Competence coverage	matrix							Gene	eral Co	urses						Maste r's Disser
GHENT UNIVERSITY Master of Science in Bio	omedical Engineering			E003280 Clinical Study Design and Biostatistics		'h Care	E015570 Health Information and Decision Support Systems	E063671 Biomaterials and Tissue Engineering	Science	E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication		E092802 Biomedical Product Development	E092682 Medical Equipment, Safety and Regulations	E027770 Data Analytics in Healthcare and Connected Care	E010610 Biomedical Robotics and Assistive Technologies	tation
Academic year 2021-20	22		E010371 Medical Imaging	l Study Desiç	E092814 Hospital Project	E015590 Leadership in Health Care	Information	terials and Ti	E010382 Neuro-engineering Science	and Nanotec ication	E074123 Artificial Organs	dical Product	al Equipment	nalytics in H	dical Robotic	E091103 Master's Dissertation
-			1 Medica	0 Clinica	4 Hospita	0 Leader	0 Health	1 Biomat	2 Neuro-	0 Micro- and Fabr	3 Artificia	2 Biome	2 Medica	0 Data A	0 Biome	3 Master
Legend: T=teaching methods E=evaluation methods Competences in one/more scientific discipline(s)	Master and apply advanced knowledge in the own engineering discipline in solving complex problems.  Apply Computer Aided Engineering (CAE) tools and advanced communication instruments in a creative and purposeful way.	T 6 E 6	E01037	E00328	а т Е	<b>■ ■</b> E01559	п – E01557 System:	E06367	E01038	E01060	E07412	E09280	E09268	E02777 Care	T E E 1061	<b>E</b> E09110
	Be familiar with and have an understanding of the basic concepts and principles in the field of anatomy, (cell- and molecular) biology chemistry, physiology, biomechanics and medical and health sciences.								T E	T E						
	for the quantitative measurement of structures and functioning of biological systems on molecular, organic and system- level.	T 1 E 1											T E			
	Be familiar with the functioning of medical devices and have insigh in the relations between the results of measurements and the observed or controlled biophysical parameters.  Be familiar with and have an understanding of state-of-the-art	tT 4 E 4 T 4		Т			Т		Т		E	E	E	Т	T E	
	methods for data analysis and the principles of artificial intelligence in data processing and medical decision support systems.  Have a fundamental insight in the physical principles, technological	E 4	Т	E			E		Ē					E	Т	
	possibilities and limitations of medical signal and imaging modalities.  Have a good understanding of the physical and chemical properties of body tissues, supplementary or substituting	E 3	E						E	T	Ţ		T		E T	
	(synthetic) biomedical materials and their interactions.  Be able to apply algorithms for the assessment and optimization of radiation doses based on a profound insight into the absorption of	E 3								E	E		Е			
	the dosage and the functioning of radiation-generating and detecting machinery.  Be able to estimate the consequences of the interaction between radiation and living tissues and biomedical materials.	T 1											Т			
Scientific competences	Analyse complex problems and translate them into concrete research questions.  Consult the scientific literature as part of the own research.	T 8 E 8	T E	T E	T E			T E T		T E				T E	T E T	T E
	Select and apply the appropriate models, methods and techniques.	E 4 T 10	т	E T	T		T	E T	Ţ	T				T	E T	E
	Develop and validate mathematical models and methods.	E 10	T	Е	Е		T	E	Е	Е				Е	E T	E
	Interpret research findings in an objective and critical manner.	E 3 T 6 E 5	E	T E			E			Т	T E	T E			T E	T E
	Analyse complex multidisciplinary biomedical problems based on (recent) scientific research and transform them into a logically structured, technologically realisable and ethically justifiable research plan.	T 2 E 2			T E											T E
	Answer a concrete and relevant biomedical engineering question on a basis of recent technical, scientific and medical knowledge.	T 9 E 9			T E	T E			T E	T E	T E		T E	T E	T E	T E
	Apply complex concepts, techniques and methods in order to solve real problems in physiology and clinical medicine.	T 8 E 7	T E		T E		T E		T E	T E	T E				T	T E
	Critically and permanently evaluate the quality, (bio-)ethical aspects, innovative value and (bio-)safety of (own) research.	T 4 E 4			T E					T E					T E	T E
	Process, evaluate, interpret and summarize results of (own) research in a systematic, critical and clear way.	T 4 E 4			T E					T E					T E	T E
Intellectual competences	Independently form an opinion on complex situations and problems, and defend this point of view.	T 6 E 6		T E		T E			T E	T E					T E	T E
	Apply knowledge in a creative, purposeful and innovative way to research, conceptual design and production.	T 4 E 3			E							E			Т	T E
	Critically reflect on one's own way of thinking and acting, and understand the limits of one's competences.	T 3 E 3			_	T E					_				T E	T E
	Stay uptodate with the evolutions in the discipline to elevate the own competences to expert level.	T 6 E 4			E	T E					T E		Т		Т	E
Competences in	Readily adapt to changing professional circumstances.  Have the ability to communicate in English about the own field of	T 3 E 2 T 11	Т	Т	T E T	Т			Т	Т	Т	Т	T		Т	E T
competences in cooperation and communication	specialisation.  Project management: have the ability to formulate objectives, report efficiently, keep track of targets, follow the progress of the	E 11 T 7 E 7	Ė	E T E	T E	E T E			Ē	E T E	Ē	T E	E		E T E	T E
	project,  Have the ability to work as a member of a team in a multi disciplinary workingenvironment, as well as being capable of taking on supervisory responsibilities.	T 3 E 3			T E	T E						T E				
	Report on technical or scientific subjects verbally, in writing and using graphics.	T 8 E 8	T E	T E	T E	T E	T E			T E					T E	T E
	Critically discuss a research plan with fellows, doctors and	T 5 E 5		T E	T E	T E						T E			<u>-</u>	T
	Communicate (own) results orally and in writing in a systematic	T 4			Т	Т									Т	Т

#### Competence coverage matrix

Societal competences  Act in an ethical, professional and social way.  Recognize the most important business and legal aspects of the T4 E E E E E E  Understand the historical evolution of the own engineering discipline.  Understand the historical evolution of the own engineering discipline and its social relevance.  Take up a well-founded position about socio-economic and societal aspects of biomedical engineering.  Take into consideration the medical ethics and laws and rules with T4 E E E E E E E E E E E E E E E E E E	E092802 Biomedical Product Development  E092802 Biomedical Product Development  E092682 Medical Equipment, Safety and Regulations	E027770 Data Analytics in Healthcare and Connected Care  L L L L L L B L E010610 Biomedical Robotics and Assistive Technologies
Academic year 2021-2022  Legend: T-teaching methods E-evaluation methods Societal competences  Act in an ethical, professional and social way.  Recognize the most important business and legal aspects of the own engineering discipline.  Understand the historical evolution of the own engineering discipline and its social relevance.  Take up a well-founded position about socio-economic and social aspects of bimedical engineering.  Take up a well-founded position about socio-economic and social advisors of bimedical engineering.  Take into consideration the medical ethics and lavas and rules with T4 respect to the implementation of medical-technical actions and social advisors, evolution, seeds and demands for innovation.  Show a strong international awareness and be open for new social adjusted in a clinical environment.  Show a strong international awareness and be open for new as strong international awareness and process models.  Strive for a continuous improvement and guarantee of health care T7 and quality of life of the individual and society.  Profession-specific competence  Reconcile conflicting specifications and prior conditions in a high T5 and quality of life of the individual and society.  Reconcile conflicting specifications and prior conditions in a high T5 and quality of life of the individual and society.  Reconcile conflicting specifications and prior conditions in a high T5 and quality of life of the individual and society.  Reconcile conflicting specifications and prior conditions in a high T5 and quality of life of the individual and society.  Reconcile conflicting specifications and prior conditions in a high T5 and quality of life of the individual and society.  Reconcile conflicting specifications and prior conditions in a high T5 and quality of life of the individual and society.  Possess sufficient ready knowledge and understanding to evaluate T4 to T T T T T T T T T T T T T T T T T T	TE	T T T T T T T T T T T T T T T T T T T
Legend: T=teaching methods E=evaluation methods  Societal competences  Act in an ethical, professional and social way.  Recognize the most important business and legal aspects of the own engineering discipline.  Understand the historical evolution of the own engineering discipline and its social relevance.  Take up a well-founded position about socio-economic and sociated aspects of biomedical engineering.  Take into consideration the medical ethics and laws and rules with respect to the implementation of medical-technical actions and scientific research in a clinical environment.  Show a strong international awareness and be open for new societal questions, evolutions, needs and demands for innovation.  Be aware of ethical and safety aspects in biomedical practice.  Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Reconcile conflicting specifications and prior conditions in a high figural innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful T4 information.  Possess sufficient ready knowledge and understanding to evaluate T4 in the concept of the second in the concept of the conditions of the concept of the conditions	TE	T T T T T T T T T T T T T T T T T T T
Legend: T=teaching methods E=evaluation methods  Societal competences  Act in an ethical, professional and social way.  Recognize the most important business and legal aspects of the own engineering discipline.  Understand the historical evolution of the own engineering discipline and its social relevance.  Take up a well-founded position about socio-economic and sociated aspects of biomedical engineering.  Take into consideration the medical ethics and laws and rules with respect to the implementation of medical-technical actions and scientific research in a clinical environment.  Show a strong international awareness and be open for new societal questions, evolutions, needs and demands for innovation.  Be aware of ethical and safety aspects in biomedical practice.  Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Reconcile conflicting specifications and prior conditions in a high figural innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful T4 information.  Possess sufficient ready knowledge and understanding to evaluate T4 in the concept of the second in the concept of the conditions of the concept of the conditions	TE	T T T T T T T T T T T T T T T T T T T
Act in an ethical, professional and social way.    Recognize the most important business and legal aspects of the   T	E	T T T T
own engineering discipline.  Understand the historical evolution of the own engineering discipline and its social relevance.  Take up a well-founded position about socio-economic and societal aspects of biomedical engineering.  Take into consideration the medical ethics and laws and rules with respect to the implementation of medical-technical actions and scientific research in a clinical environment.  Show a strong international awareness and be open for new societal questions, evolutions, needs and demands for innovation.  Be aware of ethical and safety aspects in biomedical practice.  Be aware of ethical and safety aspects in biomedical practice.  Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Synthesize incomplete, contradictory or redundant data into useful T4 T T T T T T T T T T T T T T T T T T	E	T E T T
discipline and its social relevance.  Take up a well-founded position about socio-economic and societal aspects of biomedical engineering.  Take into consideration the medical ethics and laws and rules with T4 E E E E E E E E E E E E E E E E E E	E	T T
Take up a well-founded position about socio-economic and societal aspects of biomedical engineering.  Take into consideration the medical ethics and laws and rules with respect to the implementation of medical-technical actions and scientific research in a clinical environment.  Show a strong international awareness and be open for new societal questions, evolutions, needs and demands for innovation.  Be aware of ethical and safety aspects in biomedical practice.  Be aware of ethical and safety aspects in biomedical practice.  Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Synthesize incomplete, contradictory or redundant data into useful information.  Possess sufficient ready knowledge and understanding to evaluate T 4  Take the E E E E E E E E E E E E E E E E E E E	T	T E
Take into consideration the medical ethics and laws and rules with T4 respect to the implementation of medical-technical actions and scientific research in a clinical environment.  Show a strong international awareness and be open for new societal questions, evolutions, needs and demands for innovation.  Be aware of ethical and safety aspects in biomedical practice.  Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Reconcile conflicting specifications and prior conditions in a high quality and innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful information.  Possess sufficient ready knowledge and understanding to evaluate T 4  T T T T T T T T T T T T T T T T T	T	T T
societal questions, evolutions, needs and demands for innovation.  Be aware of ethical and safety aspects in biomedical practice.  Be aware of ethical and safety aspects in biomedical practice.  The strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Reconcile conflicting specifications and prior conditions in a high quality and innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful information.  Possess sufficient ready knowledge and understanding to evaluate to the strict of the second demands for innovation.  E 2  E B E E E E E E E E E E E E E E E E E	Т	T :
Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Reconcile conflicting specifications and prior conditions in a high quality and innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful information.  Possess sufficient ready knowledge and understanding to evaluate T 4  E E E E E E E E E E E E E E E E E E	Т	T :
Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.  Profession-specific competence  Master the complexity of technical systems by using system and process models.  Reconcile conflicting specifications and prior conditions in a high quality and innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful information.  Possess sufficient ready knowledge and understanding to evaluate T 4  T T T T T T T T T T E E E E E E E E E	Т	Т
Profession-specific competence  Master the complexity of technical systems by using system and process models.  Reconcile conflicting specifications and prior conditions in a high quality and innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful information.  Possess sufficient ready knowledge and understanding to evaluate T 4  Master the complexity of technical systems by using system and T 2  E 2  T T  T T  T T  T T  T T  T T		
Reconcile conflicting specifications and prior conditions in a high quality and innovative concept or process.  Synthesize incomplete, contradictory or redundant data into useful information.  Possess sufficient ready knowledge and understanding to evaluate T 4  T  T  T  T  T  T  T  T  T  T  T  T  T		E
Synthesize incomplete, contradictory or redundant data into useful  T 4  E 4  E 7  Possess sufficient ready knowledge and understanding to evaluate T 4  T T T T T T T T T T T T T T T T T		т т
Possess sufficient ready knowledge and understanding to evaluate T 4 T	T E	T E
the results of complex calculations, or make approximate  estimates.		T T
Pay attention to entire life cycles of systems, machines, and processes.  T 3 T E 1 E	Т	Т
Pay attention to sustainability, energyefficiency, environmental cost, use of raw materials and labour costs.  T 3 T E E E	T E	
Pay attention to all aspects of reliability, safety, and ergonomics. T 5 T T T	Т	Т
Have insight into and understanding of the importance of entrepreneurship.		Т
Show perseverance, innovativeness, and an aptitude for creating added value.  T 4 T E 4 E	T E	T ·
Have sufficient knowledge and understanding to develop and T 6 T technically evaluate new materials, equipment, tools, systems and E 5 methods for prognosis, (early) diagnosis, prevention and treatment of illness and for convalescence.	TE	T
Mathematically translate complex biomechanical, biological and physiological processes under normal and pathological conditions into advanced models and paradigms, knowing their limitations and finding creative solutions for these limitations.		Т
Apply the most suitable instruments, concepts, techniques and methods for the solution of real problems in physiology and clinical to medicine on molecular, organic and system level.		T
Target-oriented implementation of algorithms for the extraction of clinically relevant information from biomedical signals or images, including the most suitable method for the reduction of measurement artefacts (baseline drift, noise, interferences, mistakes in the models,).		Т
Be aware of the importance of maintenance, quality control, safety T 5 T T and risk management and regulations for the specific application E 3 E E	Т	Т
Correctly assess the role and possibilities of data-processing systems in a local (hospital) and regional environment while being aware of potential problems associated with the implementation of such systems.		
Specify the physical and technical-chemical properties of synthetic T 2 materials for a wide range of biomedical applications and implement adequate tests.  T T E E		
Expert in Medical Radiation Physics Introduce measures and procedures in hospitals to ensure the safety and protection of radiation of persons (primarily patients) exposed to radiation for medical purposes.		
Accept radiation-generating medical devices and products as well as radiation-detecting equipment prior to their first use.  Elaborate, implement and follow-up of quality control procedures.		
Perform device-specific dosimetry.		
Provide assistance, in collaboration with the medical staff, to patient-specific dosimetry and projects on optimisation of doses.		
Provide professional advice for the preparation of specifications for the purchase of radiation-generating and -detecting devices and products.		



#### Competence coverage matrix

GHENT UNIVERSITY Master of Science in Biomedical Engineering  Academic year 2021-2022  Legend: T=teaching methods E=evaluation methods	E010371 Medical Imaging		E092814 Hospital Project	E015590 Leadership in Health Care	E015570 Health Information and Decision Support Systems	E063671 Biomaterials and Tissue Engineering	E010382 Neuro-engineering Science	E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	E074123 Artificial Organs	E092802 Biomedical Product Development	E092682 Medical Equipment, Safety and Regulations	E027770 Data Analytics in Healthcare and Connected Care	E010610 Biomedical Robotics and Assistive Technologies	E091103 Master's Dissertation
Expert in Medical Adequately choose, accept and calibrate instruments and conformal for dosimetry and measurement of radiation activity.	evices													
	W 10	0 W 19	W 29	W 19	W 13	W 4	W 8	W 20	W 17	W 10	W 14	W 7	W 41	W 31

#### EMingwALG1.1 Master and apply advanced knowledge in the own engineering discipline in solving complex problems.

Competences in one/more scientific discipline(s)

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E092814 Hospital Project	project	report	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E015570 Health Information and Decision Support Systems	practicum	oral examination	Insight in the development of clinical decision support and computer-aided diagnosis systems.
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e demonstration online project online lecture: plenary exercises online lecture online group work online demonstration lecture: plenary exercises self-reliant study activities project online discussion group lecture	oral examination report	Design skills of the embedded system aspects.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects  Understanding the design constraints of the electronic and peripheral components of implantable devices.  Understanding of the micro-and nanofabrication technologies for wearable and implantable biomedical devices and systems System integration, sterilization and packaging aspects of biomedical devices and systems.  Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.  Understanding of the contamination control in cleanroom environments.
E010610 Biomedical Robotics and Assistive Technologies	guided self-study seminar: coached exercises self-reliant study activities lecture	oral examination report	Understanding of the difficulties and challenges of human-robot interaction. The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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<b>&lt;&lt;</b>	EMingwALG1.2 Apply Computer Aided Engineering (CAE) tools and advanced communication instruments in a creative and purposeful way.  Competences in one/more scientific discipline							
Course	Teaching methods	Evaluation methods	Course learning outcome					
Noot: leer- en	evaluatievormen voorafgegaan door ** werden niet teruggevonden in de studiefiche							
E010610 B	iomedical Robotics and Assistive Technologies seminar: coached exercises		The ability to create a basic robotic control loop.					

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#### EMingwBIOM1.1 Be familiar with and have an understanding of the basic concepts and principles in the field of anatomy, (cell- and molecular) Competences in one/more scientific discipline(s) << biology, chemistry, physiology, biomechanics and medical and health sciences. Teaching methods **Evaluation methods** Course learning outcome Course Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche E010382 Neuro-engineering Science written examination with open Have insight in the working principles of the brain and a basic knowledge of most common neurological disorders. lecture questions System integration, sterilization and packaging aspects of biomedical devices and systems. E010600 Micro- and Nanotechnologies for Medical Device lecture oral examination Design and Fabrication Understanding the design constraints of the electronic and peripheral components of implantable devices. online lecture: plenary exercises online lecture

lecture: plenary exercises

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# EMingwBIOM1.2 Be familiar with and have an understanding of standard methods for the quantitative measurement of structures and functioning of biological systems on molecular, organic and system- level.

Competences in one/more scientific discipline(s)

s on molecular, organic and sy	stem- level.	
Teaching methods	Evaluation methods	Course learning outcome
ggevonden in de studiefiche		
demonstration	written examination with open	The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and
lecture	questions	regulations.
	written examination with multiple	
	Teaching methods ggevonden in de studiefiche demonstration	demonstration written examination with open lecture questions written examination with multiple

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# EMingwBIOM1.3 Be familiar with the functioning of medical devices and have insight in the relations between the results of measurements and the observed or controlled biophysical parameters. Course Teaching methods Evaluation methods Course learning outcome

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092802 Biomedical Product Development	project	participation report	Being capable of presenting and defending a project.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture	written examination with open questions written examination with multiple choice questions	The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E010610 Biomedical Robotics and Assistive Technologies	s guided self-study seminar: coached exercises self-reliant study activities lecture	oral examination report	Understanding of how a robot is controlled. Understanding of the difficulties and challenges of human-robot interaction.

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## EMingwBIOM1.8 Be familiar with and have an understanding of state-of-the-art methods for data analysis and the principles of artificial intelligence in data processing and medical decision support systems

<<

Competences in one/more scientific discipline(s)

intelligence in data processing an	nd medical decision support sy	stems.	
Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terug	gevonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination report open book examination	Critically approaching commonly used statistical methods in medicine and biomedical research
E015570 Health Information and Decision Support Systems	lecture seminar practicum	report	Knowledge of current systems for clinical decision support and computer-aided diagnosis, including expert-based, data driven and intelligent systems.  Knowledge of the basics in statistics, information theory, and machine learning for clinical decision support.
E010382 Neuro-engineering Science	seminar: practical PC room classes	report	Have an insight in the background, methods and interpretation of the different techniques to measure brain activity and signals.
E027770 Data Analytics in Healthcare and Connected C	arelecture practicum	written examination report skills test	Being able to select, for a given healthcare analytics problem, the most appropriate method to achieve the defined goals Understanding the details of and choice between supervised and unsupervised systems  Being familiar with the basic concepts of database systems and databases and understanding how database systems work Having a comprehensive knowledge of Python for data analytics purposes  Being able to construct datasets by querying APIs  Having a comprehensive knowledge about the machine learning process where data is transformed into information and knowledge  Interpreting and visualizing the results of a machine learning process or the content of medical datasets

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#### EMingwBIOM1.4 Have a fundamental insight in the physical principles, technological possibilities and limitations of medical signal and imaging Competences in one/more scientific discipline(s) << modalities. Teaching methods Course learning outcome Course **Evaluation methods** Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche Understand physical principles of different medical imaging techniques Understand relationship between different image processing techniques E010371 Medical Imaging oral examination seminar: practical PC room classes report Be able to explain the basic principles of the most important techniques in image enhancement, image segmentation and image Be able to judge the advantages and disadvantages of different medical imaging techniques. Have insight in advantages and disadvantages of existing image reconstruction techniques Be capable of defining components of medical imaging systems E010382 Neuro-engineering Science Have an insight in the background, methods and interpretation of the different techniques to measure brain activity and signals. lecture written examination with open questions E010610 Biomedical Robotics and Assistive Technologies guided self-study Understanding of the difficulties and challenges of human-robot interaction. oral examination

self-reliant study activities

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## EMingwBIOM1.5 Have a good understanding of the physical and chemical properties of body tissues, supplementary or substituting (synthetic) Competences in one/more scientific discipline(s) biomedical materials and their interactions.

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugg	evonden in de studiefiche		
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	online project online lecture: plenary exercises online lecture lecture: plenary exercises project	oral examination report	Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.  Understanding the design constraints of the electronic and peripheral components of implantable devices.  System integration, sterilization and packaging aspects of biomedical devices and systems.
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture	written examination with open questions written examination with multiple choice questions	The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E010610 Biomedical Robotics and Assistive Technologies	s guided self-study self-reliant study activities lecture		Understanding of the difficulties and challenges of human-robot interaction.

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EMingwBIOM1.6 Be able to apply algorithms for the assessment and optimization of radiation doses based on a profound insight into the absorption of the dosage and the functioning of radiation-generating and detecting machinery.

Teaching methods Evaluation methods Course learning outcome

Competences in one/more scientific discipline(s)

Course

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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# EMingwBIOM1.7 Be able to estimate the consequences of the interaction between radiation and living tissues and biomedical materials. Course Teaching methods Evaluation methods Course learning outcome Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

regulations.

The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and

E092682 Medical Equipment, Safety and Regulations

demonstration

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#### EMingwALG2.1 Analyse complex problems and translate them into concrete research questions.

Scientific	competences
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Course		Teaching methods	Evaluation methods	Course learning outcome
	n evaluatievormen voorafgegaan door ** werden niet terugge			
E010371 I	Medical Imaging	lecture seminar: practical PC room classes	report	Understand physical principles of different medical imaging techniques Understand relationship between different image processing techniques Be able to explain the basic principles of the most important techniques in image enhancement, image segmentation and image registration. Be able to judge the advantages and disadvantages of different medical imaging techniques. Have insight in advantages and disadvantages of existing image reconstruction techniques
E003280 (	Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination report open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies Critically approaching commonly used statistical methods in medicine and biomedical research Understanding the specific considerations in clinical study design for medical devices
E092814 I	Hospital Project	project	report	In vivo experience with medical technology
E063671 I	Biomaterials and Tissue Engineering	group work lecture	written examination participation	Insights in the potential and limitations of the various biomaterials.  Knowledge on methods for in vitro characterization of biomaterials.  Knowledge on the newer developments and forming methods of the various biomaterials.  Knowledge on the various biomaterials and their applied combinations in the medical sector.  Knowledge on how biomaterials are developed and improved.
	Micro- and Nanotechnologies for Medical Device Design and Fabrication	lecture online project online lecture: plenary exercises online lecture online group work lecture: plenary exercises self-reliant study activities project online discussion group	oral examination report	Design skills of the embedded system aspects.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects  Understanding the design constraints of the electronic and peripheral components of implantable devices.  Understanding of the micro-and nanofabrication technologies for wearable and implantable biomedical devices and systems.  Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.
E027770 I	Data Analytics in Healthcare and Connected Card	electure	written examination	Being able to select, for a given healthcare analytics problem, the most appropriate method to achieve the defined goals Understanding the details of and choice between supervised and unsupervised systems  Being familiar with the basic concepts of database systems and databases and understanding how database systems work Understand network technologies and protocols tailored to connect medical devices, wearables and databases Having a comprehensive knowledge about the machine learning process where data is transformed into information and knowledge
E010610 I	Biomedical Robotics and Assistive Technologies	guided self-study self-reliant study activities	oral examination	The ability to create a basic robotic control loop.
E091103 I	Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG2.2 Consult the scientific literature as part of the own research.

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Scientific competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terug	gevonden in de studiefiche		
E010371 Medical Imaging	lecture		Be able to judge the advantages and disadvantages of different medical imaging techniques.
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	report	Critically approaching commonly used statistical methods in medicine and biomedical research
E063671 Biomaterials and Tissue Engineering	lecture	written examination	Insights in the potential and limitations of the various biomaterials.  Knowledge on methods for in vitro characterization of biomaterials.  Knowledge on the newer developments and forming methods of the various biomaterials.  Knowledge on the various biomaterials and their applied combinations in the medical sector.  Knowledge on how biomaterials are developed and improved.
E010610 Biomedical Robotics and Assistive Technologi	es guided self-study self-reliant study activities	oral examination	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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<b>&lt;&lt;</b>	EMingwALG2.3 Select and apply t	he appropriate models, metho	ds and techniques.	Scientific competence
Course		Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- e	en evaluatievormen voorafgegaan door ** werden niet terug	gevonden in de studiefiche		
E010371	Medical Imaging	lecture	oral examination	Be capable of defining components of medical imaging systems
E003280	Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination report open book examination	Critically approaching commonly used statistical methods in medicine and biomedical research
E092814	Hospital Project	project	peer assessment	In vivo experience with medical technology
	Health Information and Decision Support Systems	lecture practicum	oral examination report	Insight in the development of clinical decision support and computer-aided diagnosis systems.
E063671	Biomaterials and Tissue Engineering	group work practicum lecture	written examination participation	Insights in the potential and limitations of the various biomaterials.  Knowledge on methods for in vitro characterization of biomaterials.  Knowledge on the newer developments and forming methods of the various biomaterials.  Knowledge on the various biomaterials and their applied combinations in the medical sector.  Knowledge on how biomaterials are developed and improved.
E010382	Neuro-engineering Science	seminar: practical PC room classes	report	Have an insight in the background, methods and interpretation of the different techniques to measure brain activity and signals.
	Micro- and Nanotechnologies for Medical Device Design and Fabrication	ce lecture online project online lecture: plenary exercises online lecture lecture: plenary exercises self-reliant study activities project online discussion group	oral examination report	Design skills of the embedded system aspects. Understanding the design constraints of the electronic and peripheral components of implantable devices. System integration, sterilization and packaging aspects of biomedical devices and systems. Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.
E027770	Data Analytics in Healthcare and Connected Ca		written examination	Being able to select, for a given healthcare analytics problem, the most appropriate method to achieve the defined goals Understanding the details of and choice between supervised and unsupervised systems
E010610	Biomedical Robotics and Assistive Technologie	es seminar: coached exercises	oral examination	The ability to create a basic robotic control loop.
E091103	Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG2.4 Develop and validate mathematical models and methods. Scientific competences << Course Teaching methods **Evaluation methods** Course learning outcome Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche E010371 Medical Imaging lecture oral examination Understand relationship between different image processing techniques E015570 Health Information and Decision Support Insight in the development of clinical decision support and computer-aided diagnosis systems. oral examination practicum

oral examination

The ability to create a basic robotic control loop.

E010610 Biomedical Robotics and Assistive Technologies seminar: coached exercises

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#### EMingwALG2.5 Interpret research findings in an objective and critical manner.

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Scientific competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination report open book examination	Critically approaching commonly used statistical methods in medicine and biomedical research
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	online discussion group online project online lecture project		knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects
E074123 Artificial Organs	lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092802 Biomedical Product Development	project	participation report	Being capable of presenting and defending a project.
E010610 Biomedical Robotics and Assistive Technologies	guided self-study self-reliant study activities	oral examination report	Understanding of kinematics and dynamics of robots.  The ability to create a basic robotic control loop.  Understanding of the difficulties and challenges of human-robot interaction.  Understanding of how a robot is controlled.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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## EMingwBIOM2.1 Analyse complex multidisciplinary biomedical problems based on (recent) scientific research and transform them into a logically structured, technologically realisable and ethically justifiable research plan.

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Scientific competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** we	erden niet teruggevonden in de studiefiche		
E092814 Hospital Project	project	peer assessment report	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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## EMingwBIOM2.2 Answer a concrete and relevant biomedical engineering question on a basis of recent technical, scientific and medical

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Scientific con	npetences
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knowledge.			
Course	Teaching methods	Evaluation methods	Course learning outcome
loot: leer- en evaluatievormen voorafgegaan door ** werden niet terugg	evonden in de studiefiche		
E092814 Hospital Project	project	peer assessment report	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E010382 Neuro-engineering Science	lecture	written examination with open questions	Understand the different neuromodulation techniques and how these are used to study the function of specific brain structures and to influence regions in neurological disorders.
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e lecture online project online lecture: plenary exercises online lecture online group work lecture: plenary exercises self-reliant study activities project online discussion group	oral examination report	Design skills of the embedded system aspects.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects  Understanding the design constraints of the electronic and peripheral components of implantable devices.  Understanding of the micro-and nanofabrication technologies for wearable and implantable biomedical devices and systems.  System integration, sterilization and packaging aspects of biomedical devices and systems.  Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture	written examination with open questions written examination with multiple choice questions	The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E027770 Data Analytics in Healthcare and Connected Ca	relecture	written examination	Being able to select, for a given healthcare analytics problem, the most appropriate method to achieve the defined goals Understanding the details of and choice between supervised and unsupervised systems
E010610 Biomedical Robotics and Assistive Technologie	s guided self-study seminar: coached exercises self-reliant study activities	oral examination report	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwBIOM2.3 Apply complex concepts, techniques and methods in order to solve real problems in physiology and clinical medicine.

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< EMingwBIOM2.3 Apply complex co	ncepts, techniques and met	hods in order to solve real	problems in physiology and clinical medicine.	Scientific competence
Course	Teaching methods	Evaluation methods	Course learning outcome	
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche			
E010371 Medical Imaging	lecture	oral examination	Have insight in advantages and disadvantages of existing image reconstruction techniques	
E092814 Hospital Project	project	peer assessment report	In vivo experience with medical technology	
E015570 Health Information and Decision Support Systems	practicum	oral examination report	Insight in the development of clinical decision support and computer-aided diagnosis systems.	
E010382 Neuro-engineering Science	lecture	written examination with open questions	Have an insight in the background, methods and interpretation of the different techniques to me	easure brain activity and signals
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e lecture online project online lecture: plenary exercises online lecture online group work lecture: plenary exercises self-reliant study activities project online discussion group	oral examination report	Design skills of the embedded system aspects.  Understanding the design constraints of the electronic and peripheral components of implantable Understanding of the micro-and nanofabrication technologies for wearable and implantable bior System integration, sterilization and packaging aspects of biomedical devices and systems. Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.	
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised manner.  To report on technical artificial organ subjects focussing on the scientific correctness and sound To operate independently, with a sense of creativity and personal initiative without losing one's organized to the scientific correctness and sound to operate independently.	Iness of the statements.
E010610 Biomedical Robotics and Assistive Technologies	s seminar: coached exercises		The ability to create a basic robotic control loop.	
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative a Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, be laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusively an appropriate methodology, in accordance with the applicable scientific norms of the speciments.	ooth to colleagues as to fresearch (literature search, sions,).

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### EMingwBIOM2.4 Critically and permanently evaluate the quality, (bio-)ethical aspects, innovative value and (bio-)safety of (own) research.

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Scientific competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	In vivo experience with medical technology
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e lecture online project online lecture online group work project online discussion group	oral examination report	Understanding the design constraints of the electronic and peripheral components of implantable devices. knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects
E010610 Biomedical Robotics and Assistive Technologies		oral examination	Understanding of the difficulties and challenges of human-robot interaction.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwBIOM2.5 Process, evaluate, interpret and summarize results of (own) research in a systematic, critical and clear way.

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Scientific	com	petences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	In vivo experience with medical technology
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e online discussion group online project online lecture online group work project	report	knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects
E010610 Biomedical Robotics and Assistive Technologies		oral examination report	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain. Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance. Self-assessment with adequate and critical self-correction and objectivity. Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople. Render and synthesise the results concisely. Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,). Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG3.1 Independently form an opinion on complex situations and problems, and defend this point of view.

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Intellectual	l competences
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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugg	evonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination report open book examination	Critically approaching commonly used statistical methods in medicine and biomedical research
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E010382 Neuro-engineering Science	lecture	written examination with open questions	Understand the different neuromodulation techniques and how these are used to study the function of specific brain structures and to influence regions in neurological disorders.
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e lecture online project online lecture: plenary exercises online lecture online group work lecture: plenary exercises self-reliant study activities project online discussion group	oral examination report	Design skills of the embedded system aspects. knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects Understanding the design constraints of the electronic and peripheral components of implantable devices. Understanding of the micro-and nanofabrication technologies for wearable and implantable biomedical devices and systems. System integration, sterilization and packaging aspects of biomedical devices and systems. Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.
E010610 Biomedical Robotics and Assistive Technologies	s guided self-study seminar: coached exercises self-reliant study activities	oral examination report	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG3.2 Apply knowledge in a creative, purposeful and innovative way to research, conceptual design and production.

ntellectual (	competences
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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	vonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	In vivo experience with medical technology
E092802 Biomedical Product Development	project	participation report	Being capable to analyse, synthesize and manage an innovation process.
E010610 Biomedical Robotics and Assistive Technologies	guided self-study self-reliant study activities	·	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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### EMingwALG3.3 Critically reflect on one's own way of thinking and acting, and understand the limits of one's competences.

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E010610 Biomedical Robotics and Assistive Technologies	guided self-study seminar: coached exercises self-reliant study activities	oral examination report	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG3.4 Stay uptodate with the evolutions in the discipline to elevate the own competences to expert level.

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ntellectual	competences
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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E074123 Artificial Organs	lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture		The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E010610 Biomedical Robotics and Assistive Technologies	guided self-study self-reliant study activities lecture		Understanding of kinematics and dynamics of robots. Understanding of the difficulties and challenges of human-robot interaction. Understanding of how a robot is controlled.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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## EMingwALG3.5 Readily adapt to changing professional circumstances.

Intellectual competences

Course	Teaching methods	Evaluation methods	Course learning outcome			
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet teruggevonden in de studiefiche						
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital			
E092682 Medical Equipment, Safety and Regulations	demonstration lecture		The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.			
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.			

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#### EMingwALG4.1 Have the ability to communicate in English about the own field of specialisation.

EMingwALG4.1 Have the ability	to communicate in English abou	ıt the own field of specialis	Sation. Competences in cooperation and communication
Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet te	ruggevonden in de studiefiche		
E010371 Medical Imaging	lecture seminar: practical PC room classes	oral examination report	Understand physical principles of different medical imaging techniques Understand relationship between different image processing techniques Be able to explain the basic principles of the most important techniques in image enhancement, image segmentation and image registration. Be able to judge the advantages and disadvantages of different medical imaging techniques. Have insight in advantages and disadvantages of existing image reconstruction techniques Be capable of defining components of medical imaging systems
E003280 Clinical Study Design and Biostatistics	lecture lecture: response lecture lecture: plenary exercises	written examination report	Critically approaching commonly used statistical methods in medicine and biomedical research
E092814 Hospital Project	project	peer assessment report	In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E010382 Neuro-engineering Science	seminar: practical PC room classes	report	Have an insight in the background, methods and interpretation of the different techniques to measure brain activity and signals.
E010600 Micro- and Nanotechnologies for Medical De Design and Fabrication	evice online discussion group online project online lecture: plenary exercises online group work lecture: plenary exercises project	oral examination report	Design skills of the embedded system aspects.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects  Understanding the design constraints of the electronic and peripheral components of implantable devices.  Understanding of the micro-and nanofabrication technologies for wearable and implantable biomedical devices and systems.  System integration, sterilization and packaging aspects of biomedical devices and systems.  Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.  Understanding of the contamination control in cleanroom environments.
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092802 Biomedical Product Development	guided self-study project	report	Being capable of presenting and defending a project.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture	written examination with open questions written examination with multiple choice questions	The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E010610 Biomedical Robotics and Assistive Technological	gies guided self-study seminar: coached exercises self-reliant study activities	oral examination report	Understanding of kinematics and dynamics of robots. The ability to create a basic robotic control loop. Understanding of the difficulties and challenges of human-robot interaction. Understanding of how a robot is controlled.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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## EMingwALG4.2 Project management: have the ability to formulate objectives, report efficiently, keep track of targets, follow the progress of the Competences in cooperation and communication project....

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project,			
Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	vonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	report	Critically approaching commonly used statistical methods in medicine and biomedical research
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	project online project online group work online demonstration	report	Understanding of the contamination control in cleanroom environments.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects  Understanding of the micro-and nanofabrication technologies for wearable and implantable biomedical devices and systems.
E092802 Biomedical Product Development	project	participation report	Being capable of presenting and defending a project.
E010610 Biomedical Robotics and Assistive Technologies	self-reliant study activities	oral examination	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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# EMingwALG4.3 Have the ability to work as a member of a team in a multidisciplinary workingenvironment, as well as being capable of taking on Competences in cooperation and communication supervisory responsibilities.

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden nie	t teruggevonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E092802 Biomedical Product Development	project	participation report	Being capable to analyse, synthesize and manage an innovation process.  Having no fear to start an innovation project (spin-in, spin-off or start-up).

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#### EMingwALG4.4 Report on technical or scientific subjects verbally, in writing and using graphics.

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Competences in cooperation and communication

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E010371 Medical Imaging	seminar: practical PC room classes	oral examination	Understand physical principles of different medical imaging techniques Understand relationship between different image processing techniques Be able to explain the basic principles of the most important techniques in image enhancement, image segmentation and image registration. Be able to judge the advantages and disadvantages of different medical imaging techniques. Have insight in advantages and disadvantages of existing image reconstruction techniques Be capable of defining components of medical imaging systems
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	report	Critically approaching commonly used statistical methods in medicine and biomedical research
E092814 Hospital Project	project	report	Knowledge of functioning of a clinical departement in a hospital
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E015570 Health Information and Decision Support Systems	practicum	oral examination	Knowledge of current systems for clinical decision support and computer-aided diagnosis, including expert-based, data driven and intelligent systems.
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e online discussion group online project online lecture: plenary exercises online group work lecture: plenary exercises project	report	Design skills of the embedded system aspects.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects  Understanding of the contamination control in cleanroom environments.
E010610 Biomedical Robotics and Assistive Technologies		oral examination	Understanding of kinematics and dynamics of robots.  The ability to create a basic robotic control loop.  Understanding of the difficulties and challenges of human-robot interaction.  Understanding of how a robot is controlled.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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## EMingwBIOM4.1 Critically discuss a research plan with fellows, doctors and researchers working in disciplines related to biomedical sciences Competences in cooperation and communication and health care.

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and nealth care.			
Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet t	eruggevonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	lecture lecture: response lecture	written examination report open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologie Critically approaching commonly used statistical methods in medicine and biomedical research Understanding the specific considerations in clinical study design for medical devices
E092814 Hospital Project	project	report	Knowledge of functioning of a clinical departement in a hospital
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E092802 Biomedical Product Development	project	participation report	Being capable to analyse, synthesize and manage an innovation process.  Being capable of presenting and defending a project.  Having no fear to start an innovation project (spin-in, spin-off or start-up).  Being capable to write a business plan.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwBIOM4.2 Communicate (own) results orally and in writing in a systematic and clear way to various levels.

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Competences in cooperation and communication

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	vonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E010610 Biomedical Robotics and Assistive Technologies	seminar: coached exercises	oral examination report	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG5.1 Act in an ethical, professional and social way.

Societal competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies Critically approaching commonly used statistical methods in medicine and biomedical research Understanding the specific considerations in clinical study design for medical devices
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E015590 Leadership in Health Care	project		Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E015570 Health Information and Decision Support Systems	lecture seminar	report	Insight in the current possibilities and opportunities of health information systems and in the technological and legal challenges.
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	e online discussion group online project online lecture online group work project	report	knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects
E010610 Biomedical Robotics and Assistive Technologies	s self-reliant study activities seminar: coached exercises	oral examination report	Understanding of the difficulties and challenges of human-robot interaction.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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## EMingwALG5.2 Recognize the most important business and legal aspects of the own engineering discipline.

Societal competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet ten	~		
E003280 Clinical Study Design and Biostatistics	lecture	written examination open book examination	Understanding the specific considerations in clinical study design for medical devices
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E015570 Health Information and Decision Support Systems	lecture seminar	report	Knowledge of current health information systems, including hospital information systems, picture archiving and communication systems, electronic health record, e-health and m-health.  Insight in the current possibilities and opportunities of health information systems and in the technological and legal challenges.
E010610 Biomedical Robotics and Assistive Technologies lecture			Understanding of the difficulties and challenges of human-robot interaction.

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## EMingwALG5.3 Understand the historical evolution of the own engineering discipline and its social relevance.

Societal	competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet teru	ggevonden in de studiefiche		
E015570 Health Information and Decision Support Systems	lecture	report	Knowledge of current health information systems, including hospital information systems, picture archiving and communication systems, electronic health record, e-health and m-health.
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture	written examination with open questions written examination with multiple choice questions	The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E010610 Biomedical Robotics and Assistive Technologi	es guided self-study seminar: coached exercises self-reliant study activities lecture		Understanding of kinematics and dynamics of robots. The ability to create a basic robotic control loop. Understanding of the difficulties and challenges of human-robot interaction. Understanding of how a robot is controlled.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwBIOM5.1 Take up a well-founded position about socio-economic and societal aspects of biomedical engineering.

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Societal competences

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	lecture lecture: response lecture	written examination open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies Understanding the specific considerations in clinical study design for medical devices
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E010610 Biomedical Robotics and Assistive Technologies	guided self-study seminar: coached exercises self-reliant study activities lecture	oral examination report	Understanding of kinematics and dynamics of robots. The ability to create a basic robotic control loop. Understanding of the difficulties and challenges of human-robot interaction. Understanding of how a robot is controlled.

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### EMingwBIOM5.2 Take into consideration the medical ethics and laws and rules with respect to the implementation of medical-technical actions

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Societal competences

and scientific research in a clinical	environment.		
Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	vonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	lecture lecture: response lecture	written examination report open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies Understanding the specific considerations in clinical study design for medical devices
E015570 Health Information and Decision Support Systems	lecture	report	Insight in the current possibilities and opportunities of health information systems and in the technological and legal challenges.
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	online discussion group online project online lecture online group work project	report	knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects
E010610 Biomedical Robotics and Assistive Technologies	guided self-study self-reliant study activities lecture		Understanding of the difficulties and challenges of human-robot interaction.

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## EMingwBIOM5.3 Show a strong international awareness and be open for new societal questions, evolutions, needs and demands for innovation.

Societal competences

innovation.			
Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werde	n niet teruggevonden in de studiefiche		
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.

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## EMingwBIOM5.4 Be aware of ethical and safety aspects in biomedical practice.

Societal competence
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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	vonden in de studiefiche		
E010371 Medical Imaging	lecture	oral examination	Understand physical principles of different medical imaging techniques
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E015570 Health Information and Decision Support Systems	lecture	report	Insight in the current possibilities and opportunities of health information systems and in the technological and legal challenges
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	online discussion group online project online lecture online group work project	report	knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E010610 Biomedical Robotics and Assistive Technologies	guided self-study seminar: coached exercises self-reliant study activities lecture		Understanding of the difficulties and challenges of human-robot interaction.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwBIOM5.5 Strive for a continuous improvement and guarantee of health care and quality of life of the individual and society.

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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugg	evonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	lecture lecture: response lecture	written examination open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies
E092814 Hospital Project	project	peer assessment	In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture		The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E010610 Biomedical Robotics and Assistive Technologie	s guided self-study seminar: coached exercises self-reliant study activities lecture		Understanding of kinematics and dynamics of robots.  The ability to create a basic robotic control loop.  Understanding of the difficulties and challenges of human-robot interaction.  Understanding of how a robot is controlled.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	evonden in de studiefiche		
E010610 Biomedical Robotics and Assistive Technologies	guided self-study seminar: coached exercises self-reliant study activities lecture	oral examination report	Understanding of kinematics and dynamics of robots. The ability to create a basic robotic control loop. Understanding of the difficulties and challenges of human-robot interaction. Understanding of how a robot is controlled.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG6.2 Reconcile conflicting specifications and prior conditions in a highquality and innovative concept or process.

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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werd	den niet teruggevonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E074123 Artificial Organs	excursion lecture		To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E027770 Data Analytics in Healthcare and Connected Carelecture		written examination	Being able to select, for a given healthcare analytics problem, the most appropriate method to achieve the defined goals
E010610 Biomedical Robotics and Assistive T	echnologies lecture		Understanding of the difficulties and challenges of human-robot interaction.
E010610 Blomedical Robotics and Assistive Technologies Tecture  E091103 Master's Dissertation master's dissertation		oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG6.3 Synthesize incomplete, contradictory or redundant data into useful information.

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Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden nie	et teruggevonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital
E092802 Biomedical Product Development	lecture project	participation report	Having no fear to start an innovation project (spin-in, spin-off or start-up).
E027770 Data Analytics in Healthcare and Connec	cted Carelecture practicum	written examination report skills test	Interpreting and visualizing the results of a machine learning process or the content of medical datasets Being familiar with the basic concepts of database systems and databases and understanding how database systems work Having a comprehensive knowledge of Python for data analytics purposes Being able to construct datasets by querying APIs Having a comprehensive knowledge about the machine learning process where data is transformed into information and knowledge
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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# EMingwALG6.4 Possess sufficient ready knowledge and understanding to evaluate the results of complex calculations, or make approximate estimates.

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Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** w	verden niet teruggevonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital
E027770 Data Analytics in Healthcare and Connected Carelecture written examination		written examination	Being able to select, for a given healthcare analytics problem, the most appropriate method to achieve the defined goals
	practicum	report	Having a comprehensive knowledge of Python for data analytics purposes
		skills test	Interpreting and visualizing the results of a machine learning process or the content of medical datasets
E010610 Biomedical Robotics and Assistive	e Technologies self-reliant study activities		The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination	Define, study and analyse the research problem in a specific domain.
		assignment	Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance. Self-assessment with adequate and critical self-correction and objectivity.
			Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.
			Render and synthesise the results concisely.
			Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the
			reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,). Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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#### EMingwALG6.5 Pay attention to entire life cycles of systems, machines, and processes.

Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terug	gevonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	In vivo experience with medical technology
E092682 Medical Equipment, Safety and Regulations	demonstration		The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and
	lecture		regulations.
E010610 Biomedical Robotics and Assistive Technologic	es guided self-study		Understanding of kinematics and dynamics of robots.
_	seminar: coached exercises		The ability to create a basic robotic control loop.
	self-reliant study activities		Understanding of the difficulties and challenges of human-robot interaction.
	lecture		Understanding of how a robot is controlled.

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#### EMingwALG6.6 Pay attention to sustainability, energyefficiency, environmental cost, use of raw materials and labour costs.

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Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden nie	t teruggevonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092802 Biomedical Product Development	project	report	Being capable to write a business plan.

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#### EMingwALG6.7 Pay attention to all aspects of reliability, safety, and ergonomics. << Course Teaching methods **Evaluation methods** Course learning outcome Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche E092814 Hospital Project peer assessment Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology E010600 Micro- and Nanotechnologies for Medical Device online discussion group knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, report

questions

written examination with open

including basis principles of

regulations.

required testing and related ethical aspects

To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured

The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and

To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.

To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.

Understanding of the difficulties and challenges of human-robot interaction.

online project

online lecture

demonstration

project

lecture

lecture

excursion

online group work

Design and Fabrication

E092682 Medical Equipment, Safety and Regulations

E010610 Biomedical Robotics and Assistive Technologies lecture

E074123 Artificial Organs

Profession-specific competence

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### EMingwALG6.8 Have insight into and understanding of the importance of entrepreneurship.

Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werd	en niet teruggevonden in de studiefiche		
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E010610 Biomedical Robotics and Assistive Technologies self-reliant study activities			The ability to create a basic robotic control loop.

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#### EMingwALG6.9 Show perseverance, innovativeness, and an aptitude for creating added value.

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Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugg	evonden in de studiefiche		
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital
E092802 Biomedical Product Development	project	oral examination report participation	Being capable of presenting and defending a project.
E010610 Biomedical Robotics and Assistive Technologies	s self-reliant study activities seminar: coached exercises	oral examination report	The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	vonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination report open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies. Understanding the specific considerations in clinical study design for medical devices
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	demonstration online project online lecture: plenary exercises online lecture online group work online demonstration lecture: plenary exercises self-reliant study activities project online discussion group lecture	oral examination report	Design skills of the embedded system aspects.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects  Understanding the design constraints of the electronic and peripheral components of implantable devices.  Understanding of the micro-and nanofabrication technologies for wearable and implantable biomedical devices and systems.  System integration, sterilization and packaging aspects of biomedical devices and systems.  Skills to decide on the powering and the telemetry aspects of biomedical devices and systems.  Understanding of the contamination control in cleanroom environments.
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.
E092682 Medical Equipment, Safety and Regulations	demonstration lecture	written examination with open questions written examination with multiple choice questions	The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
E010610 Biomedical Robotics and Assistive Technologies	guided self-study seminar: coached exercises self-reliant study activities lecture		Understanding of how a robot is controlled.  The ability to create a basic robotic control loop.  Understanding of the difficulties and challenges of human-robot interaction.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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EMingwBIOM6.2 Mathematically translate complex biomechanical, biological and physiological processes under normal and pathological conditions into advanced models and paradigms, knowing their limitations and finding creative solutions for these limitations.

Teaching methods

Evaluation methods

Course learning outcome

Profession-specific competence

Course Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

E010610 Biomedical Robotics and Assistive Technologies lecture

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seminar: coached exercises self-reliant study activities

Understanding of the difficulties and challenges of human-robot interaction.

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## EMingwBIOM6.3 Apply the most suitable instruments, concepts, techniques and methods for the solution of real problems in physiology and clinical medicine on molecular, organic and system level.

Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet teru	ggevonden in de studiefiche		
E010610 Biomedical Robotics and Assistive Technolog	ies guided self-study seminar: coached exercises self-reliant study activities		The ability to create a basic robotic control loop.
E091103 Master's Dissertation	master's dissertation	oral examination assignment	Define, study and analyse the research problem in a specific domain.  Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.  Self-assessment with adequate and critical self-correction and objectivity.  Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.  Render and synthesise the results concisely.  Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,).  Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.

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EMingwBIOM6.4 Target-oriented implementation of algorithms for the extraction of clinically relevant information from biomedical signals or images, including the most suitable method for the reduction of measurement artefacts (baseline drift, noise, interferences, mistakes in the models,...).

Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet teru	uggevonden in de studiefiche		
E010371 Medical Imaging	lecture seminar: practical PC room classes	oral examination report	Be able to explain the basic principles of the most important techniques in image enhancement, image segmentation and image registration.  Understand relationship between different image processing techniques
E003280 Clinical Study Design and Biostatistics	guided self-study lecture: response lecture lecture: plenary exercises lecture	written examination report open book examination	Critically approaching commonly used statistical methods in medicine and biomedical research
E015570 Health Information and Decision Support Systems	lecture practicum	oral examination report	Insight in the development of clinical decision support and computer-aided diagnosis systems.
E010610 Biomedical Robotics and Assistive Technologies seminar: coached exercises			The ability to create a basic robotic control loop.

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## EMingwBIOM6.5 Be aware of the importance of maintenance, quality control, safety and risk management and regulations for the specific

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Course	Teaching methods	Evaluation methods	Course learning outcome
loot: leer- en evaluatievormen voorafgegaan door ** werden niet terugge	vonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	lecture	written examination open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies Understanding the specific considerations in clinical study design for medical devices
092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital
E010600 Micro- and Nanotechnologies for Medical Device Design and Fabrication	online discussion group online project online lecture: plenary exercises online lecture online group work online demonstration lecture: plenary exercises project	report	Understanding of the contamination control in cleanroom environments.  knowledge of the basis priciples regarding regulatory aspects in order to introduce a new medical device on the market, including basis principles of required testing and related ethical aspects
E092682 Medical Equipment, Safety and Regulations	demonstration lecture		The technique, the function and the application (the indication) of the medical devices in a hospital, aspects of safety and regulations.
010610 Biomedical Robotics and Assistive Technologies	lecture		Understanding of the difficulties and challenges of human-robot interaction.

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## EMingwBIOM6.6 Correctly assess the role and possibilities of data-processing systems in a local (hospital) and regional environment while being aware of potential problems associated with the implementation of such systems.

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Profession-specific competence

Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet te	ruggevonden in de studiefiche		
E003280 Clinical Study Design and Biostatistics	lecture	written examination open book examination	Acknowledging the importance of clinical trials for health-care decision making and reimbursement of new medical technologies Understanding the specific considerations in clinical study design for medical devices
E092814 Hospital Project	project	peer assessment	Knowledge of functioning of a clinical departement in a hospital In vivo experience with medical technology
E015590 Leadership in Health Care	project	assignment	Insight in leadership and quality-ethical-economical thinking in complex health care issues and medical technology
E015570 Health Information and Decision Support Systems	lecture	report	Knowledge of current health information systems, including hospital information systems, picture archiving and communication systems, electronic health record, e-health and m-health.  Knowledge of current systems for clinical decision support and computer-aided diagnosis, including expert-based, data driven and intelligent systems.

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## EMingwBIOM6.7 Specify the physical and technical-chemical properties of synthetic materials for a wide range of biomedical applications and implement adequate tests.

Profession-specific competence

implement adequate tests.			
Course	Teaching methods	Evaluation methods	Course learning outcome
Noot: leer- en evaluatievormen voorafgegaan door ** werden niet t	eruggevonden in de studiefiche		
E063671 Biomaterials and Tissue Engineering	group work practicum lecture	written examination report participation	Insights in the potential and limitations of the various biomaterials.  Knowledge on methods for in vitro characterization of biomaterials.  Knowledge on the various biomaterials and their applied combinations in the medical sector.
E074123 Artificial Organs	excursion lecture	written examination with open questions	To apply the acquired knowledge in artificial organs to concrete problem solving in an organised, accurate and structured manner.  To report on technical artificial organ subjects focussing on the scientific correctness and soundness of the statements.  To operate independently, with a sense of creativity and personal initiative without losing one's critical thinking.

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EMingwBIOM7.1 Introduce measures and procedures in hospitals to ensure the safety and protection of radiation of persons (primarily patients) exposed to radiation for modical purposes

Expert in Medical Radiation Physics

patients) exposed to radiation for medical purposes.

Course Teaching methods Evaluation methods Course learning outcome

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Course Teaching methods Evaluation methods Course learning outcome

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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EMingwBIOM7.2 Accept radiation-generating medical devices and products as well as radiation-detecting equipment prior to their first use.

Expert in Medical Radiation Physics

Course Teaching methods Evaluation methods Course learning outcome

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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EMingwBIOM7.3 Elaborate, implement and follow-up of quality control procedures.

Expert in Medical Radiation Physics

Course Teaching methods Evaluation methods Course learning outcome

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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< EMingwBIOM7.4 Perform device-specific dosimetry. Expert in Medical Radiation Physics

Course Teaching methods Evaluation methods Course learning outcome

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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EMingwBIOM7.5 Provide assistance, in collaboration with the medical staff, to patient-specific dosimetry and projects on optimisation of Expert in Medical Radiation Physics doses.

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Course

Teaching methods

Evaluation methods

Course learning outcome

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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EMingwBIOM7.6 Provide professional advice for the preparation of specifications for the purchase of radiation-generating and -detecting devices and products.

Expert in Medical Radiation Physics

Course Teaching methods Evaluation methods Course learning outcome

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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EMingwBIOM7.7 Adequately choose, accept and calibrate instruments and devices for dosimetry and measurement of radiation activity.

Expert in Medical Radiation Physics

Course Teaching methods Evaluation methods Course learning outcome

Noot: leer- en evaluatievormen voorafgegaan door \*\* werden niet teruggevonden in de studiefiche

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