203 Product Design	s1	5	++	OPM
115070 Integrative Design of Biomedical Products	k4	5	+	BW
112172 Design, Production & Materials	k23	5		OPM

b. Courses from other tracks: choose 1 (5 EC)

	Qtr	EC	Rec	Lecturers
115471 Fluid Dynamics	k1	5	+++	TS
114170 Transport Phenomena	k1	5	++	ThW
115772 Solid Mechanics 1, Elasticity	s2	5	++	TM
113170 System Identification & Parameter Estimation	s2	5	++	WA
112472 Design of Production & Inventory Systems	k3	5		OPM
113932 Engineering Project Management	s2	5		OPM
110212 Cost, Management and Engineering	k2	3.6		OPM
110204 Manufacturing Facility Design	k2	5		OPM

c. Courses in Fluid Dynamics (≥ 15 EC)

	Qtr	EC	Rec	Lecturers
115472 Fluid Mechanics of Turbomachines 1	k2	5		TS
115473 Computational Fluid Dynamics	k4	5		TS
115540 Aeroacoustics	k4	3.6		TS (1-week course)
115434 Gasdynamics	k3	5		TS
115474 Bio-physical Fluid Dynamics: The Respiratory System	k1	5		TS
115475 Capita Selecta TS	tbd	tbd		TS
115476 Fluid Mechanics of Turbomachines 2	k4	3.6		TS
115437 Aerodynamics	k2	6		TS-minorLVT
115477 Wave Motion	k2	5		TS
574012 Wind Energy	k3	4		TS-SET
358001 Turbulence	k2??	5		TNW
358002 Experimental Techniques in Physics of Fluids	s2	5		TNW

d. Courses in Mathematics (minimal 1 course)

	Qtr	EC	Rec	Lecturers
155010 Theory of Partial Differential Equations	k2	5		ETW
151044 Analyse C	k2	3		ETW
155115 Num. Techniques for Partial Diff. Equations	k2	5		ETW

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115850 Advanced Programming in Engineering	k23	5		MSM
115851 Programming in Engineering	summer	3		MSM
115776 Solid Mechanics 2, Plasticity	k4	5		TM
115775 Engineering Acoustics	k1	5		TM

115774 Advanced Dynamics	s1	5	TM
115773 Computational Structural Optimisation	k4	5	TM
115039 Biomechanics	k2	5	TS/BW
121096 Signal Processing in Acoustics & Audio	k2	5	EWI
121105 Micro Electro Mechanical Systems Technology	k3	5	EWI
141002 Statistical Physics	s2	5	TNW
357004 Theory of General Relativity	k4	5	TNW
144006 Electrodynamics	k1	5	TNW
146012 Introduction to Optics	k1	5	TNW
150630 Applied Functional Analysis	s1	6	EWI
150910 Advanced modeling	s2	6	EWI
152025 Theory of Complex Functions	k4	5	EWI
155109 Mathematical Theory of Finite Element Methods	k4	6	EWI
155116 Applied Finite Element Methods for PDE's	s2	6	EWINat.MSc Prog. Math
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157108 Random Signals and Systems	k3	5	EWI
340012 Nano-fluidics	k3	5	TNW
542090 Mathematical tools for Traffic Engineering	k3	7.5	WEM
541020 Morphology	k2	7.5	WEM
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