Master of Science
Integrated Immunology



October, 2026

Module Handbook for the
Master of Science Integrated Immunology

Department of Biology
Friedrich-Alexander-Universität Erlangen-Nürnberg

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1) Structure of the Master in life sciences: Integrated Immunology

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<tr><th>Semester</th><th colspan="4">Master of Science
Integrated Immunology</th></tr>
<tr><td>1</td><td>Basic Immunology
Lectures, Seminars and Tutorials
10 ECTS</td><td>Integrated Laboratory Course
Basic Immunology
10 ECTS</td><td>Cell-and molecular biology
Tutorials
5 ECTS</td><td rowspan="2">Softskills
(elective)
imaging, bio-informatics
programming
animal sciences
genetic engineering
summerschool
total 10 ECTS</td></tr>
<tr><td>2</td><td>Translational Immunology
Lectures, Seminars and Tutorials
10 ECTS</td><td>Integrated Laboratory Course
Translational Immunology
10 ECTS</td><td>Clinical Immunology
Tutorials, Bedside visits 5 ECTS</td></tr>
<tr><td>3</td><td colspan="2">Practical project work
Laboratory rotations including international laboratories, coordination by professor 1:1 with student
15 ECTS</td><td>Theoretical project work
develop a research project 1:1 with professor, presentation during research weekend
10 ECTS</td><td>Becoming a scientist
winter school, international meetings, meet the professor, graduate school committee
5 ECTS</td></tr>
<tr><td>4</td><td colspan="4">Master thesis incl. defense
30 ECTS</td></tr>
</table>

2) Study plan for the Master in life sciences: Integrated Immunology

Code	Module	Course	SWS (semester hours)				Total ECTS credits	Distribution of work-load per semester in ECTS credits				Type/scope of examination	Grade factor
			L	T	P	S		1. sem.	2. sem.	3. sem.	4. sem.		
II-MA-M1	**Basic Immunology**[1)]	Lectures in Basic Immunology	3				**10**	2.5				EA: Written examination 90 mins	1
		Tutorials to Basic Immunology		5				5					
		Seminar to Basic Immunology				3		2.5					
II-MA-M2	**Basic Immunology Laboratory Course**	Basic Immunology Laboratory Course			10		**10**	8				CA: oral presentation 20 mins or 5-10 page report	0
		Tutorials to Basic Immunology Laboratory Course		2				2					
II-MA-M3	**Cellular and molecular biology**[1)]	Lectures in Cell and Molecular Biology	3				**5**	2.5				EA: Written examination 60 mins	1
		Tutorials to Cell and Molecular Biology		3				2.5					
II-MA-M4	**Infectious Disease Immunology**[1)]	Lectures in Infectious Disease Immunology	3				**10**		2.5			EA: Written examination 90 mins	1
		Tutorials to Infectious Disease Immunology		5					5				
		Seminar to Infectious Disease Immunology				3			2.5				
II-MA-M5	**Infectious Disease Immunology Laboratory Course**	Infectious Disease Immunology Laboratory Course			10		**10**		8			CA: oral presentation (20 mins) and laboratory report (5 pages) and oral presentation (20 mins) and laboratory report (5 pages)	0
		Seminar to Infectious Disease Immunology Laboratory Course		2					2				
II-MA-M6	**Clinical Immunology**[2)]	Lectures in Clinical Immunology	2				**5**		2.5			EA: Written examination 45 mins	1
		Tutorials to Clinical Immunology			2				2.5				
II-MA-M7	**Practical Project Work**	Laboratory Rotations including International Laboratories			15		**15**			15		CA: 1 page report and oral presentation 15 mins	0
II-MA-M8	**Theoretical Project Work**	Theoretical Project Work			10		**10**					EA: Written assignment, 25 pages (100 %)	1
		Seminar to Project Work				2							
II-MA-M9	**Softskills**[3)]	Imaging, Bioinformatics, Animal Sciences, Genetic Engineering Clinical Study Design, Language Courses			2	2	**10**	5	5			CA: [3)]	0
II-MA-M10	**Becoming a Scientist**[4)]	Winter School, International Meetings, Good Scientific Practice, Internal Retreat					**5**			5		CA: [4)]	0

II-MA-M11	**Master Thesis**	Master Thesis					**30**				30	EA: Master's thesis, 75 pages and CA: Oral examination (100 % + 0 %)	1
Total SWS and ECTS credits			**11**	**17**	**49**	**10**	**120**	**30**	**30**	**30**	**30**		
			87										

1) The type and extent of the examination depend on the specific didactic nature of the module in the respective semester and can be found in the module description.

2) Lectures in the modules are open to students from other master's programs (Integrated Life Sciences, Zell und-Molekularbiologie, Molecular Sciences).

3) Selectable from the soft skills offered by the Faculty of Natural Sciences, Faculty of Technology and Faculty of Medicine. The type and scope of the examination depend on the specific didactic nature of the module chosen by the student and can be found in the relevant (subject) study and examination regulations or the respective module description. Oral examinations may take the form of seminar presentations (30 minutes), for example, or written examinations may take the form of essays (10 pages).

4) The module includes several courses that require attendance, including an actively designed workshop. Students develop their communication, organizational, and social skills in the various courses.

3) Supervision and support for the Master Life Sciences: Integrated Immunology at the Department of Biology of the Friedrich-Alexander-Universität Erlangen-Nürnberg

➔ **Studiendekan/ Dean of Studies** (General enquiries concerning the studies)

Prof. Dr. Lars Nitschke
Department of Biology, Friedrich-Alexander-Universität Erlangen-Nürnberg
Staudtstr. 5, 91058 Erlangen, U1.182 (Bau A2)
Telefon: 09131/ 85 28453, E-Mail: bio-studiendekan@fau.de

➔ **Chairman of the Exam Committee Master Programme Integrated Immunology**
(Enquiries concerning examinations during the studies)

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Coordination of the Master Programme:

Dr. Anja Glanz (Organisation and procedures of the studies)

Department of Biology, Friedrich-Alexander-Universität Erlangen-Nürnberg
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➔ **Study Service Center**

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➔ **Student Advisory Service**

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Department of Biology, Friedrich-Alexander-Universität Erlangen-Nürnberg
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4) Presentation of the Master in Life Sciences: Integrated Immunology

The master programme Integrated Immunology is implemented by the Department of Biology, the Faculty of Medicine and the University Hospital Erlangen. It is taught in English and will provide in depth knowledge about basic, translational and clinical concepts in immunology. In addition, an advanced knowledge in molecular and cellular biology will be provided to enable a better understanding of immunological processes and their molecular and cellular basis. Through basic lectures, seminars and tutorials the students will actively participate in acquiring a detailed understanding of the complex interplay of cells in the immune system and the role of immunology in health and disease. The theoretical modules are combined with integrated laboratory courses enabling the students to plan, perform and interpret immunological experiments. Elective softskill courses in imaging, bioinformatics, and animal sciences will allow the students to deepen their knowledge according to their individual interests. Furthermore, a clinical immunology module, which includes bedside visits in different clinics of the University Hospital Erlangen will demonstrate how an impaired immune response can trigger autoimmune pathology in humans, which therapeutic options are available to treat the patients and how immunomodulatory therapies are used to treat infections and cancer. Mentoring programs will ensure the success of the learning process of individual students and allow them to constantly interact with the teaching personnel. Based on this knowledge the students will realize the need for future research in immunology and will start to develop research strategies which can address these open questions in the modules practical and theoretical project work. To expose the students to the global character of immunological research, the module practical project work will include a three month stay in a laboratory abroad, which will help the students to start building a network and foster social skills. Through the participation in a winter school in immunology, international conferences, and meetings with professors and scientists working in companies, the students will learn to identify future career options and how to use their network to find a position of interest. In the 6-month master thesis the students will demonstrate that the theoretical and practical knowledge they have acquired allows them to address an immunological question independently with state of the art immunological methods.

1	**Module name**	**II-MA-M1: Basic Immunology**	**Total number of ECTS credits**
2	Courses/lectures	WS – Lecture in Basic Immunology (3 SWS) WS – Tutorials to Basic Immunology (5 SWS) WS – Seminar to Basic Immunology (3 SWS)	10 ECTS
3	Lecturers	Prof. Dr. Lars Nitschke, Prof. Dr. Anja Lux, Prof. Dr. Krystelle Nganou, Prof. Dr. Falk Nimmerjahn, Prof. Dr. Alexander Steinkasserer, Prof. Dr. Christoph Becker et al.	

4	**Module coordinator**	Prof. Dr. Lars Nitschke
5	**Contents**	**Lecture**: • basic concepts in immunology • innate immunity • antigen recognition in lymphocytes • the development of lymphocytes • the humoral immune response • cellular immune responses **Tutorials:** In small groups (e.g. 6 students) the students will solve problems in basic immunology by problem-based learning **Seminars:** The students will present topics of current methods in immunology in oral talks (30 mins)
6	**Learning objectives and skills**	**Students are able to** • understand the principles of the immune system • understand the principles of antigen recognition • explain and distinguish different immune responses • independently solve basic immunological problems • understand and summarise specific topics in immunology and present them orally • independently develop working hypotheses and to adapt existing models and programs to test these hypotheses
7	**Prerequisites**	Not required
8	**Integration in curriculum**	Compulsory module, 1st semester
9	**Module compatibility**	M.Sc. Integrated Immunology, Lectures only: M.Sc. Integrated Life Sciences, M.Sc. Molekular- und Zellbiologie, M.Sc. Molecular Sciences
10	**Method of examination**	EA: Written examination 90 min
11	**Grading procedure**	Grade of written exam
12	**Module frequency**	Annually in the winter semester
13	**Resit examinations**	Three times
14	**Workload**	Contact hours: 165 h Independent study: 135 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	• Janeway's Immunobiology, Ed. Murphy & Weaver, Garland publishing Inc. • Cellular and Molecular Immunology, Ed. Abbas, Lichtman, Pillai, Elsevier • Immunity, Ed. DeFranco, Locksley, Robertson, Oxford University Press

1	**Module name**	**II-MA-M2: Basic Immunology Laboratory Course**	**Total number of ECTS credits**
2	Courses/lectures	WS – Practical Course: Basic Immunology Laboratory Course (10 SWS), mandatory attendance WS – Tutorial: Tutorials to Basic Immunology Laboratory Course (2 SWS), mandatory attendance	10 ECTS
3	Lecturers	Prof. Dr. Anja Lux, Prof. Dr. Lars Nitschke, Prof. Dr. Christoph Becker, Prof. Dr. Alexander Steinkasserer et al.	

4	**Module coordinator**	Prof. Dr. Anja Lux
5	**Contents**	**Course**: • identification of the organs of the immune system in mice • isolation and purification of immune cells from laboratory mice • detailed characterisation of immune cells by flow cytometry • in vitro stimulation of immune cells • quantification of humoral and cellular immune responses in vitro and in vivo • histological analysis of immune organs • DNA and RNA based techniques for quantifications of immune responses • genetic engineering of mice **Tutorials:** In small groups (3-5 students) the students will design experimental setups for the generation and the analysis of mice with defined mutations in genes of the immune system
6	**Learning objectives and skills**	**Students are able to** • isolate immune cells from laboratory animals • perform cellular characterisations of immune cells by flow cytometry including detailed quantitative analyses • characterize humoral and cellular immune responses against model antigens • perform cell culture experiments with immune cells • plan and perform basic techniques in molecular biology for the molecular analysis of innate and adaptive immune responses • understand, summarise and apply major laboratory techniques in immunology • independently develop experimental strategies to test a scientific hypothesis
7	**Prerequisites**	Not required
8	**Integration in curriculum**	Compulsory module, 1st semester
9	**Module compatibility**	M.Sc. Integrated Immunology
10	**Method of examination**	CA: Laboratory protocol (5-10 pages) or presentation (20 min) dependent on the course instruction
11	**Grading procedure**	SL: pass / fail
12	**Module frequency**	Annually in the winter semester
13	**Resit examinations**	Three times
14	**Workload**	Contact hours: 180 h; Independent study: 120 h
15	**Module duration**	1 semester (4 weeks block course)
16	**Teaching and examination language**	English
17	**Recommended reading**	• Janeway's Immunobiology, Ed. Murphy & Weaver, Garland publishing Inc. • Cellular and Molecular Immunology, Ed. Abbas, Lichtman, Pillai, Elsevier • Immunity, Ed. DeFranco, Locksley, Robertson, Oxford University Press

1	**Module name**	**II-MA-M3: Cell and Molecular Biology**	**Total number of ECTS credits**
2	Courses/lectures	WS – Lecture in Cell and Molecular Biology (3 SWS) WS – Tutorials to Cell and Molecular Biology (3 SWS)	5 ECTS
3	Lecturers	Prof. Dr. Falk Nimmerjahn, Prof. Dr. Lars Nitschke, Prof. Dr. Anja Lux, Prof. Dr. Krystelle Nganou-Makamdop, Prof. Dr. Rainer Böckmann et al.	

4	**Module coordinator**	Prof. Dr. Lars Nitschke
5	**Contents**	• cell structure and compartments • control of gene expression • cell metabolism and communication • cell cycle and apotosis • cytoskeleton and cell adhesion • cancer
6	**Learning objectives and skills**	The students should be able to • describe and explain basic concepts of cell structure • describe and explain different concepts of gene regulation and expression • describe and explain concepts of cell metabolism and communication • describe and explain advanced concepts of cell cycle and apoptosis • read, present and analyse current primary scientific literature on cell biology • train their ability for discussion and teamwork by working in small groups • give and receive critical feedback to and from fellow students
7	**Prerequisites**	Basic knowledge in molecular biology recommended
8	**Integration in curriculum**	Compulsory module, 1st semester
9	**Module compatibility**	M.Sc. Integrated Immunology Lectures: M.Sc. Integrated Life Sciences, M.Sc. Molekular- und Zellbiologie, M.Sc. Molecular Sciences
10	**Method of examination**	EA: Written examination 60 min
11	**Grading procedure**	Grade of written exam
12	**Module frequency**	Annually in the winter semester
13	**Resit examinations**	Three times
14	**Workload**	Contact hours: 90 h Independent study: 60 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	• Molecular Biology of the Cell, 7th edition; Alberts, Johnson, Lewis, Raff, Roberts, Walter; Garland Science, Taylor & Francis Group

1	**Module name**	**II-MA-M4: Infectious Disease Immunology**	**Total number of ECTS credits**
2	Courses/lectures	SS – Lectures in Infectious Disease Immunology (3 SWS) SS – Tutorials to Infectious Disease Immunology (5 SWS) SS – Seminar to Infectious Disease Immunology (3 SWS)	10 ECTS
3	Lecturers	Prof. Dr. Klaus Überla, Prof. Dr. David Vöhringer, Prof. Dr. Christian Bogdan, Prof. Dr. Matthias Tenbusch and others	

4	**Module coordinator**	Prof. Dr. David Vöhringer and Prof. Dr. Klaus Überla
5	**Contents**	• immunology of infectious diseases • tumor immunology • autoimmunity and allergy • neuroimmunology • immunodeficiencies
6	**Learning objectives and skills**	**The students should** • describe and explain basic concepts of microbiology and infectious diseases • describe and explain immune responses to pathogens and tumors and their immune escape mechanisms • describe and explain concepts of prophylactic and therapeutic immunizations • describe and explain break of tolerance and development of hypersensitivity reactions • understand major therapeutic strategies against autoimmunity and allergy • describe and explain immune responses in the central nervous system • understand complex mechanisms of neuroimmunological diseases • understand the pathogenesis of immunodeficiencies and their therapies • read, present and analyze current primary scientific literature • train their ability for discussion and teamwork by working in small groups • give and receive critical feedback to and from fellow students
7	**Prerequisites**	Modules Basic Immunology, Basic Laboratory Course and Cell and Molecular Biology or equal qualifications recommended
8	**Integration in curriculum**	Compulsory module, 2nd semester
9	**Module compatibility**	M.Sc. Integrated Immunology Lectures: M.Sc. Integrated Life Sciences, M.Sc. Molekular- und Zellbiologie, M.Sc. Molecular Sciences
10	**Method of examination**	EA: Written examination 90 min
11	**Grading procedure**	Grade of written exam
12	**Module frequency**	Annually in the summer semester
13	**Resit examinations**	Three times
14	**Workload**	Contact hours: 165 h Independent study: 135 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	• Janeway's Immunobiology, Ed. Murphy & Weaver, Garland publishing Inc. • Cellular and Molecular Immunology, Ed. Abbas, Lichtman, Pillai, Elsevier • Immunity, Ed. DeFranco, Locksley, Robertson, Oxford University Press

1	**Module name**	**II-MA-M5: Infectious Disease Immunology Laboratory Course**	**Total number of ECTS credits**
2	Courses/lectures	• SS –Infectious Disease Immunology Laboratory Course (10 SWS), mandatory attendance • SS –Tutorials to Infectious Disease Immunology Laboratory Course (2 SWS)	10 ECTS
3	Lecturers	Prof. Dr. Klaus Überla, Prof. Dr. David Vöhringer, Prof. Dr. Matthias Tenbusch, Prof. Dr. Christian Bogdan and others	

4	**Module coordinator**	Prof. Dr. David Vöhringer and Prof. Dr. Matthias Tenbusch
5	**Contents**	• detect and propagate pathogens • characterize immune responses to pathogens and vaccines • usage of tissue culture and animal models of infectious and allergic diseases, autoimmune disorders, and tumor immunology
6	**Learning objectives and skills**	**The students should** • obtain skills for detection and propagation of pathogens • obtain skills for characterization of specific immune responses • describe and explain in vitro and in vivo models for the study of immune responses • understand complex mechanisms of immune pathogenesis
7	**Prerequisites**	Modules Basic Immunology, Basic Immunology Laboratory Course and Cell and Molecular Biology recommended
8	**Integration in curriculum**	Compulsory module, 2nd semester
9	**Module compatibility**	M.Sc. Integrated Immunology
10	**Method of examination**	CA: Laboratory protocol (5 pages) and presentation (20 min) for the virology part as well as microbiology part
11	**Grading procedure**	SL: pass/fail
12	**Module frequency**	Annually in the summer semester
13	**Resit examinations**	Three times
14	**Workload**	Contact hours: 180 h Independent study: 120 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	• Janeway's Immunobiology, Ed. Murphy & Weaver, Garland publishing Inc. • Cellular and Molecular Immunology, Ed. Abbas, Lichtman, Pillai, Elsevier • Immunity, Ed. DeFranco, Locksley, Robertson, Oxford University Press

1	**Module name**	**II-MA-M6: Clinical Immunology**	**Total number of ECTS credits**
2	Courses/lectures	• SS – Lecture in Clinical Immunology (2 SWS) • SS – Tutorials to Clinical Immunology (2 SWS)	5 ECTS
3	Lecturers	Prof. Dr. Aline Bozec, Prof. Dr. Stefan Uderhardt, Prof. Dr. Veit Rothhammer, Prof. Dr. Mario Zaiss et al.	

4	**Module coordinator**	Prof. Dr. Aline Bozec and Prof. Dr. Stefan Uderhardt
5	**Contents**	• clinical insights into systemic autoimmune diseases (RA, SLE) • organ-specific inflammatory and autoimmune diseases (IBD, MS) • autoinflammatory diseases (incl. FMF, gout) • clinical aspects of inherited and acquired immunodeficiencies (incl. AIDS) • immunotherapy of cancer • transplantation medicine
6	**Learning objectives and skills**	**The students should** • describe and explain the pathophysiology and clinical picture of prevalent inflammatory and autoimmune diseases • describe and explain the pathophysiology and clinical picture of autoinflammatory diseases • describe and explain the basis and clinics of inherited and acquired immunodeficiencies • describe and explain the currently available concepts of cancer immunotherapy. • gain overview about the way of action and potential side effects of Glucocorticoids and modern immunosuppressants and biologics • understand the treatment strategies during the therapy of prevalent autoimmune and inflammatory diseases and during transplant rejection • participate in seminars studying relevant clinical case reports • participate in clinical ward rounds • gaining overview about the design and conduction of clinical trials
7	**Prerequisites**	Modules Basic Immunology, Basci Immunology Laboratory Course and Cell and Molecular Biology or equal qualifications recommended
8	**Integration in curriculum**	Compulsory module, 2nd semester
9	**Module compatibility**	M.Sc. Integrated Immunology Lectures: M.Sc. Integrated Life Sciences, M.Sc. Molekular- und Zellbiologie, M.Sc. Molecular Sciences
10	**Method of examination**	EA: Written examination 45 min (single choice /multiple choice questions)
11	**Grading procedure**	Grade of written exam
12	**Module frequency**	Annually in the summer semester
13	**Resit examinations**	Three times
14	**Workload**	Contact hours: 60 h Independent study: 90 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	• Janeway's Immunobiology, Ed. Murphy & Weaver, Garland publishing Inc. • Cellular and Molecular Immunology, Ed. Abbas, Lichtman, Pillai, Elsevier • Immunity, Ed. DeFranco, Locksley, Robertson, Oxford University Press • Individual publications and literature

1	**Module name**	**II-MA-M7: Practical Project Work**	**Total number of ECTS credits**
2	Courses/lectures	3rd semester (WS) – Laboratory course in selected external research laboratories (15 SWS), mandatory attendance	15 ECTS
3	Lecturers	Faculty of the Integrated Immunology Programme	

4	**Module coordinator**	Prof. Dr. Lars Nitschke
5	**Contents**	**Laboratory course**: The students will perform an individual research project in an external laboratory, preferentially in an international laboratory (3 month), mentored by an external and an internal lecturer. Progress reports will be given in the external laboratories. Presentations of the results of the projects of all students will be presented and discussed in a mandatory workshop. A report has to be delivered in written form.
6	**Learning objectives and skills**	**Students** • gain deepened insights into external research laboratories • acquire strong communications skills • will be able to independently plan and perform small research projects • will be able to document and summarize their research projects • will be able to discuss their progress in an external research environment • will be able to productively work and integrate in a research team
7	**Prerequisites**	Basic Immunology course including integrated laboratory course (II-MA-M1 and II-MA-M2) recommended
8	**Integration in curriculum**	Compulsory module, 3rd semester
9	**Module compatibility**	M.Sc. Integrated Immunology
10	**Method of examination**	CA: One page report and seminar presentation (15 min)
11	**Grading procedure**	SL: pass / fail
12	**Module frequency**	individually planned
13	**Resit examinations**	three times
14	**Workload**	Contact hours with mentor: 10 h Preparations of report and seminar: 40h Laboratory course: 400 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	Individual publications and literature of the external research laboratory

1	**Module name**	**II-MA-M8: Theoretical Project Work**	**Total number of ECTS credits**
2	Courses/lectures	3rd semester (WS): • Theoretical project work (10 SWS) • Seminar to project work (2 SWS)	10 ECTS
3	Lecturers	Faculty of the Integrated Immunology Programme	

4	**Module coordinator**	Prof. Dr. Christian Bogdan
5	**Contents**	**Preparation of an immunological text, e.g.** • grant application for a scientific project • review article for a scientific journal
6	**Learning objectives and skills**	**The students should** • comprehensively summarize the state-of-the-art knowledge of a defined immunological topic • critically discuss conflicting data in basic and/or clinical immunology • extract key results from the current scientific literature to provide a succinct summary on an immunological theme or problem • adequately cite and understand a body of literature • identify open questions and matters of debate in basic and/or clinical immunology and develop a research plan (including appropriate methodological approaches) to resolve these scientific issues • give and receive critical feedback to and from fellow students
7	**Prerequisites**	Modules “Basic Immunology”, “Translational Immunology” and “Clinical Immunology”; “Basic Immunology Laboratory Courses” and “Infectious Disease Immunology Laboratory Course” recommended
8	**Integration in curriculum**	Compulsory module, 3rd semester
9	**Module compatibility**	M.Sc. Integrated Immunology
10	**Method of examination**	Written immunological text (approx. 25 pages)
11	**Grading procedure**	Grade of chapter
12	**Module frequency**	Annually in the winter semester
13	**Resit examinations**	Three times
14	**Workload**	• study hours: 10 SWS x 15 weeks = 150 h (including contact with supervisor) • Seminar (attendance of lab seminars of the respective research group) 1 SWS • Preparation and literature studies = 120 h
15	**Module duration**	3 months
16	**Teaching and examination language**	English
17	**Recommended reading**	Original research articles, review articles and immunological text books relevant for the topic

1	**Module name**	**II-MA-M9: Softskills**	**Total number of ECTS credits**

2	Courses/lectures	Depending on module	10 ECTS
3	Lecturers	Depending on module	

4	**Module coordinator**	Prof. Dr. F. Nimmerjahn
5	**Contents**	Students choose module of the key skill modules, which are offered by the FAU. Key skill modules of the university are offered for all courses and can therefore not be attributed to certain subjects. Students have free choice which module of key skills they want to take. **Offered key skill modules comprise more general topics, such as:** • presentation skills • languages • culture, history, science and technology • intercultural communication **or more specific topics such as:** • cellular imaging techniques • bioinformatics • animal sciences • genetic engineering • design of clinical studies
6	**Learning objectives and skills**	**Students are able to** • develop job-related competences (softskills) which supplement the topics directly related to the education in science • extend the general knowledge • lead to inter-disciplinary knowledge and science approaches
7	**Prerequisites**	Not required
8	**Integration in curriculum**	1st and 2nd semester, but can also be taken flexibly during all 4 semesters
9	**Module compatibility**	M.Sc. Integrated Immunology
10	**Method of examination**	SL: oral or written, depending on module
11	**Grading procedure**	Pass/fail
12	**Module frequency**	Depending on module
13	**Resit examinations**	Depending on module
14	**Workload**	300 h
15	**Module duration**	2 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	Depending on module

1	**Module name**	**II-MA-M10: Becoming a Scientist**	**Total number of ECTS credits**
2	Courses/lectures	3rd Semester (WS): Mandatory Attendance • Good Scientific Practice Workshop (1 SWS) • Attending one International Meeting in Immunology (2 SWS) • Meet the Professors of the Scientific Advisory Board and alumni on the internal retreat (2 SWS)	5 ECTS
3	Lecturers	Prof. Dr. Falk Nimmerjahn, Prof. Dr. Christian Bogdan, Prof. Dr. Klaus Überla, Prof. Dr. Diana Dudziak and others	

4	**Module coordinator**	Prof. Dr. Falk Nimmerjahn
5	**Contents**	• participation in an International Meeting on Immunology • meet the Professors of the Scientific Advisory Board and alumni to discuss career and evaluate the program on the internal retreat • good scientific practice course
6	**Learning objectives and skills**	**The students should** • understand advanced lectures in immunology • advance their knowledge about the role of immune cells in the steady state and during infection, cancer, and autoimmunity • give feedback to advanced lectures • train their ability to discuss with experts (professors, speakers) advanced concepts of immunology • advance their communicational, organisational and social skills and discover career opportunities by participating on the internal retreat • understand and are able to apply the rules of good scientific practice
7	**Prerequisites**	Modules Basic Immunology, Basic Immunology Laboratory Course and Cell and Molecular Biology or equal qualifications recommended
8	**Integration in curriculum**	Compulsory module, 3rd semester
9	**Module compatibility**	M.Sc. Integrated Immunology
10	**Method of examination**	Pass / fail
11	**Grading procedure**	Written report about the International Meeting Certificate of attendance for the retreat and the GSP course
12	**Module frequency**	Annually the winter semester
13	**Resit examinations**	Three times
14	**Workload**	Contact hours: 90 h Independent study: 60 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	• Fundamental Immunology, William E. Paul, Wolters Kluwer • Nature Reviews Immunology, Nature Springer Publishing Group • Nature Reviews Microbiology, Nature Springer Publishing Group • Nature Immunology, Nature Springer Publishing Group • Immunity, Ed. DeFranco, Locksley, Robertson, Oxford University Press

1	Module name	**Intergrated Immunology II-MA-M11: Master Thesis**	30 ECTS credits
2	Courses/lectures	4th semester (SS) **Master Thesis**	
3	Lecturers	Faculty of the Department of Biology or Faculty of Medicine	

4	**Module coordinator**	Prof. Dr. Falk Nimmerjahn
5	**Contents**	• independent work on an actual topic of the respective research area within a fixed period (6 months) • generate a scientific report • oral presentation and discussion of the results (30 min) within a seminar
6	**Learning targets and skills**	**The students are** • able to work independently with experimental molecular, cell biological and immunological methods in vitro and in vivo on a specific scientific question • are able to describe experimental results professionally according to the demands/terminology in immunology and molecular and cellular biology • able to present the results of the scientific project in a report • are able to apply the acquired skills in future research projects in immunology, cell and molecular biology
7	**Recommended prerequisities**	All other modules of the Master Programme
8	**Integration in curriculum**	4th semester
9	**Module compatibility**	M.Sc. Integrated Immunology
10	**Method of examination**	PL: master thesis (ca. 75 pages) SL: defend thesis in seminar (30 min presentation and discussion)
11	**Grading procedure**	Master Thesis 100%
12	**Module frequency**	WS or SS
13	**Resit examinations**	Once
14	**Workload**	900 h
15	**Module duration**	1 semester
16	**Teaching and examination language**	English
17	**Recommended reading**	Original research articles, review articles and immunological text books relevant for the topic