Maastricht University

Education and Examination Regulations

Master of Science Programmes

Biobased Materials

Imaging and Engineering

Systems Biology **2022-2023**

Maastricht, May 2022

Faculty of Science and Engineering

Msc Biobased Materials, Molecular Imaging and Engineering and Systems Biology

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SECTION 1 GENERAL PROVISIONS

Article 1.1 Applicability of the regulations

These regulations apply to the education, exams and examinations of the Master of Science programmes in Biobased Materials (BBM), hereinafter referred to as: 'the BBM programme', in Systems Biology (MSB), hereinafter referred to as: 'the MSB programme', and in Imaging and Engineering, hereinafter referred to as: 'the MIE programme' and to all students who are registered within the programme.

The programmes are provided by Maastricht University's Faculty of Science and Engineering, hereinafter referred to as: 'the faculty'.

The regulations were adopted by the Faculty Board after advice and consent of the Educational Programme Committees and in consultation with and after consent from the Faculty Council. These regulations apply to all students enrolled in the academic year of 2022-2023.

These regulations also apply to students from other programmes, faculties or institutions of higher education, insofar as they follow components of the programmes to which these Education and Examination Regulations apply.

For components of the programmes that students follow at another degree programme, faculty or institution of higher education, the Education and Examination Regulations for the other programme, faculty or institution apply to the component in question.

Article 1.2 Definitions

In these regulations, the following definitions apply:

academic year	the period from September 1 of a calendar year up to and including August 31 of the following calendar year
assessment	a component of the course exam as defined in the course manual;
Board of Admissions	the board responsible for assessment of admissibility of a candidate to one of the programmes;
Board of Examiners	the board referred to in Article 7.12 of the Act;
CANVAS	web-based learning management system, or LMS. It is used by Maastricht University, coordinators, tutors, examiners, and students to access and manage online course learning materials and assessment.
course coordinator	the person responsible for overseeing the coordination of a course;
course manual	a paper or electronic document outlining the content and intended learning outcomes of a course, describing methods of education and examination of that course and specifying regulations and guidelines applicable to that course;
course	a programme component or study unit of the programme within the meaning of Article 7.3 of the Act;
credit	a unit expressed in European credits (EC, *c.f.* European Credit), with one credit equalling 28 hours of study

Educational Programme Committee	the representation and advisory body that carries out the duties described in Articles 9.18 and 9.38c of the Act;
elective	part of the programme that is the result of individual choice of the student and part of the final examination;
exam	a component of the examination as referred to in Article 7.10 of the Act;
examiner	the person designated by the Board of Examiners to administer exams and to determine the results of such exams;
examination	a component of the final examination as referred to in Article 7.10 of the Act; theexamination consists of multiple forms of assessment;
extracurricular education	courses and/or other educational activities for which EC may be obtained that are not part of the programme;
Faculty Board	the Faculty Board, referred to in Article 9.12 of the Act;
Faculty Council	the Faculty Council referred to in Article 9.37 of the Act;
intranet	internal website for the BBM, MIE or MSB programmes containing information about the programme (study related information, forms, rules and regulation documents, advice, support and guiadance).
master thesis	an individually and independently written thesis, related to a specific domain, that concludes the programme. This the concluding course of is part of the final examination;
office of student affairs	a team of administrative staff providing services related to education, including but not limited to course registration, grades publication and collecting course evaluations;
oral exam	a component of the examination administered orally, either individually or in a group.
pre-master programme	a tailor-made individual programme of 30 ECTS offered by the Faculty of Science and Engineering for the purpose of eligibility for admission based on the previous education of the applicant;
programme director	the person responsible for the operational management of the programme;
programme	the Master's programmes referred to in Article 1.1 of these regulations, consisting of a coherent whole of study units;
project	integrated course in which education takes place in the form of research using previously attained knowledge and skills;
semester	part of an academic year, either starting in September or starting in February;
skills training	practical exercise as referred to in Article 7.13(2)(d) of the Act, in one of the following forms: - carrying out research in a group during a project; - writing a paper, writing a research-project proposal or performing another written assignment; - performing a research assignment; - participating in field work, a field trip, or an excursion; - peer-review exam of a research proposal, a presentation, or a research paper;

	- research portfolio; - participating in an activity intended to develop certain skills;
student portal	the portal to the digital environment of Maastricht University which can be used by students for administrative purposes e.g. course registration, and by the programme for communication to students, for which a username and password are provided to all students upon enrolment at Maastricht University;
student	a person who is registered at the university for education and/or to take exams and the examination of the BBM, the MSB or the MIE programme;
the Act	the Higher Education and Scientific Research Act [*Wet op het Hoger onderwijs en Wetenschappelijk onderzoek*];
the BBM programme	the Master of Science programme in Biobased Materials;
the MIE programme	the Master of Science programme in Molecular Imaging and Engineering;
the MSB programme	the Master of Science programme in Systems Biology;
UM	Maastricht University.

The other terms in these Education and Examination Regulations have the meaning conferred to them by the Act.

SECTION 2 ADMISSIONS

Article 2.1 Admission to the programme

Persons who meet the requirements referred to in article 2.2 are eligible for admission to the programme.

Article 2.2 Admission requirements

1. The following persons are eligible for admission to:

   the BBM or MSB programme:
   a) applicants who possess a Bachelor of Science degree in one of the fields of science listed in Appendix E1 (BBM) or E3 (MSB), or
   b) applicants who possess a Bachelor of Science degree from a Dutch HBO study programme or equivalent in one of the fields of science listed in Appendix ED1 (BBM) or E3 (MSB), .

   the MIE programme:
   c) applicants who possess a Bachelor of Science degree in one of the fields of science listed in Appendix E2, or
   d) applicants who successfully completed a tailor-made pre-master programme, after applying with a Bachelor of Science degree in another discipline, or at another level comparable to Dutch HBO with a clear and distinct interest in engineering as evidenced by their personal motivation.

2. In addition to the requirements listed in Article 2.2.1, the following applies:

   e) at least 15 EC in mathematics at bachelor's level. The Board of Admission may grant exemption from the 15 EC requirement if sufficient knowledge in mathematics can be proven otherwise and will get expert advice before taking a decision.

Article 2.3 Language requirement with non-Dutch diplomas

1. Holders of a non-Dutch diploma can only register if they have met the minimum English language requirement as listed below.
2. The requirement referred to under (1) is met if the person concerned:
   - has completed bachelor's or master's study programme where the native language (of instruction) is English (e.g. Australia, Canada, Ireland, New Zealand, United Kingdom, United States);
   - has obtained an International or European Baccalaureate, a US high school diploma or UK GCE A-levels, or can demonstrate sufficient proficiency in English, for example through English taught courses, internships or work experience in an English environment, or can submit one of the following language test certificates.
     - IELTS (6.5)
     - TOEFL Paper-based test (575)
     - TOEFL Internet test (90)
     - TOEIC listening and reading (720) and speaking and writing (310)
3. Cambridge [Advanced (CAE) Grade C (scale 180-184), First Certificate in English (FCE) Grade A (scale 180-184), First Certificate in English (FCE) Grade B (scale 176-179) or similar accredited certification English native speakers and persons holding a bachelor's diploma issued in a country in which English is the official language of communication and instruction and/or who have obtained their bachelor's degree at a programme in which the

language of communication, instruction, and assessment was completely in English, are exempt from the language requirement.
4. The Board of Admission may grant exemption from the IELTS or TOEFL test requirement if sufficient proficiency of the English language can be determined otherwise.

Article 2.4 Board of Admission

1. The Board of Admission for the BBM, MIE and MSB programme is responsible for assessing eligibility for admission and issuing the certificate of admission to the respective programmes.
2. Each programme established a board of admission consisting of
   - three members appointed from the academic staff, with one member acting as chair.
   - The Admission Officer, a supporting staff member responsible for all administration and handling of admissions requests.
3. The Faculty Board appoints the members of the Board of Admission.

Article 2.5 Admission procedure

1. The applicant is required to provide the requested documentation through which academic performance and eligibility are assessed. The applicants must also write a personal statement, in which they motivate their choice for the BBM programme, the MIE programme or the MSB programme. For the BBM the applicant must also include 1-2 reference letters;
2. The Board of Admission reviews all required information, as mentioned under paragraph 1, and decides whether an eligible applicant will be evaluated or will be directly admitted;
3. After the interview, the Board of Admission makes an overall assessment of the complete file of the applicant and decides on the admission of the student to the BBM programme, MIE programme or, MSB programme;
4. The candidate will be admitted subject to the condition that, by the relevant start date for the BBM programme, MIE programme or MSB programme, they will have satisfied the requirements stated in Article 2.2 & 2.3 regarding knowledge, understanding and skills, as evidenced by the required certificates.

SECTION 3 CONTENT AND STRUCTURE

Article 3.1 Aim of the programme

- The BBM programme is intended to provide the student with:
  - a university education within the framework of the specific UM teaching philosophy and profile characteristics[1];
  - added depth to the student's specific choice for the field of Biobased Materials;
  - the opportunity to broaden the student's education into related disciplines;
  - specialised knowledge, skills and understanding in the field of Biobased Materials;
  - preparation for a professional career in the field of Biobased Materials;
  - specialised knowledge, skills and understanding in the field of Biobased Materials and attainment of the exit qualifications referred to in the table below;
  - preparation for professional practice as a scientist in the field of Biobased or Sustainable Materials;

[1] See Edview Education position report: https://edlab.nl/wp-content/uploads/2018/10/EDview_Position-Paper.pdf

- preparation for a PhD/research programme in the field of Biobased or Sustainable Materials;
- professional standards/values with regards to scientific integrity applicable during the study and within academia.

The MIE programme is intended to provide the student with:

- a university education within the framework of the specific UM teaching philosophy and profile characteristics[1];
- added depth to the student's specific choice for the field of Imaging Engineering;
- the opportunity to broaden the student's education into related disciplines;
- specialised knowledge, skills and understanding in the field of Imaging Engineering;
- preparation for a professional career in the field of Imaging Engineering;
- specialised knowledge, skills and understanding in the field of Imaging Engineering and attainment of the exit qualifications referred to in the table below;
- preparation for professional or academic practice as a scientist in the field of Imaging Engineering;
- professional standards/values with regards to scientific integrity applicable during the study and within academia.

The MSB programme is intended to provide the student with:

- a university education within the framework of the specific UM teaching philosophy and profile characteristics[1];
- added depth to the student's specific choice for the field of Systems Biology;
- the opportunity to broaden the student's education into related disciplines;
- specialised knowledge, skills and understanding in the field of Systems Biology;
- preparation for a professional career in the field of Systems Biology;
- specialised knowledge, skills and understanding in the field of Systems Biology and attainment of the exit qualifications referred to in the table below;
- preparation for professional practice as a scientist in the field of Systems Biology, or Biological Data Science;
- preparation for a PhD/research programme in the field of Systems Biology;
- professional standards/values with regards to scientific integrity applicable during the study and within academia.

A graduate of the BBM programme has achieved the Programme Final Qualifications listed below:

Dublin Descriptor	Intended learning outcomes (ILOs)
1. Students have a breadth of academic knowledge	**1.1 CORE KNOWLEDGE** Students have profound knowledge and understanding of the field of Biobased Materials, in particular the combination of the underlying scientific fields of biology, chemistry, and materials science and engineering in the context of industrial application and sustainability.
	1.2 DISCIPLINARY KNOWLEDGE. Students are able to identify appropriate theoretical frameworks to address a biobased materials problem. They can connect concepts across disciplines. They are able to integrate and apply models, theories, methods and techniques in the field of biobased materials and have thorough knowledge of a specialty within the study programme, or thorough knowledge on the interface of the study programme with other fields, integrating disciplines into the field of biobased materials.
	1.3 BIOBASED MATERIALS KNOWLEDGE Students have gathered extensive knowledge, competences and skills in identification, isolation, production, processing and application of biobased materials.
	1.4 ACADEMIC KNOWLEDGE Students are able to comprehend new emerging concepts, theories and techniques for research or problem-solving in the field of biobased materials.
	1.5 DISCIPLINE KNOWLEDGE Students have the basic knowledge to isolate biobased building blocks and biobased materials from biomass.
	1.6 DISCIPLINE KNOWLEDGE Students have the basic knowledge and skills to synthesize novel biobased building blocks, green materials and/or materials from refined biomass.
	1.7 DISCIPLINE KNOWLEDGE Students have the basic knowledge and skills to design, process and shape the desired biobased materials into products with targeted functionality and performance.
	1.8 DISCIPLINE KNOWLEDGE Students are able to assess the impact of biobased materials and transfer the knowledge for different applications, for example biomedical applications, sustainability and life cycle assessment, materials performance applications and others.
2. Students can apply their knowledge and understanding, and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study	**2.1 PROBLEM-SOLVING** Students can apply gathered scientific knowledge, competences, and skills to identify, formulate, analyse and suggest possible solutions to problems independently in the field of biobased materials.
	2.2 CONDUCT RESEARCH Students are able to comprehend new emerging concepts, theories and techniques and use these to initiate creative research for solving relevant problems in the field of biobased materials. Students have the academic skills to propose and conduct research on a problem concerning biobased materials, its production, processing or application, and report on it in a manner that meets the customary standards of the discipline.
	2.3 CONTRIBUTIONS Students possess professional and academic skills to provide a substantial and potentially leading contribution to the field in a multi- or interdisciplinary team, crossing the boundaries between disciplines.
	2.4 CONTEXTUAL AWARENESS Students are capable of applying the knowledge and understanding gained in the discipline of Biobased Materials in a broader social context. Students are aware of the impact and scope of biobased materials and their application on human society and the environment and take this into account in their work. Students are aware of the professional and economic context within which they operate.
	2.5 PROFESSIONAL ATTITUDE Students have the ability to apply knowledge and understanding to complex, multi- or interdisciplinary problems, to formulate solutions and sustain arguments for those solutions in a professional fashion, both independently and in a team. Students are capable of applying knowledge and understanding in a way which demonstrates ethical responsibility to their work or profession.

	2.6 APPLY TECHNICAL SKILLS Students can apply relevant skills and techniques to evaluate structure-function relationships of materials and assess their potential application.
3. Students have the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments;	**3.1 SCIENTIFIC ATTITUDE** Students have a scientific attitude aimed at learning and the generation of new knowledge and viewpoints.
	3.2 CRITICAL ANALYSIS Students are capable of evaluation and critical analysis of research results obtained and derivation of new scientific insights. Students are able to critically analyse scientific publications or research proposals including hypothesis, problem definition, approach, interpretation of results, conclusions, limitations.
	3.3 SOCIAL RESPONSABILITY Students are able to discuss and predict the impact, effects and application of Biobased Materials and their production on human society and the environment they live in.
	3.4 ETHICS Students have developed into responsible and ethical scientists who show social responsibility in the transition towards a biobased and sustainable society.
4. Students can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;	**4.1 COMMUNICATION** Students are capable of communicating conclusions, as well as the underlying knowledge, grounds and considerations, to an audience composed of specialists or non-specialists in English. Students can communicate and create links with and between scientists and experts involved in the development, application and commercialisation of biobased materials. Students have the ability to communicate and cooperate in multi- or interdisciplinary teams with people from different socio-cultural and national backgrounds.
	4.2 LEADERSHIP AND TEAMWORK Students possess professional and academic skills to provide substantial contribution and potentially leading an interdisciplinary team of individuals and are able to take adequate decisions within the team in the context of academic and industrial biobased materials and applications.
	4.3 EVALUATION Students have the capability to perform and communicate self- and peer-evaluation in order to continually improve themselves and their peers.
5. Students have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous	**5.1 INNOVATIVE ATTITUDE** Students demonstrate a creative and innovative attitude in their work that is driven by life-long learning.
	5.2 CRITICAL THINKING Students have the ability to reach and support a conclusion in a logically structured fashion based on evidence, in an intellectually honest and reflective fashion. They are able to comprehend new emerging concepts, theories and techniques and use these to initiate creative research for solving relevant problems in the field of biobased materials.
	5.3 LEARNING Students are able to extract relevant information from lectures, group assignments, journal clubs etc. Students are able to effectively use Problem-Based Learning and Research-Based Learning.
	5.4 EXTEND KNOWLEDGE Students have the ability to independently maintain and extend professional knowledge and competences.

A graduate of the MIE programme fulfils the following intended learning outcomes that are in line with national and international scientific and professional engineering standards:

Dublin Descriptor	Intended learning outcomes (ILOs)
1. Students have a breadth of	**1.1 CORE KNOWLEDGE** Students have knowledge of the underlying fields of engineering, mathematics, physics and (bio)chemistry in the context of molecular imaging and engineering.

academic knowledge	**1.2 MOLECULAR IMAGING AND ENGINEERING KNOWLEDGE** Students develop broad knowledge and understanding of the field of molecular imaging and engineering, in particular the combination of the underlying fields of engineering, mathematics, physics and (bio)chemistry. Students have basic knowledge, understanding and skills related to the determination and manipulation of chemical structures of molecules. They combine this with basic knowledge and skills which they can use for the effective operation, design and optimisation of imaging instrumentation. In addition, students have basic knowledge and skills in the related data analysis and management, required for the use, design and development of imaging instruments, protocols as well as imaging research.
	1.3 SPECIALISATION KNOWLEDGE Students have profound knowledge, understanding and skills within their respective specialisation. 1.3A Students who complete the specialisation in instrumentation imaging engineering are able to operate, design and engineer innovative analytical measurement and detection strategies including instrumentation. 1.3B Students who complete the specialisation in molecular imaging engineering are able to use their fundamental knowledge, skills and insights of molecules, their properties, behaviour and interactions for the advancement of molecular imaging.
	1.4 ACADEMIC AND ENGINEERING KNOWLEDGE Students understand and are able to identify, apply, integrate and develop models, theories, methods and techniques in the field of molecular imaging and engineering.
2. Students can apply their knowledge and understanding, and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study	**2.1 PROBLEM-SOLVING** Students have the academic skills to identify, formulate, analyse and suggest possible solutions to complex problems in the field of molecular imaging and engineering. In doing so, students are able to comprehend and incorporate new or emerging concepts, theories and techniques from the underlying disciplines engineering, mathematics, physics and (bio)chemistry or interdisciplinary disciplines to benefit problem-solving.
	2.2 CONDUCT RESEARCH Students have knowledge of the process of scientific research and are able to conduct scientific research. Students have the knowledge and skills to assess which expertise, design strategy, materials, infrastructure and experiments are required for scientific research. They are able to develop new knowledge and/or insights within the field of molecular imaging and engineering through scientific research.
	2.3 ENGINEERING Students have basic knowledge of the workings, opportunities and limitations of imaging equipment. They have knowledge and skills of methods and tools to model, design, develop and/or optimise imaging instrumentation for different application areas in research and industrial environments
	2.4 DATA ANALYSIS AND MANAGEMENT Students demonstrate quantitative and qualitative knowledge, understanding and skills in data acquisition, modelling, analysis and data managing methods and techniques for different imaging applications.
	2.5 PROFESSIONAL ATTITUDE Students are capable of applying their knowledge, understanding and skills in a way which demonstrates a professional attitude and ethical responsibility to their work or profession.
3. Students have the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete or limited information, but that include	**3.1 SCIENTIFIC ATTITUDE** Students have a scientific attitude aimed at learning and the generation of new knowledge, insights and viewpoints and apply a systematic approach to their work.
	3.2 CRITICAL ANALYSIS Students are capable of critical interpretation and evaluation of research results obtained and derivation of new scientific insights. Students are able to critically analyse scientific publications or research proposals including the hypothesis, problem definition, scientific approach, interpretation of results, conclusions and limitations.

reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments;	**3.3 JUDGMENT** Students are competent in reasoning, reflecting, forming a judgment and sustaining arguments in complex molecular imaging and engineering contexts.
	3.4 ETHICS Students have the ability to analyse ethical issues in academic and social environments in relation to their professional activities and to oversee the implications of their decisions and work as imaging engineers.
	3.5 CONTEXTUAL AWARENESS Students are aware of the impact and scope of molecular research and/or imaging technologies and equipment and their application on human society and the environment they live in. They take into account the global, environmental and economic context in their work. Students are aware of the professional, temporal and societal context within which they operate.
4. Students can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;	**4.1 COMMUNICATION** Students are capable of communicating in English conclusions, as well as the underlying knowledge, grounds and considerations, to an audience composed of specialists or non-specialists.
	4.2 TEAMWORK Students possess professional and academic skills to provide a substantial, potentially leading, contribution to an interdisciplinary team of individuals. They have the ability to communicate and collaborate effectively and appropriately with people from different academic, socio-cultural and national backgrounds.
	4.3 EVALUATION Students are capable to perform and communicate self- and peer-evaluations in order to continually improve themselves and their peers.
5. Students have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous	**5.1 INNOVATIVE ATTITUDE** Students demonstrate a creative and innovative attitude in their work that is driven by scientific curiosity and life-long learning.
	5.2 CRITICAL THINKING Students have an adequate questioning strategy and the ability to reach and support a conclusion in a logically structured fashion based on evidence.
	5.3 EXTEND KNOWLEDGE Students have the ability to independently maintain and extend professional knowledge and competencies.
	5.4 PROJECT MANAGEMENT Students have the ability to execute a project in a systematic manner including prioritisation of tasks, maintaining focus and taking responsibility, dealing with limited resources and time, risk management and trade-offs, and adequate decision-making.
	5.5 REFLECTION Students have the ability to critically reflect on their own activities and conclusions and steer their learning process.

A graduate of the MSB programme has achieved the Programme Final Qualifications listed below:

Dublin descriptor	**Intended learning outcomes (ILOs)**
1. Students have a breadth of academic knowledge	**1.1 CORE KNOWLEDGE** Students have profound knowledge and understanding of the field of Systems Biology, in particular the combination of the underlying scientific fields of Biology and Mathematics as well as computational, experimental and modelling aspects of Systems Biology.

	1.2 SYSTEM BIOLOGY FIELD KNOWLEDGE Students are able to identify appropriate theoretical frameworks to address a Systems Biology problem. Students can connect concepts across disciplines and integrate and apply models, theories, methods and techniques in the field of system biology and have thorough knowledge of a specialty within the study programme, or thorough knowledge on the interface of the study programme with other fields.
	1.3 DISCIPLINE KNOWLEDGE Students have gathered extensive and detailed knowledge and understanding of biological and mathematical foundations of normal and pathological biological systems from molecular to population level.
	1.4 ACADEMIC KNOWLEDGE Students are able to comprehend new emerging concepts, theories and techniques and use these to initiate creative research for solving relevant problems in the field of Systems Biology.
	1.5 DISCIPLINE KNOWLEDGE Students have gathered detailed knowledge and understanding of statistical and computational methods for the analysis of data from biological experiments and mathematical methods for modelling complex biological systems.
	1.6 TOOLS KNOWLEDGE Students have detailed knowledge and understanding of tools for modelling complex biological systems.
2. Students can apply their knowledge and understanding, and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study	**2.1 PROBLEM-SOLVING** Students have the academic skill to independently identify, formulate, analyse and suggest possible solutions to problems in the field of Systems Biology.
	2.2 CONDUCTING RESEARCH Students have the academic skills to independently propose and conduct research on a problem concerning Systems Biology, including its experimental design, data collection and management, analysis, modelling and model validation, and report on it in a manner that meets the customary standards of the discipline. Students have the ability to perform original and innovative scientific and translational research in systems biology.
	2.3 CONTRIBUTIONS Students possess professional and academic skills to provide substantial and potentially leading contributions in a multidisciplinary team, crossing the boundaries between disciplines within Systems Biology.
	2.4 CONTEXTUAL AWARENESS Students understand the context of Systems Biology within science and society and are capable of applying the knowledge and understanding gained in the discipline of Systems Biology in a broader social context.
	2.5 PROFESSIONAL ATTITUDE Students have the ability to apply knowledge and understanding to complex, multi- or interdisciplinary problems, to formulate solutions and sustain arguments for those solutions in a professional fashion, both independently and in a team. Students are capable of applying knowledge and understanding in a way which demonstrates a professional attitude and ethical responsibility to their work or profession.
	2.6 APPLICATION OF TOOLS Students have insight into and experience in describing explaining and applying biological systems with mathematical methods and computational tools.
	2.7 DATA-BASED INSIGHT Students have insight into and ability to use statistical and computational approaches to convert biological data into new hypotheses and functional experiments.
3. Students have the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete or	**3.1 SCIENTIFIC ATTITUDE** Students have a scientific attitude aimed at learning and generating new knowledge and viewpoints.
	3.2 CRITICAL ANALYSIS Students are capable of evaluation of research results obtained and derivation of new scientific insights. Students are able to find and critically analyse relevant scientific publications or research proposals including hypothesis, problem definition, approach, interpretation of results, conclusions and limitations.

limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments;	**3.3 SOCIAL RESPONSIBILITY** Students are able to discuss and predict the impact, effects and application of Systems Biology on human society and the environment they live in.
	3.4 ETHICS Students have developed into responsible and ethical scientists are aware of the relevance and applications of Systems Biology.
4. Students can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;	**4.1 COMMUNICATION AND TEAMWORK** Students are capable of communicating in English their conclusions, as well as the underlying knowledge, grounds and considerations, to an audience composed of specialists or non-specialists. Students can communicate and create links with and between scientists and experts. Students have the ability to communicate and cooperate in multidisciplinary teams with focused assignments and collaborate effectively and appropriately with people from different socio-cultural and national backgrounds.
	4.2 EVALUATION Students have the capability to perform and communicate self- and peer-evaluation in order to continually improve themselves and their peers
5. Students have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous	**5.1 INNOVATIVE ATTITUDE** Students demonstrate a creative and innovative attitude in their work that is driven by life-long learning.
	5.2 CRITICAL THINKING Students have the ability to reach and support a conclusion in a logically structured fashion based on evidence, in an intellectually honest and reflective fashion. They are able to comprehend new emerging concepts, theories and techniques and use these to initiate creative research for solving relevant problems in the field of Systems Biology.
	5.3 LEARNING Students are able to optimally extract information provided / resulting from lectures, group assignments, journal clubs etc. Students are able to effectively use Problem-Based Learning.
	5.4 EXTEND KNOWLEDGE Students have the ability to independently maintain and extend professional knowledge and competences.

Article 3.2 Timeline

The BBM, MIE and MSB programmes are full-time and commence once a year at the beginning of the academic year. The programmes are 120 ECTS and two years long.

Article 3.3 Language of instruction

All teaching, education, examinations and communication of the BBM, MIE and MSB programmes are in English in accordance with Appendix F

Article 3.4 Communications and announcement of decisions

1. All official education-related communication (policy, content, examination) will proceed via available communication tools: Student Portal, Intranet and regular UM e-mail or CANVAS .
2. Students carry the responsibility to stay updated on course-related communication by regularly checking their university e-mail, CANVAS, Intranet and Student Portal. Any information disseminated via these communication lines will be assumed to be known.

Article 3.5 Study load

Each course year at the BBM programme. MIE programme and the MSB programme has a study load of 60 EC (120 EC total), with one EC corresponding to 28 hours of study.

Article 3.6 Content

The BBM programme includes the following components and related study loads, which are specified in appendices A, B and C:

4 mandatory courses	4 x 6 EC; 24 EC
2 mandatory projects	2 x 6 EC = 12 EC
6 elective courses	6 x 6 EC = 36 EC
1 Master thesis research	47 EC
1 research portfolio	1 x EC

The MIE programme includes the following components and related study loads, which are specified in appendices A, B and C:

4 mandatory core courses	4 x 6 EC; 24 EC
2 mandatory specialisation courses	2 x 6 EC = 12 EC
3 elective courses	3 x 6 EC = 18 EC
2 elective projects	2 x 6 EC = 18 EC s
1 Master thesis	48 EC

The MSB programme includes the following components and related study loads, which are specified in appendices A, B and C:

4 mandatory courses	4 x 6 EC = 24 EC
2 mandatory projects	2 x 6 EC = 12 EC
6 elective courses	6 x 6 EC = 36 EC
1 Master thesis research	48 EC

1. from the MIE project coordinator and MIE master thesis coordinator respectively.

Article 3.7 Electives courses and Specialisation

1. Each student chooses the elective components with a total study load as referred to in article 3.6.
2. In exceptional cases, the student may - subject to prior approval by the Board of Examiners of the sending and receiving programme - choose to take components given by another programme or UM faculty, another Dutch university or a foreign university.
3. To attain the certificate for the examination for the BBM and MSB Master's programme, the student must have obtained at least 30 EC of the electives in the educational programme through components provided by the respective Master's programme.
4. To attain the certificate for the examination for the MIE Master's programme, the student must have obtained at least 12 EC of the electives in the educational programme through components provided by the MIE Master's programme.
5. Taking an alternative elective course requires written consent of the receiving coordinators and study advisor and must be submitted for approval to the Board of Examiners at least 20 working days before the start of the course.

For the MIE programme only

6. MIE specialisation comprises 3 courses, 1 project and 1 master thesis, with a total study load of 72 EC in either instrumentation imaging engineering or molecular imaging engineering.
7. Each student chooses one MIE specialisation. They declare the specialisation before the end of the first semester of registration in the programme. At least the second project and the master thesis have to be on a topic fitting in the student's specialisation. These require prior approval

Article 3.8 Flexible programme and flexible Master's

1. A student registered for the BBM, MSB or MIE programme may, under exceptional conditions, formulate an educational programme that deviates from the educational programme stated in Article 3.6. The programme must include exams.
2. Any alternative programme requires a clearly written motivation by the student, a detailed listing of alternative courses (including course numbers & descriptions) as well as convincing evidence that these are compatible with the programme ILO's as defined under 3.1.2. The flexible programme must have a minimum study load of 120 EC.
3. Any alternative programme requires written consent of the receiving coordinators and study advisor and must be submitted for approval to the Board of Examiners before implementation.
4. The Board of Examiners will decide whether to grant permission for the student's proposal within 20 working days after receiving the proposal.

Article 3.9 The final examination

The final examination consists of the components as listed in Article 3.6, totalling 120 EC.

SECTION 4 EDUCATION

Article 4.1 Courses; composition and format

1. For the programme components, courses are given with the study load stated in Article 3.6.
2. Education is provided in the form of classes, tutorial groups, skills trainings, lectures, individual supervision, group work, journal clubs, writing assignments, or otherwise.

Article 4.2 Prior knowledge; Master Thesis entrance requirements

1. Students are granted entrance to the BBM or MSB Master Thesis research project, provided the four mandatory courses are completed successfully (24 EC), both projects are completed successfully (12 EC) and enough elective courses are completed to accrue the EC listed in 4.2.2.
2. Students are granted entrance to the MIE Master Thesis research project, provided the four mandatory courses are completed successfully (24 EC), both project is completed successfully (12 EC), all 18 EC of specialisation courses is attained and enough elective courses are completed to accrue the EC listed in 4.2.3.
3. The Master Thesis Research project comprises 4 weeks of Master Thesis proposal writing and research planning, and 28 weeks of Master Thesis research. If at the start of the Master Thesis Research project less than 72 EC have been accrued, a student is only allowed to complete the proposal writing part. Master thesis research can only be started upon completing 72 EC.
4. Attendance in courses during the Master thesis period requires explicit permission by the BoE. The thesis deadlines and therewith graduation will be adjusted in accordance to the master thesis research delay.

Article 4.3 Course and exam registration

1. Registration deadlines are communicated in the academic calendar.
2. Students must make their elective choice before the registration deadline.
3. In case a student fails to comply with the course registration deadline, registration and participation cannot be guaranteed.
4. Students will be registered for the first sit and the resit (if applicable) of a course final exam.
5. Besides being registered, a student must comply with the conditions specified in the course manual to be eligible for a resit.
6. It is the responsibility of the students to verify in time whether they have a valid registration for the course and the (resit) exam.
7. In case a student has no valid registration for the course and/or the (resit) course examination, the student is not allowed to take the (resit) course examn.
8. Failure to participate in the first sit without motivated prior notice automatically transfers the first sit to the resit and forfeits the right to another resit within the current academic year.
9. Once a student passes an exam, the student cannot resit that exam, unless the Board of Examiners decides otherwise.

Article 4.4 Attendance and best-efforts obligation

1. Attendance and participation in course (element)s may be part of a course exam when announced in the course manual.
2. Attendance at and participation in the final exam first sit and resit (if applicable) and other components of the course exam is mandatory.

Article 4.5 Skills training and project period

1. The compulsory and elective courses may include skills trainings.
2. Skills trainings and project meetings are mandatory. In addition, each student is expected to participate actively (as defined in the course manual) in execution of educational tasks within the project and to cooperate actively with their group in order to successfully finish the project.
3. Students who have not met the requirements in Article 4.5.2 and/or students whose absence or inactivity during the course has been marked as inexcusable by the course coordinator and/or students that have a substandard contribution to the group work will not receive a pass for the project concerned

SECTION 5 EXAMS AND ASSESSMENT

Article 5.1 General

1. During a course, the student will be tested for (progress in) academic competence and the extent to which the student has achieved the stated learning objectives.
2. The course manual describes the achievements the student must make to pass the course and the criteria by which the student is assessed.
3. The Rules of Procedure for Examinations (appendix F) describe the assessment procedure.

Article 5.2 Grades

1. Final grades are awarded on a scale of 1 to 10 in accordance with table 1. Final Grades are rounded to 1 decimal, or can be awarded a pass/fail.
2. In case a student cannot be appraised, a 'No Grade' (NG) will be assigned.
3. The student must receive a final overall grade of at least 6.0 or higher before rounding to pass the course.
4. NG (no grade) will be assigned in case of (auto)plagiarism or academic fraud or when course assessment is incomplete.

Table 1. Interpretation of the Dutch grading system

10.0	Surpasses expectation
9.0	Outstanding
8.0	Very good
7.0	Good
6.0	Sufficient
5.0	Insufficient
4.0	Insufficient
3.0	Insufficient
2.0	Insufficient
1.0	Insufficient
Pass	≥6.0; performance meets the minimum criteria
Fail	<6.0; performance below the minimum criteria
'No grade' (NG)	It constitutes a fail and no EC is awarded

Article 5.3 Scheduling and frequency of the exams and assessments

1. Students can take a course exam twice per academic year: once during or directly after the course period (first sit for the exam) and once during the course of the remainder of the academic year (resit option).
2. In conformance with article 7.30 paragraph 3 of the Act, the Board of Examiners may grant a student permission to sit other exams than referred to in Article 5.3.1.
3. In exceptional cases, the Board of Examiners may decide that an exam can be taken at another time than stipulated in Article 5.3.1.
4. A second opportunity to take a resit may be granted by the Board of Examiners under special conditions.

Article 5.4 Exam format

1. The exam format and criteria for exams are announced by the examiner at the start of the course and published in the course manual.
2. Each course contains at least two exams or modes of assessment at two different moments. A resit can follow a different form than the exam(s) that is (/are) part of a course.
3. At the student's request, the Board of Examiners may allow students to take the exam in a manner other than that stipulated in the course manual and on the student portal.
4. Upon request, students with a disability may take exams in a manner which accommodates their specific disability as much as possible. Students must file a request with the UM Disability Office preferably at the start of the Master programme. The Board of Examiners will procure confirmation of consultation to the faculty's Student Advisor/Disability Offices and/or the Student Dean at the Student Service Centre (SSC) before taking a decision in such matters.

Article 5.5 Oral exams and assessments

1. Oral exams are taken on an individual basis and always in the presence of a second examiner, as witness. Deviation of this principle requires approval of the Board of Examiners.
2. A thesis defence is held by the examiner in the presence of a second examiner; the thesis defence is not public. Deviation of this principle requires approval of the Board of Examiners.
3. Oral thesis presentations are in principle public. Deviation of this principle requires approval of the Board of Examiners.
4. All other oral assessments (e.g. group and project presentations) can be taken individually or in groups in the presence of an optional second examiner.

Article 5.6 Written assessments

1. Students will be provided guidelines for written assessments and the Master thesis. The guidelines will be included in the course manuals.
2. The Master thesis assessments will be evaluated by at least two UM examiners.
3. All other written forms of assessment are individual except where otherwise communicated.

Article 5.7 Determination and announcement of course exam result

1. The Board of Examiners determines the standards for assessing exams. The standards are specified in the document 'Rules and Regulations'.
2. The examiner determines the result of a written final exam within 15 working days following the date on which it was taken and provides the Office of Student Affairs with the necessary information to apprise the student of the result before this deadline.
3. The examiner determines the result of a final oral exam immediately after it is taken and communicates the final result to the student. If more than one student takes the same exam in succession, the assessment and grading period may be extended by up to five working days.
4. The examiner determines the result of any other forms of assessment taken during the course period (before the final exam week), within 10 working days.
5. Examiners must share all assessment results with students individually.

Article 5.8 Right of inspection

1. Students may inspect their assessments within 10 working days of announcement of assessment result. At the time of result announcement students will be informed on inspection of the exam and filing an appeal as referred to in Article 6.5.

2. Within the given period of time, as stated in Article 5.8.1, a student will be given an alternative opportunity to exercise the right of inspection, provided that the student has provided timely notice regarding inability to exercise this right in the first instance (due to circumstances beyond the student's control).
3. Within the period referred to in paragraph 1, quality control stakeholders like the Assessment Platform and Accrediation panelists may, upon request, inspect the questions and assignments for the written exam and, if possible, the standards based on which it was assessed.

Article 5.9 Period of validity

1. Course (final) exams which have been passed are valid for an unlimited period
2. Contrary to the above, the Board of Examiners may require the student to take an additional or replacement exam or exam component for an exam which was passed more than six years ago, if either the course content was changed and/or the skills that were examined are demonstrably outdated.
3. If exceptional circumstances apply as referred to in Article 7.51 (2) of the Act, the period of 6 years in paragraph one will be extended by the duration of the financial support the student receives from the profiling fund.
4. If a student fails a course, all exams or forms of assessment which were part of the course, will lose their validity after the academic year in which they were passed unless the Board of Examiners decides otherwise.

Article 5.10 Retention period for exams

1. The exercises, answers, completed assessment forms, and the evaluated work of all graded components will be retained in paper or digital form for at least two years after the exam/examination result is determined.
2. The final projects/theses and the evaluation of these will be archived for at least seven years after the evaluation.

Article 5.11 Exemption

1. The Board of Examiners may, at a student's request, and having heard the relevant examiner, grant the student an exemption from taking an exam, if they can demonstrate that they previously:
   - either passed an exam for a university or higher professional education programme which was similar in terms of content and academic level or;
   - gained sufficient knowledge and skills relevant to the exam concerned, either through work or professional experience.
2. An exemption only pertains to an entire course and not a component thereof.
3. Exemption applies to maximally 12 EC within any programme.
4. The Master's two mandatory projects and the master thesis are excluded from this exemption option.
5. The Board of Examiners will not grant any exemption based on exams passed by a student outside the programme during the period in which the student was barred by the Board of Examiners from taking exams for the programme because of proven fraudulent behaviour.
6. The same period of validity applies to exemptions as to exam results.

Article 5.12 Fraud

1. The Rules and Regulations include further provisions about what constitutes fraud and which disciplinary measures the Board of Examiners can impose.
2. 'Fraud', including 'plagiarism', means actions or omissions by a student which make it impossible in whole or in part to properly evaluate his/her knowledge, understanding and

skills. Allowing and/or enabling other students to engage in fraud is also considered fraud under these regulations.

3. 'Plagiarism' refers to the use and presentation of ideas or words from one's own (*autoplagiarism*) or someone else's sources without proper acknowledgment of the sources.
4. If the Board of Examiners determines that a student has engaged in fraudulent behaviour with respect to an exam or exam component, the Board of Examiners will take appropriate measures.
5. In serious cases of fraud (as outlined in the Rules and Regulations document), the Board of Examiners can propose to UM's Executive Board that the student(s) concerned be permanently deregistered from the BBM, MIE, or MSB programme.

Article 5.12 An invalid exam

1. If an exam involves irregularities that make it impossible to accurately assess the candidate's knowledge, insight and skills, the Board of Examiners may declare the exam invalid for either the examinee or a group of examinees.
2. Any change to an existing exam after the examtook place, should be communicated to the Office of student affairs.

Article 5.13 Unsuitability (Iudicium Abeundi)

1. In exceptional cases and after careful consideration of the interests involved, the Board of Examiners or the Faculty Board may ask the Executive Board of Maastricht University to terminate or, as the case may be, refuse the enrolment of a student in a programme, if that student, through their behaviour or opinions ventured, has demonstrated his/her unsuitability for the practice of one or more professions for which they is trained by the programme they follows, or, as the case may be, for the skill preparation for the practice of the profession.
2. The relevant clauses of Maastricht University's Enrolment Provisions apply.

SECTION 6 MASTER'S PROGRAMME FINAL EXAMINATION

Article 6.1 Final Examination

1. The Board of Examiners determines the result and date of the final examination and issues the certificate as referred to in Article 6.3 as soon as the student has satisfied the requirements for the examination programme.
2. Prior to determining the result of the final examination, the Board of Examiners may conduct their own investigation of the student's knowledge regarding one or more components or aspects of the programme.
3. To pass the final examination, the student must have passed all exams for all required course referred to in Article 3.6.
4. To pass the final examination and receive the graduation certificate, the student must also have been registered for the programme during the period in which the exams were taken.
5. A certificate may only be issued after it has been shown that the student has satisfied all the obligations, including payment of tuition fees.
6. The last day of the month in which the student satisfied all the final examination obligations will be considered the final graduation date.
7. Students who have passed the final examination and who are entitled to the issuance of a graduation certificate may ask the Board of Examiners for a reasoned postponement. This request must be submitted at least one month before the last course exam is submitted or the final examination is taken.
   The Board of Examiners will grant such a request without objections:
   - if the student is selected by the faculty for a double degree, an extracurricular internship or an extracurricular exchange, or
   - if the student holds or will hold a board position for which at least nine months of financial support is awarded from the profiling fund or holds or will hold an 'INKOM' board position.

   The Board of Examiners may also grant an exceptional request if its refusal would result in case of unfairness, because of the fact that the student concerned could not have taken the automatic graduation into account when they was planning his/her study.

Article 6.2 Degree

Students who have passed the final examination will be awarded the degree Master of Science (M.Sc.).+

Article 6.3 Diplomas and transcripts

1. As proof that the final examination was passed, the Board of Examiners issues a diploma. The diploma is based on the model that UM's Executive Board has adopted. A diploma will be issued for every programme the student successfully completes.
2. The diploma also indicates:
   a. the name of the institution;
   b. the name of the programme;
   c. for MIE, the name of the specialisation;
   d. the final examination components;
   e. the degree awarded;
   f. the date on which the BBM,MSB, or MIE programme was most recently accredited or was subjected to the new programme test.
3. Students who are entitled to the issuance of a diploma may, stating reasons, ask the Board of Examiners for postponement of the graduation (pursuant to Article 6.1(7)).
4. The diploma is signed by the chair of the Board of Examiners and the Dean of the Faculty.
5. The diploma is awarded in public, unless the Board of Examiners decides otherwise.
6. The Board of Examiners includes a diploma supplement as referred to in Article 7.11(4) of the Act with the certificate. This diploma supplement is based on the model adopted by the Executive Board, which is in compliance with the agreed European standard format.

7. The Board of Examiners will award the '*cum laude' or 'summa cum laude'* designation in accordance with the provisions in the BBM, MSB, or MIE programme Rules and Regulations.
8. The distinction *cum laude* will be added when the student has:
   - a course Grade Point Average between 8.0 and 8.9 with two decimals before rounding up, and;
   - a thesis grade of 8.0 with two decimals before rounding up or higher, and;
   - obtained a minimum of 120 EC (for the MIE programme: a minimum of 110 EC) within the programme, and;
   - no resit exams are on the student's progress records.
9. The distinction *summa cum laude* will be added when the student has:
   - a course Grade Point Average between 9.0 and 10.0 with two decimals before rounding up, and;
   - a thesis grade of 9.0 or higher with two decimals before rounding up, and;
   - obtained a minimum of 120 EC (for the MIE programme: a minimum of 110 EC) within the programme, and;
   - no resit exams are on the student's progress records.
10. Students who have passed more than one final exam and who cannot be issued a diploma will upon request receive a transcript issued by the Board of Examiners, which at least indicates the final exams that they passed.

Article 6.4 Grade point average (GPA)

The diploma supplement referred to in Article 6.3(6) indicates the final grade point average (GPA), to provide a reflection of the student's academic performance.

Article 6.5 Right of appeal

Within six weeks after any exam decision by the examiner and/or the Board of Examiners is announced, the student may appeal this decision to the Complaints Service Point of Maastricht University.

The appeal must be signed, must include a date and the name and address of the party filing the appeal, must indicate the grounds for the appeal and, if possible, must include a copy of the decision being appealed

SECTION 7 STUDY GUIDANCE

Article 7.1 Study progress administration

1. The Office of Student Affairs registers the students' individual course results and makes these available via the Student Portal.
2. Upon request, a student is provided with an overview of the study results obtained thus far.

Article 7.2 Study guidance

1. Students registered for the BBM, MSB and MIE programmes will be provided with an introduction as well as to academic and study guidance
2. Guidance includes:
   - An introduction week before the start of the first academic year;
   - Academic advising (by appointed academic advisors): group and individual academic advising on possible study paths in- and outside the programme, partly with a view to the professional options after the master's programme;
   - Study advising (by Study advisor): on matters pertaining to the study plan, study changes and academic growth and relevant non-study related issues.
3. A student is requested to consult the Student Disability Office/Student Advisory Office or study advisor of any personal circumstances that may affect study progress as soon as possible. In such cases, prior proof of consultation is a prerequisite for further communication with the BoE with regards to curriculum changes.

SECTION 8 TRANSITIONAL AND FINAL PROVISIONS

Article 8.1 Amendments

1. Amendments to these regulations may be adopted in a separate decision by the Faculty Board, after advice and consent from the Educational Programme Committees and after advice and consent from the Faculty Council.
2. An amendment in these regulations will not pertain to the current academic year, unless the interests of the students will reasonably be harmed as a result.
3. In addition, amendments may not affect, to the students' detriment, a decision regarding a student that has been taken by the Board of Examiners pursuant to these regulations.

Article 8.2 Notice

1. The Faculty Board ensures that proper notice is given of these regulations, the rules and regulations adopted by the Board of Examiners, and any changes to these documents, by, for example, placing such notice on the UM website, or in Student Portal.
2. Any interested party may obtain a copy of the documents referred to in 8.2.1 from the Office of Student Affairs or the Secretary of the Board of Examiners.

Article o8.2a Evaluation

The Faculty Board will ensure that the education of the programme is regularly evaluated, assessing at least the student workload.

Article 8.3 Unforeseen cases/safety net scheme

1. In cases not covered or not exhaustively covered by these regulations, decisions are taken by or on behalf of the Faculty Board, after it has consulted with the Board of Examiners.
2. In individual cases in which application of the Education and Examination Regulations would lead to manifestly unreasonable results, the Board of Examiners can deviate from the stated regulations in the student's favour.

Article 8.4 Effective date

This Regulation will be implemented as of September 1st 2022 and will be valid for the academic year 2022/2023.

Adopted by the Faculty Board on May 31st, 2022.

APPENDICES OF THE EDUCATION AND EXAMINATION REGULATIONS

APPENDIX A GENERAL OVERVIEW OF THE CURRICULUM

For the BBM and SB Programme

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
Year 1	Compulsory courses	Compulsory Courses	Project	Elective Courses	Elective courses	Project
Year 2	Elective courses	Master Thesis research project				

For the MIE Programme

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
Year 1	Compulsory courses	Compulsory Courses	Project	1 Specialisation course and 1 Elective Course	1 Specialisation course and 1 Elective Course	Project
Year 2	Specialisation course and 1 Elective Course	Master Thesis research project				

APPENDIX B COURSES IN THE BBM PROGRAM

Curriculum Overview						
Y1	S1	P1	2 core courses	Biobased Materials (6 EC)	Process Technology (6 EC)	
		P2	2 core courses	Molecular Biology and Physiology of Plants and Microbes* (6 EC)	Principles of Materials Science* (6 EC)	Bio-organic chemistry* (6 EC)
		P3	1 project	Research Project I (6 EC)		
	S2	P4	2 elective courses	2 out of the following electives: Molecular Genetics & Biotechnology (6 EC) Advanced Macromolecular Chemistry: Biopolymers synthesis, modification and characterization (6 EC) Applied Materials Science and Engineering (6 EC) Biomedical Materials (6 EC)		
		P5	2 elective course	2 out of the following electives: Plant Derived Building-Blocks (6 EC) Organic coatings: Modification and Spectroscopical Analysis (6 EC) Nano-science and Nano-technology: (Bio)polymers and (Bio)composites (6 EC) Sustainability of Biobased Materials (6 EC)		
		P6	1 project	Research Project II (6 EC)		
Y2	S1	P1	2 elective courses	2 out of the following electives: Biopolymers (6 EC) Polymer Processing (6 EC) Commercialization and Entrepreneurship (6 EC; shared with SB)		
		P2	1 Master thesis	Master Thesis (47 EC) BBM Research Portfolio (1EC) The BBM research portfolio is initiated in period 2 (year 1) and finished after period 7 (year 2). Overall, the BBM research portfolio is awarded 1 EC, which is part of the Master thesis BBM.		
		P3				
	S2	P4				
		P5				
		P6				

* Students are assigned to two out of three of these courses based on the focus of previous academic study.

Disclaimer: The offering of elective courses is subject to change based on enrolment (student preference) and scheduling limitations.

APPENDIX C COURSES IN THE MIE PROGRAM

Curriculum Overview					
Y1	S1	P1	2 core courses	Molecular Imaging and Engineering (6 EC)	Imaging Techniques and Instrumentation (6 EC)
		P2	2 core courses	Molecules and Structures (6 EC)	Imaging Informatics (6 EC)
		P3	1 project	Research and Engineering Project I (6 EC)	
	S2	P4	1 specialisation course 1 elective course	Optics and Vacuum Systems (6 EC) – *specialisation Instrumentation Imaging Engineering* Molecular Interactions (6 EC) – *specialisation Molecular Imaging Engineering* Advanced Image Processing and Artificial Intelligence (6 EC) – *elective* Advanced Optical Microscopy (6 EC) – *elective*	
		P5	1 specialisation course 1 elective course	Detectors and Electronics (6 EC) – *specialisation Instrumentation Imaging Engineering* Molecular Engineering for Imaging (6 EC) – *specialisation Molecular Imaging Engineering* Mass Spectrometry Imaging (6 EC) – *elective* Electron Microscopy (6 EC) – *elective*	
		P6	1 specialisation project	Research and Engineering Project II (6 EC)	
Y2	S1	P1	1 specialisation course 1 elective course	Integrative Imaging Systems Design – *specialisation Instrumentation Imaging Engineering* Process Analytical Technologies (6 EC) – *specialisation Molecular Imaging Engineering* Imaging Data Management (6 EC) – *elective* Magnetic Resonance Technologies (6 EC) – *elective*	
		P2	1 specialisation thesis	Master Thesis (48 EC)	
		P3			
	S2	P4			
		P5			
		P6			

Disclaimer: The offering of elective courses is subject to change based on enrolment (student preference) and scheduling limitations.

APPENDIX D COURSES IN THE MSB PROGRAM

Curriculum Overview						
Y1	S1	P1	2 core courses	Systems Biology (6 EC)	Biology and Physiology * (6 EC)	Mathematics of Biological Systems * (6 EC)
		P2	2 core courses	Modelling Biosystems(6 EC)	Experimental Design & Data Management (6 EC)	
		P3	1 project	Research Project I (6 EC)		
	S2	P4	2 elective courses	2 of the following 3 electives: Omics (6 EC) Cardiovascular Systems Biology (6 EC) Dynamical Systems & Non-Linear Dynamics (6 EC)		
		P5	2 elective courses	2 of the following 3 electives: Fundamental & Systems Neuroscience (6 EC) Modelling Metabolism (6 EC) Machine Learning & Multivariate Statistics (6 EC)		
		P6	1 project	Research Project II (6 EC)		
Y2	S1	P1	2 elective course	2 of the following 4 electives: Computational Neuroscience (6 EC) Network Biology (6 EC) Scientific Programming (6 EC) Commercialization and Entrepreneurship (6 EC; shared with BBM)		
		P2	1 master thesis	Master Thesis (48 EC)		
		P3				
	S2	P4				
		P5				
		P6				

* * Students are assigned to one these courses based on the focus of previous academic study.

Disclaimer: The offering of elective courses is subject to change based on enrolment (student preference) and scheduling limitations.

APPENDIX E1 BACHELOR STUDIES TYPICALLY LEADING TO THE BBM PROGRAMME

- Biology
- Biomedical Engineering
- Biomedical Sciences
- Biotechnology
- Chemical Engineering
- Chemistry
- Polymer/Material Science and Engineering
- Studies related to Chemistry and Materials from Biological sources
- University Colleges or Maastricht Science Programme or relevant Liberal Arts & Sciences/Technology and Liberal Arts & Sciences
- Other bachelor's programmes in a related discipline

APPENDIX E2 BACHELOR STUDIES TYPICALLY LEADING TO THE MIE PROGRAMME

- Engineering (Industrial Engineering, Mechanical Engineering, Engineering Physics)
- Physics or Applied physics
- Chemistry
- Chemical Engineering
- Biomedical Engineering
- Advanced Technology
- Business Engineering
- University Collegues, Maastricht Science Programme or relevant Liberal Arts & Sciences/Technology and Liberal Arts & Sciences
- Biomedical Sciences or Molecular Life Sciences (chemistry emphasis)
- Other bachelor's programmes in a related discipline

APPENDIX E3 BACHELOR STUDIES TYPICALLY LEADING TO THE MSB PROGRAMME

- Bioinformatics
- Biology
- Biomedical Sciences or (Molecular) Life Sciences
- Life Sciences and Technology
- Medical Natural Sciences
- Data Science
- Informatics or Computer Sciences
- Mathematics
- Neuroscience
- Physics
- Biochemistry
- UM Data science and Knowledge Engineering bachelor degree
- UM University Colleges or Maastricht Science Programme or relevant Liberal Arts & Sciences/Technology and Liberal Arts & Sciences
- Other bachelor's programmes in a related discipline

APPENDIX F LANGUAGE OF INSTRUCTION

The choice of language of instruction for the BBM programme, the MIE programme and the MSB programme is in line with the Code of Conduct of Maastricht University on language in accordance with the Dutch Higher Education and Research Act (WHW) art. 7.2.

Because of the specific educational nature and profile of the Masters programmes, teaching and exam/examinations are conducted in English. This guarantees the quality of education, because:

- The content of all three programmes has an international orientation and focus, as they are designed for students who are able to bridge the gap between the underlying academic fields or disciplines while obtaining profound knowledge and understanding in their field of studies. To this end, all education, course content and materials are provided in English.
- The academic community is internationally oriented, and the staff is international. The programmes are both characterized by crossing the boundaries of traditional disciplines and strengthening the links between these disciplines. The programmes deliver graduates that are able to provide substantial and potentially leading contributions in multidisciplinary teams with people from different backgrounds. To prepare students for working in these interdisciplinary and international teams, the programmes are offered in an *international classroom* setting and English is the common language.
- The labour market demand is internationally oriented. The programmes also offer an industrial application. To participate in the international research community upon graduation, it is crucial that students Master the English language.
- The student intake and current student population is internationally diverse, and English is the common language.
- The programmes are characterised by working together across and strengthening the links between disciplines. The programmes are also characterised by a strong connection to stakeholders in industry and society. Offering the programmes in English allows students to develop the ability to cooperate and communicate in the required international context.
- Being internationally competent enhances students' chances on both the national and international labour markets. This is endorsed by regional and (inter)national companies.

APPENDIX G RULES OF PROCEDURE FOR EXAMS

Section 1 General provisions

Article 1 Applicability

These Rules of Procedure apply to all written exams administered at locations designated by or on behalf of the Maastricht University faculty or the school Board of Examiners offering the exam. Where applicable, supplementary or different regulations may be appended for exams administered in computer labs or faculty rooms.

Article 2 Definitions

a. Board of Examiners: the Board of Examiners of a faculty or school;
b. Exam Coordinator: the person responsible for scheduling and organising a written exam on the Board of Examiners' behalf;
c. Head (or other) Invigilator: the person, assigned by the Office of Student Affairs and instructed by the course examiner, who monitors compliance with the Rules of Procedure at the exam location on the Board of Examiners' or Faculty Board's behalf;
d. Examiner: the teacher designated by the Board of Examiners to administer the exam and determine the results.

Section 2 Participation in the exam

Article 3 Proof of identity

1. Only students who are officially enrolled at UM at the time of the exam are permitted to participate in the exam. Students must provide proof of their identity during the exam, preferably by a clearly legible UM Card with an undamaged, recent passport photo bearing a clear resemblance to the holder and which complies with the Digital Passport Photo Guidelines for the UM Card (see Annex 1). Students can also identify themselves by an original, legal ID in the form of a valid:
- passport; or
- students from EU/EEA countries: driving licence or state-issued identity card; or
- Dutch residence permit or in some cases EU residence permit.
  At the start of the exam, the UM Card or legal ID must be placed on the student's table and be clearly visible or, in case of online exam, must be presented to the invigilator at the beginning of the exam.

Copies of IDs will not be accepted as proof of identity.

2. Students who cannot provide a proof of identity during the exam in the prescribed manner will not be permitted to participate in or continue to participate in the exam, and will be required to leave the exam room at the Head (or other) Invigilator's instruction.

Article 4 Right to participate

1. Students as referred to in Article 3 will be permitted to participate in the exam only if they are entitled to do so under the specific faculty regulations.
2. No student will be admitted into the room where the exam is being administered after the exam has officially begun. Such students will not be entitled to participate in the exam, regardless of the reason for their late arrival.

Article 5 Instructions

Students must always follow the instructions of the Exam Coordinator and/or the Head (or other) Invigilator.

Section 3 Use of the exam room

Article 6 Arrangement of the room

1. The exam room will open at least 15 minutes before the exam begins. From the time the exam room is opened, students may enter and take a seat at the positions where the exams are place or, if applicable, in accordance with the seating plan posted by the room entrance.
2. A seat shall be reserved for each student who has registered for the exam in conformity with the registration procedure.

Article 7 Personal belongings and other materials

1. Before the exam starts, coats, bags and other personal belongings must be placed underneath the table or in the place designated by the Head (or other) Invigilator. Bags must be closed. Head coverings are permitted with eyes and ears clearly visible.
2. Materials as referred to in Article 16(c) (such as communication devices and other information carriers) must be switched off and stored in students' bags. Use of these materials is not permitted during the exam, unless the Board of Examiners has determined otherwise. Students are not permitted to take these unauthorised materials out of their bags until after they leave the exam room.
3. Students are not permitted to wear watches during the exam. Watches must be placed in students' bags before the exam starts and are not to be taken out until after they leave the exam room.

Article 8 Leaving the exam room/seat

1. Students are not permitted to leave the exam room until 30 minutes after the official start, and during the last 30 minutes of the examn.
2. Students are not permitted to leave the exam room or their seat without the Head (or other) Invigilator's permission.

Article 9 Disruptive behaviour

1. Students are not permitted to engage in any behaviour that is disruptive to the other students or to the Invigilators or other persons present in the exam room. The Head (or other) Invigilator will judge whether behaviour is disruptive and speak to the student in question.
2. Students are permitted to consume food and drinks they have brought along during the exam provided this is not disruptive to others and they leave the area clean and tidy.
3. If a student creates a serious disruption, the Head (or other) Invigilator may exclude that student from further participation in the exam.

Article 10 Emergencies during the exam

In the event of an emergency, students must follow the instructions of the Invigilators, emergency services (such as the fire brigade) and/or emergency response workers at the exam venue.

Section 4 Handing in exams

Article 11 Procedure

1. Students are permitted to hand in their exams to their course Invigilator no earlier than 30 minutes after the exam starts. Students hand in their exam papers in one of two different ways, depending on when they finish:
   - Before the end of the exam: By taking the exam papers to the invigilator and handing over their completed work.
   - At the end of the exam: Students remain seated until either the head invigilator or another invigilator has collected their completed work/answer form/exam papers from their desk.
2. The Examiner may determine that the exam questions must also be handed in.
3. The Head (or other) Invigilator will announce when there are only 30 minutes remaining until the end of the exam.
4. After handing in their examns students must leave the room quickly and as quietly. Students who have handed in their exams and left the room will not be permitted to re-enter the room.
5. Exam papers must be handed in no later than the official end of the examn or as instructed by the Head (or other) Invigilator. If a student continues writing on their answer form after the exam has officially ended, this may be documented on an Irregularity
6. Students are not allowed to amend their answers once the exam has ended or after their exam was handed-in. Students must fill in their name and/or student ID number before the end of the exam. See also Article 16, paragraph g.
7. The Board of Examiners may determine that students must provide proof of identity in conformity with the provisions of Article 3 when handing in their exams and before they can leave the room.

Section 5 Toilet visits

Article 12 Restrictions; medical necessity

1. Students are permitted a maximum of two toilet visits during two-hour exams. No toilet visits are permitted during the first and last 30 minutes of the examn.
2. students are permitted a maximum of three toilet visits during three-hour exams. No toilet visits are permitted during the first and last 30 minutes of the exam.
3. If due to a medical necessity a student may have to make more than the maximum number of toilet visits permitted during the exam, the student must consult with the disability office which will inform the Head (or other) Invigilator before the exam.

Article 13 Procedure

1. Students wishing to leave the exam room temporarily to go to the toilet must request permission from the Head (or other) Invigilator by raising a hand. If permission is granted, the student will receive a toilet pass in exchange for their ID, which will be returned in exchange for the toilet pass upon their return to the exam room.
2. No more than one student (per block) shall be allowed to go to the toilet area at the same time.
3. Before being permitted to visit the toilet, students can be asked to present the contents of their pockets or the like to verify they are not in possession of any unauthorised materials as referred to in Article 16(c)), having due regard for students' privacy. If a student refuses to present the full contents of their pockets or the like, an Irregularity Report Form will be drawn up. Article 15.2 shall apply by analogy.

Section 6 Completion instructions

Article 14 Compliance with completion instructions

Instructions for completing exam answer forms, questions or booklets shall be included with the forms, questions or booklets in question. If a student fails to follow these instructions, uses materials other than those permitted (see Article 16(c)), makes changes to pre-printed information or notes elsewhere on an answer form, it will not be possible to process the answer form and issue an examresult. Students will be held wholly responsible for the consequences of failure to comply with the completion instructions. Any suspected mistakes in the instructions must be reported immediately to the Head (or other) Invigilator.

Section 7 Suspected fraud and reporting irregularities

Article 15 Irregularity Report Form

1. If a student is suspected of fraud, the Head (or other) Invigilator shall submit a report to the Board of Examiners using an Irregularity Report Form.
2. The irregularity report shall describe in detail the factual situation as witnessed by the Head (or other) Invigilator. The Head (or other) Invigilator may draw up this report in Dutch or English, depending on the language spoken and written by the student. The Head (or other) Invigilator will make sure that the student understands the content of the report. After the student has read and agreed to the content of the Irregularity Report Form, the Head (or other) Invigilator, the Examiner (if present) and the student shall sign the form.

Article 16 Suspected fraud

Fraud may be suspected in situations where a student:

a. exchanges information with another student or other persons in the exam room in any manner whatsoever before, during or after the exam is administered;
b. exchanges information with another student or other persons in any manner whatsoever before, during or after visiting the toilet during the exam;
c. has unauthorised materials within reach. Unauthorised materials in any case include:
   - forms of identification other than a UM Card or legal ID (see also Article 3);
   - communication devices and/or other electronic equipment (mobile phones, smart watches calculators, palmtops and the like () other than the authorised materials specified on the front page of the exam;
   - dictionaries, books, texts and notetaking materials (notes can be made on blank pages in the examn booklet or on the scrap paper furnished by the exam administrators) other than the authorised materials specified on the front page of the exam;
d. leaves the room without an Invigilator's permission;
e. goes to the toilet without an Invigilator's permission with any of the object mentioned under c.;
f. takes something out of their bag during the exam without an Invigilator's permission.

g. writes something on the exam papers after the official end of the exam without permission from an invigilator.

Article 17 Confiscation of unauthorised materials

1. If in the Head (or other) Invigilator's judgment a student has unauthorised materials as referred to in Article 16(c) within reach, the Head (or other) Invigilator may ask to inspect them.
2. The Head (or other) Invigilator shall inform the student of the potential irregularity or fraud observed and confiscate the unauthorised materials. In principle, the student may continue to participate in the exam.
3. If the student objects to the confiscation of unauthorised materials, the Head (or other) Invigilator will record this on an Irregularity Report Form and submit it to the Board of Examiners. To the extent that the confiscated materials cannot serve as evidence of fraud, they shall be returned to the student on a date/at a time to be determined by the Board of Examiners.
4. If a student has written permission from the Board of Examiners to use unauthorised materials during the exam they must inform the Examn Coordinator or Head (or other) Invigilator at the exam venue before the start of the exam and must be able to present a copy of this document.

Section 8 Liability

Article 18 Damage to or loss of property in the examn room

Maastricht University hereby expressly excludes any liability for damage to or loss of property given in custody to or confiscated by the Head (or other) Invigilator.

Section 9 Unforeseen cases

Article 19 Violations

Any violation of these Rules of Procedure shall be documented on an Irregularity Report Form. Article 15.2 shall apply by analogy.

Article 20 Consultation

In cases not provided for in these Rules of Procedure, the Exam Coordinator shall decide the matter in consultation with the Head Invigilator and, if possible, the Examiner or Board of Examiners.