Master electives list Biomedical Engineering (2023-2024)

Medical Imaging track

Content

Biomedical Engineering – MI – Research profile	
Core	5 ec
Specialization electives *)	20 ec
Free space	15 ec
Externship	20 ec
Graduation project	60 ec

Biomedical Engineering – MI – Free profile	
Core	5 ec
Specialization electives	20 ec
Free space	30 ec
Externship	20 ec
Graduation project	45 ec

*) Minimum 5 EC TU/e and 5 EC UU

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Core course

Code	Course name	Lecturer	Q/TS	EC
8DM10	Team challenge in medical imaging	Veta	1+2+3/..	5

Specialization electives

Specialization electives for MI track – Eindhoven University of Technology (TU/e)

Code	Course name	Lecturer	Q/TS	EC
8CM10	Radiation physics	Raaijmakers	1/A **a)**	2.5
8DM50	Machine learning in Medical Imaging and Biology	Veta	1/B	5
8NM00*	Radioisotopes and ionizing radiation in biochemical technology CFK)	Moerdijk	2/B	2.5
8VM60	Ultrasound in the (bio)medical engineering	Lopata	2/D	5
8VM70+	Advanced topics in Ultrasound imaging in the (bio)medical engineering	Lopata	2/D	2.5
5LPE0	Electromagnetic fields in MRI	Raaijmakers	2/C	5
8DM20	Capita selecta medical image analysis	Pluim	3/A+B1 **b)**	5
8MM10	Microscopy for biological samples	Van Turnhout	4/B1	2.5

Specialization electives for MI track – Utrecht University (UU)

Code	Course name	Lecturer	Q/TS	EC
8UU00	Programming for medical imaging (BMB502417)	Kuijf	1/C+D	5
8UU22	AI for Medical Imaging (BMB4708022)	Maspero	2	2.5
8UU23	Diffusion MRI (BMB4709022)	Leemans	2	2.5
8UU24	Image-guided ultrasound therapy (BMB4710022)		3	2.5
8UU02	Advanced MR Physics 1 (BMB502717)	Bartels	2/A+E	5
8UU04	Radiotherapy Physics (BMB502617)	Van Asselen	3/B+D	5
8UU03	Advanced MR Physics 2 (BMB503317)	Siero	3/C+D	5

* = Limited number of spots
CFK) = 8NM00 students in the "Fysica in de kliniek" certificate fill the first spots
\+ = If you already did 8VC00

a) = Only on Monday
b) = Lectures on Monday only and BZ on Monday afternoon

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Suggestions for free space

Master level

Code	Course name	Lecturer	Dep		EC
8GM10	BiTT project	Van Donkelaar	BME	3+4	2.5
8GM15	BiTT project	Van Donkelaar	BME	3+4	5
8GM00	Career development	Pril	BME	all	2.5
8CM00	Systems medicine	Van Riel	BME	1/D	5
8MM50	Host response to biomaterials	Smits	BME	1/A	5
8SM00	Clinical chemistry	Scharnhorst	BME	1/B1	2.5
8SM50	Chemical Biology	Brunsveld	BME	1/D	5
8VM00	Cardiovascular fluid mechanics	Van de Vosse	BME	1/B	5
3MN170	Molecular biosensing	De Jong	AP	2/E	5
8CM20	Molecular modelling	Markvoort	BME	2/A	5
8MM30	Numerical analysis of continua II	Loerakker	BME	2/C	5
8MM40	Cell mechanobiology and engineering	Kurniawan	BME	2/B	5
8SM10	Protein engineering	Merkx	BME	2/D	2.5
8TM10	Orthopaedic soft tissues: biomechanics and mechanobiology	Foolen	BME	2/D	5
8VM30	Vascular mechanics	Rutten	BME	2/E	5
6EMA61	Advances in molecular chemistry	Palmans	CEC	3/E	5
8SM20	Biomaterials	Dankers	BME	3/C	5
8SM30	Capita selecta laboratory medicine	Scharnhorst	BME	3/B1	2.5
8TM00	Bone structure and function	Van Rietbergen	BME	3/B1	5
8VM20	Cardiac function	Bovendeerd	BME	3/D	5
8VM80	Pathophysiology of the cardiovascular system	Van Sambeek	BME	3/B	5
3MN210	Single molecule microscopy of nano materials	De Jong	AP	4/C	5
8CM30	Applied clinical data science	Van Riel	BME	4/E	2.5
8MM10	Microscopy for biological samples	Van Turnhout	BME	4/B1	2.5
8SM40*	Nanomedicine	Van der Meel	BME	4/A	5
8VM40	Cardiovascular fluid-structure interaction	Van de Vosse	BME	4/D	5
8ZM97	Extending extern/internship		BME		5
8ZM98	Extending extern/internship		BME		10
8ZM99	Extending extern/internship		BME		15

Specialization electives in the lab

Code	Course name	Lecturer	Q/TS	EC
8PM00*	Project Molecular biology**	Merkx	1/$	5
8MM20*	Cell biological techniques and cell-biomaterial interactions**	Dankers	2/$	5
8PM01*	Project Organic chemistry	Meijer	4/C+E	5

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** = 8MM20 **or** 8PM00 (not both)

$ = Individually planned with lecturer

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Electives given by faculty from other departments

Code	Course name	Lecturer	Dep	EC
0LM120	Perspectives on medical technology	Dennis	IEIS	5
0LM140	Let's make humans better	Frank	IEIS	5
1ZM16	Management of product development	Sihag	IEIS	5
1ZM90	Open innovation	Cloodt	IEIS	5
2IPC0	Programming methods	Cleophas	MCS	5
2IX20	Software specification	Keiren	MCS	5
2MMA80	Mathematics of neural networks	Duits	MCS	5
2MMS20	Statistics for big data	Vd Heuvel	MCS	5
3MA100	Physics behind medical technology: equipment and physiology	Van Pul	AP	5
4CM00	Control engineering	Witvoet	MECH	5
4LM50	Rheology/Computational rheology	Cardinaels	MECH	5
4MM20	Computational and experimental micro-mechanics	Hoefnagels	MECH	5
4UM00*	Microfabrication methods	Den Toonder	MECH	5
5LSB0	Monitoring respiration and circulation	Woerlee	EE	5
5LSC0	Biomedical sensing technology (indien 8VB10 niet is gedaan)	Mischi	EE	5
5SSC0	Adaptive array signal processing	Van Sloun	EE	5
5SSD0	Bayesian machine learning and information processing	De Vries	EE	5
5SSD0	Bayesian machine learning and information processing	De Vries	EE	5
6EMA51	Characterization of materials	Friedrich	CEC	5
6EMA53	Molecular photophysics	Janssen	CEC	5
6MSM10	Physical organic chemistry	Sijbesma	CEC	5
6MSM31	Polymer and colloid science	Tuinier	CEC	5

* = Limited number of spots

Bachelor level

Maximum 15 EC bachelor level 3 courses; check Osiris if they are taught in English or Dutch

Code	Course name	Lecturer	Q/TS	EC
8DC00	Medical image analysis	Van Eijnatten	1/E	5
8RC00	Pharmacology	Brunsveld	1/A	5
8TB10	Structure and function of joints	Foolen	1/A	5
2DBM90	Applied biostatistical modelling	Rijpkema	2/A	5
8LC00	Applied cell biology	De Boer	2/E	5
8P370	CBL Microscopy	Albertazzi	2/C	5
8VC00	Advanced imaging techniques	Lopata	2/D	5
6E3X0	Macro-organic chemistry	Palmans	3/B	5
8CB10	Simulation biochemical systems	Hilbers	3/C	5
8P340	Project Biomechanics	Van de Vosse	3/B	5
8P350	Project Tissue engineering	Smits	3/D	5
8P361	Project Imaging	Veta	3/E	5
8P380	Project Lab on chip	Gumuscu Sefunc	3/B	5
8TC20	Basic tissue engineering	Hofmann	3/C	5
8VB10	Measurements and modeling in the clinic	Lopata	3/A	5
8CB20	Synthetic and systems biology	De Greef	4/B	5
8CC00	Adv. Programming & Biomed. Data Analysis	Hilbers	4/B	5
8P313	Instrumental analysis	Abdelmohsen	4/A	5
8RB10	Bio-organic chemistry	Dankers	4/B	5
8VB20	Model based cardiovascular pathophysiology	Bovendeerd	4/A	5

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