These 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 Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (FPO MAP-M)
Dated 15 May 2006

amended by statutes of
9 March 2011
30 July 2013
13 March 2017

With reference to Section 13 (1) in conjunction with Sections 43 (5) and 61 (2) of the Bavarian Higher Education Act (BayHSchG), FAU passes the following degree programme and examination regulations:

Preamble
As part of the Elite Network of Bavaria (ENB), FAU, the University of Bayreuth and the University of Würzburg offer an Elite degree programme in the field of 'Advanced Materials and Processes' (taught in English).

Section 1
Scope
(1) The degree programme and examination regulations shall govern admission to the Elite Network of Bavaria Master's degree programme 'Advanced Materials and Processes' and the examinations required for successfully completing the degree programme. They complement the current version of the General Examination Regulations for the Bachelor's and Master's Degree Programmes of the Faculty of Engineering at FAU (ABMPO/TechFak) dated 18 September 2007 as amended from time to time.

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

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Section 3
Qualification for Admission to the Elite Degree Programme

(1) The qualification requirements for the Master's degree programme ‘Advanced Materials and Processes’ shall be a degree with an above-average final grade that meets the requirements specified in Section 29 (1)(1) ABMPO/TechFak in chemical and biological engineering or materials science or a related subject (in particular life science engineering, medical engineering, biotechnology) and passing the qualification assessment process according to Appendix 3 in conjunction with Appendix ABMPO/TechFak. Section 12 (3) ABMPO/TechFak shall apply accordingly to degrees graded using a different grading system.

(2) Applicants should have completed this degree with an overall grade of at least 2.00 (good). Section 12 (3) ABMPO/TechFak shall apply accordingly.

Section 4
Joint Admissions Committee

(1) A joint admissions committee shall be formed to decide on admitting suitable candidates to the degree programme. The committee shall be made up of one professor involved in the teaching of the Elite degree programme from the areas of chemical and biological engineering, and materials science and one research associate from each of these areas.

(2) The members shall be appointed by the Faculty Council of the Faculty of Engineering for a term of office of three years based on the proposal of the steering committee for the degree programme; re-election shall be permitted.

(3) The members of the joint admissions committee shall elect one of their members to the position of chairperson and one as deputy chairperson.

Section 5
Scope and Structure of the Degree Programme, Teaching and Examination Language

(1) The degree programme consists of 17 modules worth 120 ECTS credits in total according to Appendix 1. The courses to be taken in modules 1 – 4 are determined in an individual study plan for each student.

(2) At the beginning of the first semester, the Admissions Committee shall determine the foundation subjects (M1-M4) to be completed by each individual student according to the module handbook. Modules should be chosen on the basis of the module descriptions to ensure that students acquire specific subject knowledge compared to their previous Bachelor’s degree programme within the context of the qualification goals of the Master's degree programme Advanced Materials and Processes (MAP).

(3) In the MAP Elite degree programme, students must choose two of the following four specialisations:

- Biomaterials and bioprocessing
- Nanomaterials and nanotechnology
- Computational materials science and process simulation
- Advanced processes
The specialisations shall be chosen at the latest by the end of the first semester.
Written confirmation from the Admissions Committee is necessary to register for examinations at the Examinations Office.

(4) The teaching and examination language of the Elite degree programme Advanced Materials and Processes is English.

Section 5a
Compulsory Elective Modules M9-M12
(1) The first learning outcome of the compulsory elective modules M9-M12 is to give students the opportunity to explore two specialisations in more depth (Biomaterials and bioprocessing, Nanomaterials and nanotechnology, Computational materials science and process simulation, Advanced processes). The second learning outcome is methodological, training students in interdisciplinary approaches. Thirdly, the element of choice gives students the opportunity to create their own specialisation profile in view of their future career.

(2) The type and scope of the examination are dependent on the competencies for the chosen module according to (1) and the module handbook. Possible examination achievements are: oral examination (45 minutes) or written examination (60 minutes). The module catalogue is announced before the beginning of the semester in accordance with local practice.

(3) The compulsory elective modules generally consist of either two lectures (2 SWS) and two practicals (1 SWS); two lectures (2 SWS), one practical (1 SWS) and one seminar (1 SWS); or three lectures (3 SWS) and one practical (1 SWS). [SWS = semester hour]

Section 6
Master's Degree Examinations
Course and examination achievements serve to prove that students possess the required expertise to successfully complete a module. The type and scope of the course and examination achievements are set out in Appendix 1.

Section 7
Registration for the Master's Examination
[revoked]

Section 8
Admission Requirements for the Master's Thesis
Modules 1-16 must be completed successfully for students to gain admission to the Master's thesis. Students shall submit proof of their approved specialisations according to Section 5 (3) when applying for admission to the Master's examination.

Section 9
Master's Thesis
The student shall register for the Master's thesis after successfully completing modules 1-16. Exceptions are only permitted in exceptional circumstances (e.g. participating in the additional specialisations according to Section 11 in conjunction with Appendix 2).
(2) The Master's thesis is supposed to demonstrate students' ability to solve problems independently in a relevant current area of research. The Master's thesis includes a presentation followed by a discussion on the results of the thesis. The date for the presentation shall be set by the supervisor.

(3) The topic for the Master's thesis shall be issued by a professor or a researcher who is eligible to act as an examiner and who teaches in the Elite degree programme Advanced Materials and Processes of the Elite Network Bavaria or at the Departments of Materials Science or Chemistry and Biological Engineering.

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

Section 10
Assessing the Master's Degree Programme, Resitting Examinations
(1) The Master's degree programme has been passed when the modules M1 to M16 have been passed and the Master's thesis (Module 17) including presentation is evaluated as at least 'ausreichend' (sufficient).

(2) The overall grade for the Master's degree programme is calculated from the grades for modules M5-M13, M15 and M17.

(3) There are only limited possibilities to resit unsatisfactory course and examination achievements in the Advanced Materials and Processes Elite degree programme. The course and examination achievements of modules M1-M17 may only be repeated once.

Section 11
Additional Specialisations Research Focus and Industry Focus
(1) Students enrolled on the Master's degree programme Advanced Materials and Processes may also complete the additional specialisations Research Focus or Industry Focus parallel to their degree programme. By successfully completing the additional specialisations, students can show evidence of in-depth qualifications relating to academic working (Research Focus) or industry-related qualifications (Industry Focus)

(2) The additional specialisation Research Focus comprises four modules with ECTS credits as follows:
- M18: Elective module with a scientific and technological focus (5 ECTS)
- M19: Science-oriented soft skills (5 ECTS)
- M20: Research-oriented mini project (10 ECTS)
- M21: Research placement in industry, non-university institutes or universities (10 ECTS)

The additional specialisation Industry Focus comprises four modules with ECTS credits as follows:
- M22: Elective module with a technical or business focus (5 ECTS)
- M23: Soft skills for the work environment
- M24: Application-oriented mini project (10 ECTS)
- M25: Industrial internship (10 ECTS)

Further information on the modules and on the type and scope of examinations can be found in Appendix 2. These examination regulations shall apply to registering for examinations, resitting examinations, withdrawal, breach of regulations, fraud and
assessment. Module 13 must be completed successfully before students are admitted to the examinations for modules M20 and M24.

(3) After successfully completing the module examinations stipulated in (2), the student is granted a certificate in Additional Research Qualifications or Additional Qualifications for Business and Industry stating the successfully completed achievements including ECTS credits and grades for the modules. This is indicated in a separate section in the Transcript of Records. If the student files a request with the Examinations Office at the latest eight weeks before certificates are issued, additional specialisations are not listed on the final certificate.

Section 12
Master's Thesis
[revoked]

Section 13
Evaluation of Student Performance
[revoked]

Section 14
Legal Validity
These degree programme and examination regulations shall come into effect on the day after their publication.
## Appendix 1: Structure of the Degree Programme

<table>
<thead>
<tr>
<th>No.</th>
<th>Module groups</th>
<th>Module</th>
<th>SWS</th>
<th>ECTS credits</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; sem.</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; sem.</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; sem.</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; sem.</th>
<th>Type and scope of examination and course achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>Foundation subjects (20 ECTS)</td>
<td>Foundation subject I (compulsory elective)</td>
<td>2+1</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>CA (W 90 min)</td>
<td></td>
</tr>
<tr>
<td>M2</td>
<td>Foundation subject II (compulsory elective)</td>
<td>2+1</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td>CA (W 90 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>Foundation subject III (compulsory elective)</td>
<td>2+1</td>
<td>5</td>
<td>5</td>
<td></td>
<td>CA (W 90 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M4</td>
<td>Foundation subject IV (compulsory elective)</td>
<td>2+1</td>
<td>5</td>
<td>5</td>
<td></td>
<td>CA (W 90 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M5</td>
<td>General subjects (20 ECTS)</td>
<td>General subjects I (Advanced Processes)</td>
<td>4</td>
<td>5</td>
<td>2.5</td>
<td>2.5</td>
<td>EA (W 120 min)</td>
<td></td>
<td></td>
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<tr>
<td>M6</td>
<td>General subjects II (Biomaterials and Bioprocessing)</td>
<td>4</td>
<td>5</td>
<td>2.5</td>
<td>2.5</td>
<td>EA (W 120 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M7</td>
<td>General subjects III (Computational materials science and process simulation)</td>
<td>4</td>
<td>5</td>
<td>2.5</td>
<td>2.5</td>
<td>EA (W 120 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M8</td>
<td>General subjects IV (Nanomaterials and nanotechnology)</td>
<td>4</td>
<td>5</td>
<td>2.5</td>
<td>2.5</td>
<td>EA (W 120 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M9</td>
<td>Specialisation A (15 ECTS)</td>
<td>Specialisation A</td>
<td>4+2</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
<td>1&lt;sup&gt;)&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M10</td>
<td>Specialisation B (15 ECTS)</td>
<td>Specialisation B</td>
<td>4+2</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
<td>1&lt;sup&gt;)&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M11</td>
<td>Mini project (10 ECTS)</td>
<td>Mini project</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td></td>
<td>EA (PA: written project report)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M12</td>
<td>Research skills I (2.5 ECTS)</td>
<td>General laboratory course</td>
<td>2</td>
<td>2.5</td>
<td>2.5</td>
<td></td>
<td>CA (P: series of reports)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M13</td>
<td>Research skills II (2.5 ECTS)</td>
<td>Literature research</td>
<td>2</td>
<td>2.5</td>
<td>2.5</td>
<td></td>
<td>EA (SA: written essay)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M14</td>
<td>Soft skills (5 ECTS)</td>
<td>Core skills Field trips</td>
<td>4</td>
<td>5</td>
<td>2.5</td>
<td>2.5</td>
<td>CA: Discussion contribution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M15</td>
<td>Master's thesis (30 ECTS)</td>
<td>Master's thesis</td>
<td>30</td>
<td>3</td>
<td>30</td>
<td></td>
<td>EA (presentation, 30 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Master's thesis</td>
<td>Master's thesis Colloquium</td>
<td>30</td>
<td>3</td>
<td>30</td>
<td></td>
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<td>58</td>
<td>10</td>
<td>120</td>
<td>32.5</td>
<td>27.5</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

EA = examination achievement (graded), CA = course achievement, PA = practical/laboratory achievement, SA = seminar achievement, W x min = written examination x minutes, o x min = oral examination x minutes

1<sup>)</sup> cf. Section 5a
### Appendix 2: Additional specialisations within the meaning of Section 11

#### Additional specialisation *Research Focus*

<table>
<thead>
<tr>
<th>No.</th>
<th>Module groups</th>
<th>Module</th>
<th>SWS (semester hours)</th>
<th>ECTS credits</th>
<th>1st sem.</th>
<th>2nd sem.</th>
<th>3rd sem.</th>
<th>4th sem.</th>
<th>Type and scope of examination and course achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EA</td>
<td>CA</td>
<td>PA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M18</td>
<td>Elective module (5 ECTS)</td>
<td>Elective module from Faculty of Sciences or Faculty of Engineering</td>
<td>2+1</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>EA/CA (depending on chosen module)</td>
</tr>
<tr>
<td>M19</td>
<td>Soft skills</td>
<td>Research-oriented soft skills; in addition to what is offered in M14</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>SA</td>
</tr>
<tr>
<td>M20</td>
<td>Mini project 2</td>
<td>Research-oriented mini project</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>EA (PA: written project report)</td>
</tr>
<tr>
<td>M21</td>
<td>External placement</td>
<td>Research placement in industry, non-university institutions or universities (in Germany or abroad) of at least 12 weeks</td>
<td></td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>CA: (PA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td>7</td>
<td>8</td>
<td>30</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

EA = examination achievement (graded), CA = course achievement, PA= practical/laboratory achievement, SA= seminar achievement

#### Additional specialisation *Industry Focus*

<table>
<thead>
<tr>
<th>No.</th>
<th>Module groups</th>
<th>Module</th>
<th>SWS (semester hours)</th>
<th>ECTS credits</th>
<th>1st sem.</th>
<th>2nd sem.</th>
<th>3rd sem.</th>
<th>4th sem.</th>
<th>Type and scope of examination and course achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EA</td>
<td>CA</td>
<td>PA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M22</td>
<td>Elective module (5 ECTS)</td>
<td>Elective module from the Faculty of Engineering or the Faculty of Business, Economics, and Law</td>
<td>2+1</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>EA/CA (depending on chosen module)</td>
</tr>
<tr>
<td>M23</td>
<td>Soft skills</td>
<td>Soft skills for the work environment; in addition to what is offered in M14</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>SA</td>
</tr>
<tr>
<td>M24</td>
<td>Mini project 2</td>
<td>Application-oriented mini project</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>PA (written project report)</td>
</tr>
<tr>
<td>M25</td>
<td>External placement</td>
<td>Industry internship of at least 12 weeks</td>
<td></td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>CA: (P)</td>
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<td></td>
<td>Total</td>
<td></td>
<td>7</td>
<td>8</td>
<td>30</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

EA = examination achievement (graded), CA = course achievement, LA = laboratory achievement, SA = seminar achievement
Appendix 3: Qualification assessment process

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

(2) Applications for admission to the qualification assessment process shall be submitted for the following winter semester to the chairperson of the Admissions Committee by 31 March at the latest (for applicants from abroad) or by 15th July (for applicants from the EU).

(3) The application shall include:
1. CV in tabular form, with a recent photo, listing all qualifications from school and university and, if applicable, all work experience, without any gaps.
2. Documents showing fulfilment of admission requirements according to Section 3
3. Proof of English language skills equivalent at least to Level B2 of the Common European Framework of Reference (CER) for languages or equivalent proof of English language skills if the higher education entrance qualification or the relevant initial professional qualification was not acquired in the English language (for example TOEFL test, at least 85 points in iBT)
4. If applicable, other qualifications of relevance to the degree programme e.g. proof of completed modules in scientific or research-related studies (minimum 7.5 ECTS credits), proof of completed modules with an explicit engineering focus (minimum 7.5 ECTS credits) or proof of placements in a scientific or technical environment (minimum 3 months full-time) or similar qualifications.

(4) The Admissions Committee shall shortlist applications based on the submitted documents as part of the qualification assessment process to assess whether an applicant qualifies for a Master's degree programme as such. Applicants with a degree within the meaning of Section 29 ABMPO/TechFak in conjunction with Section 3 (1) or in the case of Section 29 (3) ABMPO/TechFak with an average grade of 2.0 (=gut, good) or better in their achievements to date shall be invited to an interview lasting at least 20 minutes, which may also be conducted via video conference. Section 12 (3) ABMPO/TechFak shall apply accordingly for qualifications with a differing grading system. Applicants with a degree within the meaning of Section 29 ABMPO/TechFak in conjunction with Section 3 (1) or in the case of Section 29 (3) ABMPO/TechFak with an average grade of 2.01 to 2.20 (=gut, good) or better in their achievements to date shall be invited to an interview if they can provide evidence of other qualifications relevant to the Elite Master's degree programme within the meaning of Section 3 (4). The remaining applicants will receive a notification of rejection; this will specify the reasons for rejection and provide information on available legal remedies. The interview shall be conducted by at least two members of the Admissions Committee. At least one member must come from the area of materials science and one member from the area of chemical and biological engineering. The interview shall be held in English. In the interview, the applicant shall outline and defend their qualifications and previous work on subjects relevant to the degree programme and answer technical questions regarding topics relevant to the Elite degree programme at an appropriate level. The suitability of applicants for the Elite degree programme shall be assessed on the basis of the following criteria:
1. Quality of basic knowledge in chemical and biological engineering or materials science (weighting 40 %)
2. Quality of expert knowledge acquired through voluntary placements or lectures attended during the Bachelor's degree programme as the basis for a future specialisation in two of the four specialisation subjects in the Master's degree programme. Applicants are expected to be able to use their basic knowledge of chemical and biological engineering or materials sciences to work out fundamental connections in the areas covered by the respective specialisation subjects. The specialisation subjects for the interview will be chosen by the applicant (weighting 40 %).
3. The ability to come to terms with interdisciplinary problems in the areas of chemical and biological engineering and materials sciences and develop suggestions for solutions (weighting 20 %).

(5) The Admissions Committee shall notify applicants of the result of the qualification assessment process in writing. A rejection notification shall include reasons and information on the legal remedies available. A repetition of the qualification assessment process on the basis of documents already submitted shall not be permitted.

(6) Confirmation of passing the qualification assessment process shall remain valid indefinitely, provided that the Master's degree programme has not been changed significantly.