

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.

**Degree Programme and Examination Regulations for the
Bachelor's and
Master's Degree Programme Molecular Science at the Faculty of Sciences of Friedrich-Alexander-Universität Erlangen-Nürnberg – FPOMol–
Dated 25 July 2013**

Based on Section 6, Section 13 (1)(2), Section 43 (4) and (5), Section 61 (2)(1) of the Bavarian Higher Education Act (Bayerisches Hochschulgesetz, BayHSchG), the University of Erlangen-Nürnberg enacts the following examination regulations:

I: General Conditions

Section 35 Scope

The degree programme and examination regulations for the Bachelor's and consecutive Master's degree programme Molecular Science complement the General Examination Regulations for the Bachelor's and Master's in Chemistry and Molecular Science at the Faculty of Engineering of Friedrich-Alexander-Universität Erlangen-Nürnberg as amended from time to time.

Section 36 Bachelor's Degree Programme, Standard Duration of Studies, Start of Programme

¹The Bachelor's degree programme Molecular Science shall consist of modules over the course of six semesters. ²This shall include the period for working on the Bachelor's thesis.

Section 37 Master's Degree Programme, Standard Duration of Studies, Language, Teaching Language

¹The Master's degree programme Molecular Science builds on the contents of the Bachelor's degree programme Molecular Science. ²It shall consist of modules worth 120 ECTS credits including the Master's thesis. ³The teaching language shall be English.

II: Special Provisions

1. Bachelor's Examination

Section 38 Structure of the Bachelor's Degree Programme

The distribution across the semesters, the type and duration of the examinations in the compulsory modules and the required number of ECTS credits are set forth in **Appendix 1**.

Section 39 Preliminary Examination (Grundlagen- und Orientierungsprüfung, GOP)

(1) The preliminary examination (Grundlagen und Orientierungsprüfung, GOP) shall consist of the modules set forth in **Appendix 1**.

Section 40 Bachelor's Thesis

(1) ¹The Bachelor's thesis is supposed to enable students to learn to solve problems from the field of molecular science independently. ²All university lecturers teaching at the Department of Biology as their main occupation shall be entitled to allocate subjects for Bachelor's theses. ³Requirements for the Bachelor's thesis shall be such that it can be completed with a workload of 300 hours.

(2) 10 ECTS credits shall be awarded for the Bachelor's thesis.

2. Master's Examination

Section 41 Qualification for a Master's Degree Programme, Certificates and Admission Requirements

(1) A subject-specific degree within the meaning of Section 29 (1) (1) ABMPOChemMol/NatFak is a Bachelor's degree in the subject Molecular Science. ²Bachelor's degrees in chemistry in particular shall be recognised as subject-related degrees within the meaning of Section 29 (1)(1) ABMPOChemMol/NatFak.

(2) In the oral admission examination according to Appendix Paragraph 5 (3) ff. ABMPOChemMol/Natfak, applicants shall be evaluated according to the following criteria:

1. A good knowledge of the foundations of the subject (60%)
2. Good knowledge of a field of specialisation corresponding to an eligible specialisation in the Master's degree programme (20%)
3. A positive prognosis based on improving performance over the course of the studies so far (20%)

Section 42 Scope and Structure of the Master's Degree Programme

(1) The Master's degree programme shall consist of the modules set forth in **Appendix 2**.

(2) The elective module MSM-E must be previously agreed upon with the dean of studies.

Section 43 Master's Degree Examinations

The type and duration of the module examinations is set forth in **Appendix 2**.

Section 44 Requirements for Admission to the Master's Thesis

¹Work on the Master's thesis may be started as soon as the course and examination achievements set forth in **Appendix 2** with the exception of the modules MSM-SM and MSM-CA have been successfully completed. ²If admission to the Master's de-

gree programme was granted with conditions, the relevant certificates shall be submitted.

Section 45 Master's Thesis

(1) ¹The Master's thesis is supposed to demonstrate students' ability to solve problems in the field of molecular science independently. ²Requirements for the thesis shall be such that it can be completed within a period of six months.

(2) ¹The Master's thesis shall usually deal with a scientific subject from the chosen branch of study. ²Section 40 (1)(2) shall apply accordingly.

³30 ECTS credits shall be awarded for the Master's thesis.

III: Concluding Provisions

Section 46 Legal Validity

¹These degree programme and examination regulations shall come into effect on 1 October 2013. ²They shall be applied to students who start the Bachelor's or Master's degree programme Molecular Science from the winter semester 2013/2014 onwards.

Appendix 1: Molecular Science (Bachelor's degree)

Molecular Science – basic study period

| No. | Module | V | P | S | Ü | sem. | ECTS credits | | Examination | PFP definition | Preliminary Examination (GOP*) |
|---|---|---|----|---|---|------|--------------|------|-------------|-------------------------------|--------------------------------|
| | | | | | | | nano | life | | | |
| MSG-1 | General Inorganic Chemistry | 4 | | | 2 | 1 | 5 | 5 | PFP | W90 (PL) + EX (SL) | x |
| MSG-2 | Qualitative Analytical Chemistry Modern Aspects in Molecular Science – MAM | 2 | 8 | 2 | | 1 | 10 | 10 | PFP | W90 (PL) + LAB (PL, AP) SL | x |
| | | 2 | | | | 1 | | | | | |
| MSG-3 | Quantitative Analytical Chemistry | 2 | 5 | 1 | | 2 | 5 | 5 | LAB | W60 (PL) + LAB (PL, AP) | x |
| MSG-4 | Chemistry of Metals | 3 | | | | 2 | 5 | 5 | W | W90 (PL) | x |
| MSG-5 | Preparative Inorganic Chemistry | | 7 | 1 | | 3 | 5 | 5 | LAB | LAB (PL, AP) | |
| MSG-6 | General Organic Chemistry | 4 | | | 2 | 2 | 5 | 5 | PFP | W90 (PL) + EX (SL) | x |
| MSG-7 | Organic Chemistry Spectroscopy of Organic Compounds | 3 | | 2 | | 3 | 10 | 10 | PFP | W90 (PL) + EX (SL) EX (SL) | |
| | | 2 | | | 2 | 3 | | | | | |
| MSG-8 | Laboratory: Organic Chemistry | | 13 | 1 | | 4 | 10 | 10 | LAB | LAB (PL, AP) | |
| MSG-9 | PC1 Thermodynamics, Electrochemistry | 3 | | | 1 | 2 | 5 | 5 | PFP | W90 (PL) + EX (SL) | x |
| MSG-10 | PC2a Atomic and molecular structure of matter | 2 | | | 1 | 3 | 5 | 5 | PFP | W60 (PL) + EX (SL) | |
| MSG-11 | PC2b Kinetics | 2 | | | 1 | 3 | 5 | 5 | PFP | W60 (PL) + EX (SL) | |
| MSG-12 | PC3 – Practical for Beginners | | 9 | 1 | | 4 | 10 | 10 | LAB | LAB (PL, AP) | |
| MSG-13 | Theoretical Chemistry 1 | 2 | | | 2 | 2 | 5 | 5 | PFP | W90 (PL) + EX (SL) | x |
| MSG-14 | Theoretical Chemistry 2 | 2 | | | 2 | 3 | 5 | 5 | PFP | W90 (PL) + EX (SL) | |
| MSG-15 | Computational Molecular Chemistry | 2 | | | 2 | 4 | 5 | 5 | PFP | W90 (PL) + EX (SL) | |
| MSG-16 | Mathematics | 2 | | | 2 | 1 | 5 | 5 | W | W90 (PL) + EX (SL) | |
| | Physics 1 | 4 | | | 1 | 1 | 5 | 5 | W | W90 (PL) + EX (SL) | |
| MSG-18 | Physics 2 | 4 | | | 1 | 2 | 5 | 5 | W | W90 (PL) + EX (SL) | |
| MSG-19 | Toxicology and Jurisprudence Toxicology and Jurisprudence | 2 | | | | 3 | 5 | 5 | PFP | W60 (PL) | ‡ 5 ECTS |
| | | 2 | | | | 4 | | | | W60 (SL) | |
| Choice of one module from MSG-20 and MSG-21 MSG-20 is required for the specialisation 'Life' (prerequisite for MSV-6L, -7L, -8L, -9L and -10L) | | | | | | | | | | | |
| MSG-20 | Biochemistry and Molecular Biology I | 2 | | | | 3 | 5 | 5 | PFP | W90 (PL) | |
| | Biochemistry and Molecular Biology II | 2 | | | | 4 | | | | W90 (PL) | |
| MSG-21 | Biochemistry and Molecular Biology | 2 | | | | 3 | 5 | 5 | PFP | W90 (PL) | |
| | Introduction to Nanoscience | 2 | | | | 4 | | | | W90 (PL) | |

Σ BSc-G 53 42 8 19 120 120
 Σ BSc-G-SWS 122

*) 30 ECTS from these modules
 must be obtained in first 2 semesters

Molecular Science – focus period

| No. | Module | V | P | S | Ü | sem. | nano | life | Examination | Examination |
|---------------------|---|--------|----|---|---|--------------------|------|------|-------------|--|
| MSV-1 | Synthesis of Molecules IC Synthesis of Molecules OC | 2 2 | | | | 5 and 6 5 and 6 | 5 | 5 | W | W90 (PL) |
| MSV-2 | Laboratory: Molecule Chemistry IC | | 10 | 2 | | 5 and 6 | 5 | 5 | LAB | LAB (PL, AP) |
| MSV-3 | Laboratory: Molecule Chemistry OC | | 10 | 2 | | 5 and 6 | 5 | 5 | LAB | LAB (PL, AP) |
| MSV-4 | Mechanisms and Stereochemistry OC | 3 | | | | 5 | 5 | 5 | W | W90 (PL) |
| MSV-5 | Mechanisms and Stereochemistry IC | 3 | | | | 6 | 5 | 5 | W | W90 (PL) |
| Profile life | | | | | | | | | | |
| MSV-6L | Molecular Modelling Seminar: Molecular Modelling Practical: Molecular Modelling | 2 | | 1 | 1 | 5 5 6 | | 5 | PFP | W90 (PL) (50 %) EX (PL) (25 %) LAB (PL, AP) (25 %) |
| MSV-7L | Biological Chemistry 1 Microbiology Elective course/lecture 1 from Pharmaceutical Biology, Genetics, Plant Physiology | 3 2 | | | | 5 and 6 | | 5 | PFP | W90 (PL) SL |
| MSV-8L | Biological Chemistry 2 Elective course/lecture 2 from Pharmaceutical Biology, Genetics, Plant Physiology Practical: Biochemistry | 2 | 4 | | | 5 and 6 | | 5 | PFP | SL LAB (SL, AP) |
| MSV-9L | Medicinal Chemistry 1 Food Chemistry 1 | 3 1 | | | 1 | 5 5 | | 5 | W | W90 (PL) |
| MSV-10L | Medicinal Chemistry 2 Food Chemistry 2 | 3 1 | | | 1 | 6 6 | | 5 | W | W90 (PL) |
| Profile nano | | | | | | | | | | |
| MSV-11N | Theory of Periodic Systems Software Applications in Nanoscience Practical: Computational Nanoscience | 2 | | 1 | 1 | 5 5 6 | 5 | | PFP | W90 (PL) (50 %) EX (PL) (25 %) LAB (PL, AP) (25 %) |
| MSV-12N | Integrated Course | | | 4 | | 5 and 6 | 5 | | W | W90 (PL) |
| MSV-13N | Molecular Statistics (PC) | 3 | | | 1 | 5 | 5 | | PFP | W90(PL) + EX (SL) |
| MSV-14N | Foundations of Nanoscience, Scientific Presentation Skills | 2 | | 2 | | 6 | 5 | | PFP | W90 (PL) + LEC (SL) |
| MSV-15N | Practical: Microscopic Techniques (PC) | | 8 | | | 5 and 6 | 5 | | PFP | LAB (PL, AP) |
| MSV-16 | Bachelor's thesis | | 10 | | | 6 | 10 | 10 | thesis | 2 reviewers |

‡a 1.25 ECTS
 ‡a 1.25 ECTS

‡a 2.5 ECTS

‡a 2.5 ECTS
 ‡a 1.5 ECTS

Σ BSc-V 34 46 12 5 60 60
 Σ BSc-V-SWS 97
 Σ BSc 87 88 20 24 180 180
 Σ BSc 219

‡: Module contains core skills
 ‡a: Module contains xx ECTS including core skills

Appendix 2: Molecular Science (Master's degree)

| Module | with the courses/lectures | V | P | S | Ü | sem. | Life | Nano | Examination | PFP definition |
|----------|---|----|----|---|---|------|------|------|-------------|-------------------------------|
| MSM-nano | Mandatory module: Molecular Nanoscience | 19 | 7 | 4 | | 1/2 | | 30 | PFP | O45 (3 examiners) (PL) |
| | A Mandatory courses | | | | | | | | | |
| | Nanoparticles and Nanostructured Thin Films I | 1 | | | | | | | | |
| | Nanoparticles and Nanostructured Thin Films II | 1 | | | | | | | | |
| | Supramolecular Chemistry I | 2 | | | | | | | | |
| | Supramolecular Chemistry II | 2 | | | | | | | | |
| | Nanoprobes I | 2 | | | | | | | | |
| | Nanoprobes II | 2 | | | | | | | | |
| | Molecular Nanoscience – SEMINAR I | | | 2 | | | | | | |
| | Molecular Nanoscience – SEMINAR II | | | 2 | | | | | | |
| | LAB COURSE Molecular Nanoscience | | 7 | | | | | | | LAB (SL, AP) |
| | B Elective courses | | | | | | | | | |
| | Courses of the student's choice related to the module and with approval from the representative of the degree programme | 8 | | 1 | | | | | | |
| MSM-life | Mandatory module: Drug Discovery | | 23 | 7 | | 1/2 | 30 | | PFP | O45 (3 examiners) (PL) (66 %) |
| | Drug Discovery – SEMINAR | | | 7 | | | | | | LEC (PL) (34 %) |
| | Drug Discovery – LAB course | | 23 | | | | | | | (SL, AP) |
| MSM-ME | Mandatory elective module | 5 | 7 | 3 | | 1-3 | 15 | 15 | PFP | according to chosen module |
| | Detailed modules can be found in module handbook | | | | | | | | | |
| | Examples: | | | | | | | | | |
| | Medicinal Chemistry A | | | | | | | | | |
| | Pharmacopeia-based analysis of bioactive compounds | 2 | | | | | | | | |
| | Pharmaceutical/Medicinal Chemistry 1/2 | 6 | | | | | | | | |
| | Pharmacopeia-based analysis of bioactive compounds LAB | | 7 | | | | | | | LAB (SL, AP) |
| | Molecular Synthesis | | | | | | | | | |
| | LAB COURSE (IC/OC) and SEMINAR Molecular Synthesis | | 6 | 1 | | | | | | LAB (SL, AP) |
| | Advanced Inorganic Chemistry 1 | 2 | | | | | | | | |
| | Advanced Inorganic Chemistry 2 | 1 | | | | | | | | |
| | Inorganic Synthesis (student's choice from offered courses) | | | 1 | | | | | | |
| | Advanced Org. Chemistry 1 | 2 | | | | | | | | |
| | Advanced Org. Chemistry 2 (student's choice) | 2 | | | | | | | | |

| | | | | | | | | | |
|---------|--|---|----|---|-------|----|----|--------|---|
| MSM-E | Elective module Free choice of module Example modules can be found in module handbook | 5 | 7 | 3 | | 15 | 15 | PFP | according to (according to choice of module) |
| MSM-SM | Scientific Methods Scientific English, Scientific Writing Scientific Data, Literature and Information Management | 8 | 0 | 1 | # 1-3 | 10 | 10 | PFP | EX (SL) EX (SL) + TH (SL) |
| MSM-CA | Current Aspects in Molecular Science | | | 4 | 1-4 | 10 | 10 | PFP | LEC (SL, AP) |
| MSM-REP | Repetition and Rehearsal | | | 4 | 2-3 | 10 | 10 | PFP | EX (SL) |
| MSM-MT | Master's Thesis | | 30 | | 4 | 30 | 30 | thesis | TH, referee report 2 experts |

| | | | | | | | |
|--------------|-----|-----|----|----|------------|-----|-----|
| MSc-L | 10 | 67 | 27 | 0 | 104 | 120 | 120 |
| MSc-N | 29 | 51 | 24 | 0 | 104 | | |
| BSc+MSc Life | 97 | 155 | 47 | 24 | 323 | | |
| BSc+MSc Nano | 116 | 155 | 47 | 24 | 323 | | |

elective module without a lab course

V Vorlesung (lecture)

P Praktikum (lab course)

S Seminar (seminar)

Ü Übung (exercise)

Wxx written examination xx minutes

Oxx oral examination xx minutes

Ex Übungen (exercise – further details: Handbook of modules)

LAB praktische Laborleistung (lab course – further details: Handbook of Modules)

LEC seminar lecture

TH seminar paper or thesis

PFP portfolio examination

AP compulsory attendance for practicals

PL Prüfungsleistung
(examination
achievement)

SL Studienleistung
(course achieve-
ment)

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Erlangen, 25 July 2013

Prof. Dr. Karl-Dieter Gröske
President

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