

These degree programme and examination regulations have been worded carefully to be up to date; however, errors cannot be completely excluded. The official German text available at the Examinations Office is the version that is legally binding.

Note: For students who started their studies before the latest amendment came into effect, please also note the previous amendments with their transitory provisions.

**Degree Programme and Examination Regulations for the
Elite Network of Bavaria Master's Degree Programme
'Advanced Materials and Processes' (MAP)
of the Faculty of Engineering
at the University of Erlangen-Nürnberg
(FPO MAP-M)
Dated 15 May 2006**

amended by statutes of
09 March 2011
30 July 2013

Based on Section 13 (1) in conjunction with Section 43 (5) and Section 61 (2) of Bayerisches Hochschulgesetz (Bavarian Higher Education Act; BayHSchG) and Section 60 (6) BayHSchG in conjunction with Section 57 (1) of Qualifikationsverordnung (Qualification Regulations for Studies at Public Universities in Bavaria; QualV), Friedrich-Alexander-Universität Erlangen-Nürnberg enacts the following degree programme and examination regulations:

Preamble

¹As part of the Elite Network of Bavaria (ENB), the University of Erlangen-Nürnberg, the University of Bayreuth and the University of Würzburg offer an Elite programme in the field of 'Advanced Materials and Processes' (MAP) (taught in English). ²This programme results in the special Master's degree 'Master of Science with Honours'. ³The degree 'Master of Science with Honours' awards the outstanding achievements of graduates beyond a standard Master's degree.

**Section 1
Scope**

(1) ¹The degree programme and examination regulations shall govern admission to the Elite Network of Bavaria Master's degree programme 'Advanced Materials and Processes' and the Master's examination. ²They are therefore an extension of the currently valid version of the General Examination Regulations for the Diplom, Bachelor's and Master's Degree Programmes of the Faculty of Engineering at the University of Erlangen-Nürnberg (DiplProTF).

**Section 2
Degree Title**

¹The degree title 'Master of Science with Honours' (abbreviated as MSc (hons.)) shall be awarded to students who pass the Master's examination. ²The degree may also be used with the addition '(FAU Erlangen-Nürnberg)'.

Section 3

Qualification for Admission to the Elite Degree Programme

¹The qualification requirements for the Master's degree programme 'Advanced Materials and Processes' shall be a degree in chemical and biological engineering, materials science or a comparable degree programme with an above-average final grade, as well as admission from the Academic Committee according to the qualification assessment process set out in **Appendix 1**. ² Certificates for the following may be submitted as proof of qualification:

1. A Bachelor's examination at a German or foreign university
2. A Diplom, Bachelor's or Master's examination at a German university of applied science, or
3. Another, comparable university degree.

³Applicants shall have been among the top 10% of their year or shall have completed the degree with a final grade of at least 1.9. ⁴Degrees that were evaluated according to a different grading system must be convertible.

Section 4

Academic Committee

(1) The Academic Committee shall comprise:

1. As representatives of the University of Erlangen-Nürnberg, one professor each from the subjects chemical and biological engineering and materials science, and one research associate from one of these subjects
2. As a representative of the University of Bayreuth, a professor of materials science or engineering science
3. As a representative of the University of Würzburg, a professor of nanostructure technology

(2) The members shall be appointed by the Faculty Council for a term of office of three years; re-appointment shall be permitted.

(3) The members of the Academic Committee shall elect a member as chairperson and one as deputy.

(4) The Academic Committee shall make the decision on the admission of applicants to the degree programme dependent on the available places.

Section 5

Scope and Structure of the Degree Programme

(1) ¹In the seven modules of the Elite degree programme 'Advanced Materials and Processes', students shall obtain a total of 120 ECTS credits in examinations, course achievements and in the Master's thesis. ²In addition, MAP requires completion of a minimum 12 week industrial internship. For the latter, internships carried out before participation in MAP will be recognised (although not those which contributed to a Bachelor's degree). ³Further information is given in **Appendix 2**.

(2) At the beginning of the degree programme, the Academic Committee shall determine the fundamental courses to be completed by each student depending on their previous knowledge.

(3) ¹In the MAP programme, students must choose two of the following Focal subjects:

- Biomaterials and bioprocessing
- Nanomaterials and nanotechnology
- Computational materials science and process simulation
- Advanced processes

²The choice of the two Focal subjects should be made, at the very latest, by the end of the first semester and in consideration of the number of free study places and after approval by the Academic Committee. ³The written confirmation of the Academic Committee is necessary for the registration for examinations at the examination office.

Section 6 Course Credit

(1) ¹Course credit shall be obtained through regular attendance or, where applicable, graded examinations or course achievements. ²Sufficient knowledge/skills/competence to obtain course credit (following regular and successful participation in lectures/exercises/practicals) will be established through written examinations, oral examinations, presentations, project reports or literature reviews. ³The lecturers will make known the form of evaluation at the start of the respective lectures/exercises/practicals.

(2) ¹Soft skills classes will be organised each semester by internal and external tutors ²The amount of classes is prescribed in **Appendix 2**. ³Depending on the subject, soft skills classes may take the form of a lecture, a tutorial or a project.

Section 7 Registration for the Master's Examination

¹Candidates shall register for the Master's examination in good time so as to be able to sit the last individual subject examination in the examination period following the third semester. ²The Examinations Committee may grant exemptions in justified cases.

Section 8 Admission Requirements for the Master's Examination

Students shall submit proof of their approved specialisations according to Section 5 (3) when applying for admission to the Master's examination.

Section 9 Scope and Structure of the Master's Examination

(1) The Master's examination shall consist of examinations in the following subjects:

1. One examination in each Focal subject
2. The Master's thesis

(2) The duration and type of the examination shall be governed by **Appendix 3**.

(3) The Focal subjects are the two chosen subjects according to the scheme shown in **Appendix 3**, part 2.

(4) ¹Candidates may sit examinations in subjects additional to the compulsory subjects (additional subjects). ²The inclusion of the grades for these examinations is regulated in the general examination regulations (DiplPrOTF).

Section 10 Passing the Master's Examination, Expulsion from the Degree Programme

(1) The Master's examination has been passed when the modules M1 to M6 have been passed and the Master's thesis (Module 7) is evaluated as at least 'ausreichend' (sufficient).

(2) A module consisting of several components (modules 1 to 6) has been passed when all examinations and coursework have been evaluated at least as satisfactory, or where applicable, successful participation has been proven.

(3) ¹Retaking unsatisfactory examinations or coursework is limited in MAP. ²Only in one each of the three sections 'Fundamentals, Basics and Focal subjects' is a retake possible. (cf. **Appendix 2 and 3**). ³Failed course or examination achievements in more than one subject shall result in expulsion from the degree programme. ⁴In this case credits accrued from the Elite degree programme 'Advanced Materials and Processes' can be transferred to the Master's degree programme Chemical and Biological Engineering or Materials Science unless the relevant degree programme and examination regulations state otherwise. ⁵In case of termination, a member of the Academic Committee shall counsel the student on the further course of their studies.

Section 11

Admission Requirements for the Master's Thesis

The requirements for admission to the Master's thesis shall be as follows:

1. Passing the modules M1 to M6
2. Submitting proof of an industrial internship lasting twelve weeks in total recognised by the Academic Committee.

Section 12

Master's thesis

(1) The subject of the Master's thesis shall be allocated by professors or full-time university lecturers involved in teaching MAP.

(2) The period for Master's thesis work shall be limited to six months.

(3) ¹The Master's thesis shall be written in English.

Section 13

Evaluation of Student Performance

(1) The final grade of the Master's examination shall be calculated using the grades of:

1. The graded course achievements according to **Appendix 2** with half the weighting of their credit points.
2. The examinations and the Master's thesis according to **Appendix 2** with the weighting of their credit points.

(2) The certificate shall list the following for the modules M1 to M7:

1. The examination subjects and graded course achievements according to **Appendix 2**
2. the subject of the Master's thesis and the corresponding grades.

(3) The degree certificate shall be issued in German and English.

Section 14

Legal Validity

These degree programme and examination regulations shall come into effect on the day after their publication.

Appendix 1: Qualification Assessment Process

(1) The qualification of applicants for the Elite degree programme shall be assessed by the Academic Committee.

(2) ¹Applications for admission to the qualification assessment process shall be submitted to the chairperson of the Academic Committee by 15 July for the following winter semester of that year. ²Documents that are not available at this date may be submitted later within a deadline determined by the Academic Committee.

(3) Application documents shall include:

- CV
- documents showing fulfilment of admission requirements according to Section 3
- letter of a maximum length of two A4 pages stating reasons for choosing the Elite degree programme 'Advanced Materials and Processes' at the University of Erlangen-Nürnberg; the applicant shall state the aptitudes and interests making them especially qualified for the programme.
- letters of recommendation from two university lecturers from previous studies

(4) ¹Applicants shall take part in an interview with two university lecturers of the MAP programme. ²The university lecturers shall be selected by the Academic Committee. ³The interview will determine whether the applicant can be expected to complete the degree programme with academic independence and responsibility. ⁴It shall cover basic knowledge from the fields of chemical and biological engineering and materials science.

(5) The applicant shall be considered as having qualified if the majority of the members of the Academic Committee and the two university lecturers who conducted the interview approve admission.

(6) Applicants who have not proven their qualification for the MAP programme may not reapply.

Appendix 2 Examinations, Course Achievements and Credits

Module			Examinations	Course achievements		45 minute sessions per week (SWS)		ECTS credits
No.	Description	ECTS credits		Graded	Based on attendance	L+T	P	Credits
M1	Fundamentals	19.0			Fundamentals	10		15.0
					Practical labs		4	4.0
M2	Basics I	10.0		Basic subject 1		1		1.5
				Basic subject 2		1		1.5
				Basic subject 3		1		1.5
				Basic subject 4		1		1.5
					Soft skills 1	4		4.0
M3	Basics II	11.0		Basic subject 5		1		1.5
				Basic subject 6		1		1.5
				Basic subject 7		1		1.5
				Basic subject 8		1		1.5
					Soft skills 2	5		5.0
M4	Focals A	20.0	Focal subject 1			4		6.0
			Focal subject 2			4		6.0
				Research project 1		4		4.0
				Research project 2		4		4.0
M5	Focals B	12.5	Focal subject 3			5		7.5
					Soft skills 3	5		5.0
M6	Focals C	17.5	Focal subject 4			5		7.5
				Research project 3		5		5.0
				Research project 4		5		5.0
M7	Master's thesis	30.0	Master's thesis					30.0
			Total examination achievements:			44		87.0
			Total ungraded course achievements:			24	4	33.0
			Total:			68	4	120.0
						72 SWS		ECTS credits

Appendix 3: Basic and Focal subjects

3.1 Basic subjects

No.	Description
1	Basics in Biomaterials and Bioprocessing 1
2	Basics in Nanomaterials and Nanotechnology 1
3	Basics in Computational Materials Science and Process Simulation 1
4	Basics in Advanced Processes 1
5	Basics in Biomaterials and Bioprocessing 2
6	Basics in Nanomaterials and Nanotechnology 2
7	Basics in Computational Materials Science and Process Simulation 2
8	Basics in Advanced Processes 2

3.2 Focal subjects

	Focal subjects			
	Biomaterials and Bioprocessing	Nanomaterials and nanotechnology	Computational materials science and process simulation	Advanced Processes
Focal subject 1 and Focal subject 2	Biomaterials and Bioprocessing 1	Nanomaterials and Nanotechnology 1	Computational Materials Science and Process Simulation 1	Advanced Processes 1
Focal subject 3 and Focal subject 4	Biomaterials and Bioprocessing 2	Nanomaterials and Nanotechnology 2	Computational Materials Science and Process Simulation 2	Advanced Processes 2

No.	Description	Type and scope of the examinations
	Biomaterials and Bioprocessing 1	Written assignment and approx. 30 min. oral examination
	Biomaterials and Bioprocessing 2	and approx. 30 min. oral examination
	Nanomaterials and Nanotechnology 1	Written assignment and approx. 30 min. oral examination
	Nanomaterials and Nanotechnology 2	and approx. 30 min. oral examination
	Computational Materials Science and Process Simulation 1	Written assignment and approx. 30 min. oral examination
	Computational Materials Science and Process Simulation 2	Approx. 30 min. oral exam
	Advanced Processes 1	Written assignment and approx. 30 min. oral examination
	Advanced Processes 2	and approx. 30 min. oral examination