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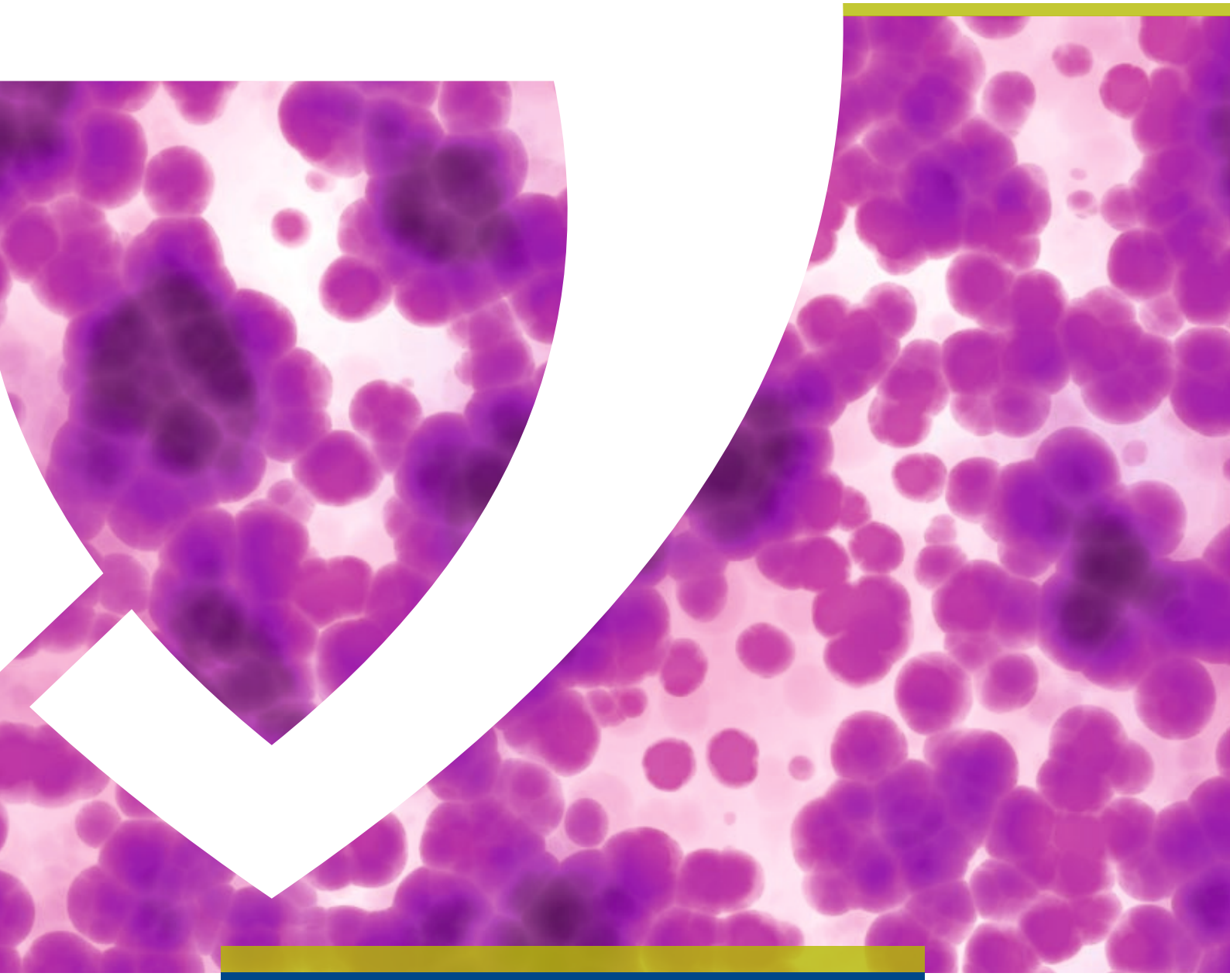

School of Engineering and Science

Molecular Life Science

Graduate Program

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1 Preamble

This is the MoLife graduate handbook. The handbook will be revised regularly (once or twice per year). Please check on the Jacobs-University MoLife graduate program Web page for the latest version. The procedural rules in this handbook are labeled as Jacobs University rules, SES (School of Engineering and Science) rules, or MoLife rules. In case of conflict, Jacobs University rules (which are taken from the Graduate Policies at http://www.jacobs-university.de/policies-graduate) always take precedence.

2 The Molecular Life Science Graduate Program

"Living organisms normally contain no functionless compounds, although there are some biomolecules whose functions are not yet understood." (Albert L. Lehninger, 1970)

Research in Molecular Life Science plays a central role in all disciplines of the Life Sciences. Currently, Molecular Life Science Research is at an exciting point of development, since for the first time a mechanistic understanding of the phenomenon of Life in all its facets is within reach. Molecular Life Science Research has a wide impact on modern life in different areas such as Medicine, Plant and Animal Biology, Biotechnology and even Ethics. The Jacobs University Molecular Life Science graduate program (MoLife) invites students to participate and take an active role in the development of this fascinating field. Faculty from the Molecular Life Sciences and neighboring fields at Jacobs University Bremen have combined their expertise in a graduate program which provides students with the benefits of cooperation and synergy in research and teaching. The Molecular Life Science program (MoLife) is the graduate program for all molecular life sciences at the Jacobs University Bremen (Jacobs University). Its main aim is to comprehensively train students who join with a BSc (or generally after three years of study) for independent research work. MoLife graduates are qualified to work towards a PhD by research.

2.1 General Structure of the Program

The MoLife program takes two years to the MSc, and another three (altogether five) years to the PhD. The first stage, up to the MSc or the qualifying examination, may be funded by a graduate stipend from Jacobs University. Additional non-funded spaces may be offered to applicants. The first academic year is dedicated to course work and three laboratory rotations (of about 60 days each), to be done in the laboratories of the MoLife faculty. The purpose of these laboratory rotations is for students to become acquainted with the research and methods in order to be able to choose a laboratory for the MSc and/or PhD thesis. The second academic year is dedicated to the MSc thesis (which is usually done in one of the rotation laboratorys), and additional course work. The MSc stage is concluded either by the submission of an MSc thesis and its defense with the acquisition of 120 credit points altogether, or by passing a qualifying examination, held after finishing all required course work and laboratory rotations except the MSc thesis work. The qualifying examination constitutes no degree but it allows the student to immediately continue working towards the PhD at any MoLife research group without having to submit or defend an MSc thesis. After completion of the MSc thesis or the qualifying exam, students may (upon consent of a MoLife faculty member) continue their studies towards the PhD. Funding for this stage comes from the respective laboratory. For Jacobs University graduates (those students who concluded undergraduate studies at Jacobs University with a BSc degree) and who have very good grades, MoLife offers the possibility of a "Fast Track" which allows them to begin with their PhD research work after only one year.

	Courses	Number	Credits	Sum of credits in year
Year 1	Obligatory Lectures	4x2,5	10	
	Fundamental Lectures	2	10	
	MoLife Lectures	2	10	
	Lab Rotations	3	45	75
Year 2	MoLife Lectures	3	15	
	Master Thesis	1	30	45

The MoLife program offers different specialization areas (SA). The SA currently implemented are:

- **Cellular and Molecular Biology**
- **Computational Biology**
- **Molecular Biophysics**
- **Molecular Biotechnology**
- **Molecular Genetics**

Each student must select two SAs and depending on their choice there will be different combinations of allowed lectures and laboratory rotations. One of these SAs will be later selected for Master thesis. The SAs define certain undergraduate courses (”fundamental lectures”) as eligible, one of which has to be taken by each student. In addition, the student has to take two MoLife lecture of each SA and perform in total three laboratory rotations.

Category	Courses	Credits	Sum
General Courses	Research in MoLife Groups I and II[1]	5	
	MoLife Seminar I and II[2]	5	10
Spec. Area I	Fundamental Lecture[3]	5	
	MoLife Lecture	5	
	MoLife Lecture	5	
	Lab Rotation I or II	15	
	Lab Rotation III	15	
	Master Thesis	30	75
Spec. Area II	Fundamental Lecture[3]	5	
	MoLife Lecture	5	
	MoLife Lecture	5	
	Lab Rotation I or II	15	30
Miscellaneous	additional MoLife Lecture	5	5
Total Sum of Credits			120

1. Lecture series of all MoLife faculty. Two half courses running over the first year of study (course numbers 530451 and 530482).
2. Two half courses are running over the first year of study. Students will give literature seminar and report on results of their lab rotations. This course also allows communication of issues of general interests for the program (course numbers 530431 and 530432)
3. Fundamental lectures can be replaced by additional MoLife lecture upon approval of the representative of the SA. (See rules detailed in section 2)

The study program for students in MoLife comprises four phases:

1. Students must select the first SA during their initial application to the MoLife program. After admission to the MoLife program, several lectures (fundamental lectures, MoLife lectures, obligatory lectures) will be taken in the first fall semester. The initial laboratory rotation will be conducted in one of the laboratorys of the selected first SA.
2. After the first semester, all students select the second SA. Admission to the second SA is conditional on the approval of the SA representative. The studies then continue with a second set of fundamental, obligatory and MoLife lectures and a rotation in one of the laboratories of the second SA.
3. During the second semester, the students decide on one of the two SAs as their major focus and perform a third laboratory rotation in a second laboratory of the main SA.
4. After the semester with the third rotation, students should select one of the laboratories of their main SA for master thesis. Usually, this will be one of the two laboratories in which they conducted a rotation before. Alternatively, the student may decide to pass the qualifying examination and conduct a PhD project in one laboratory of the main SA provided that funding is ensured. During the third and fourth semester, all students attend MoLife graduate lectures and work towards their MSc thesis.

2.2 Specific Training Aims

Studying life sciences at molecular level requires, on one hand, specialization and in depth theoretical and practical education at very diverse fields of science knowledge and, on the other hand, an interdisciplinary understanding essential for successful research. MoLife integrates these goals by offering different specialization areas, from which each student must select two. This organization ensures that each student receives a well structured practical and theoretical education in two modern fields of molecular life science. Furthermore, the balance between necessary specialization and inter-disciplinarity of the education is ensured.
The aim of MoLife is to train students to reach subject knowledge in their area of interest, and in the molecular life sciences in general, so they can understand the current state of the field, current problems and directions, and modern methods. MoLife teaches students

- to understand that scientific knowledge is constantly evolving, and to be able to independently obtain and update their subject knowledge as above;
- to design, understand, and critique experimental approaches;
- to carry out research work in a precise, diligent, and reproducible manner;
- to understand the value and challenges and practice of interdisciplinary approaches;
- to develop their own career perspective.

2.3 Career Perspectives for MoLife Graduates

Students who graduate from MoLife with an MSc (or qualifying examination) are fully prepared and qualified to pursue research work towards a PhD. While a PhD is usually the condition for a high-level scientific position, MSc graduates can find employment worldwide in industry or government institutions, or proceed to an additional higher degree.
MoLife offers students excellent opportunities for research as documented in several publications co-authored by students from MoLife (or its predecessor program: BioRec) (see the

MoLife Web page for details). Examples of future careers of MoLife students are also available on the MoLife Web page as well.

3 Specialization Areas (SA)

Currently, the SAs offered in MoLife are ”Cellular and Molecular Biology”, ”Computational Biology”, ”Molecular Biotechnology”, ”Molecular Biophysics” and ”Molecular Genetics”. The suitable courses in each area and the research groups open for laboratory rotations are compiled in the following section. More detailed descriptions of the faculty members' research interests can be found on the MoLife website, or on their individual faculty pages. MoLife students are advised to study the research interest of all MoLife faculty members carefully in order to identify potential research groups for laboratory rotations and their research areas of interest.

	Cellular and Molecular Biology	Computational Biology	Molecular Biotechnology	Molecular Biophysics	Molecular Genetics
Prof. Benz			x	x	
Prof. Brix	R				
Prof. Fritz				x	
Prof. Hütt		R			
Prof. Kleinekathöfer		x		x	
Prof. Kuhnert				x	
Prof. Lahore			R		
Prof. Lerchl				x	
Prof. Muskhelishvili					R
Prof. Nau				x	
Prof. Nevoigt			x		
Prof. Preusser		x			
Prof. Roccatano		x			
Prof. Springer	x				
Prof. Ullrich	x				x
Dr. Weingart			x	x	
Prof. Winterhalter			x	R	

For questions regarding courses and laboratory rotations students should approach the representative of the specialization area (labeled by ”R”).

Replacement of fundamental lectures: Students can request that their fundamental lectures be replaced with additional MoLife lectures only with the approval of the Representative of the SA. The replacement of fundamental courses only applies to Jacobs University students who have already attended the same courses before and also to exceptionally qualified external students. The replacement MoLife lecture should be in the same SA. Only in the exceptional case where a student has attended all MoLife lectures of one SA, can the fundamental courses be replaced by MoLife courses taken from another SA. A fundamental lecture cannot be replaced by a lecture taken form undergraduate programs which is not specified in the SA.

Advanced studies courses: The ”Advanced studies” courses offer an intensive theoretical training for advanced students. In this course, students directly interact with one of the instructors of the SA and work on a theoretical subject. The course is finished with a written report that is the basis for grading. The reports together with the grades are submitted to the representatives of the SA and the program coordinator for approval. Students who visited at least two MoLife courses in there respective SA are allowed to select ONE advanced studies course in their main SA in their 2nd or 3rd semester of studies. Acceptance of students for an advanced studies course is by approval of the respective instructor.

Laboratory rotations in other laboratories: Laboratory rotations in research groups not listed in the SA may be allowed but only by the approval of the Representative of the SA. Students must obtain permission BEFORE beginning the laboratory rotation. Please note that external laboratory rotations, i.e. rotations outside of Jacobs University, are not allowed in the MoLife Graduate Program by definition. (for detailed rules see section ”laboratory rotations”)

4 Courses

Cellular and Molecular Biology

Representative: Prof. Brix

Research groups for laboratory rotation: Prof. Brix
Prof. Springer
Prof. Ullrich

Mol. Life Sciences Graduate Program Lectures:

Number	Title	Instructor	Type	Schedule	Prerequisites
530581	Cellular Biochemistry	Springer	Lecture, 2.5 Credits	Annually, Fall semester	
530541	Physiology of Eucaryotic Cells	Brix	Lecture, 2.5 Credits	Annually, Fall Semester	520311
530591	Microbial Pathogenicity	Ullrich	Lecture, 2.5 credits	Annually, Spring Semester	520251
530641	Literature Course Molecular Immunology I	Hein, Springer	Seminar, 2.5 Credits	Annually, Fall semester	
530642	Literature Course Molecular Immunology II	Hein, Springer	Seminar, 2.5 Credits	Annually, Spring semester	
530481	Models of Metabolism	Hütt	Seminar, 2.5 Credits	Bi-annually, Fall Semester, Uneven Years	
530661	Molecular Evolution	Muskhelish-vili, Ullrich	Lecture, 5 Credits	Bi-annually, Fall Semester, Even Years	520202, 520251
530611	Advanced Studies in Cellular & Molecular Biology	Brix, Springer, Ullrich	Seminar, 5 Credits	Offered Each Semester	530431, 530451

Fundamental Lectures

520311: Biomedicine and Infection Biology (Brix, Illenberger, Ullrich)
520251: Microbiology (Ullrich)
520322: Immunology (Springer)

Computational Biology

Representatives: Prof. Hütt

Research groups for laboratory rotations: Prof. Hütt
Prof. Kleinekathöfer
Prof. Preusser
Prof. Roccatano

Mol. Life Science Graduate Program Lectures:

Number	Title	Instructor	Type	Schedule	Prerequisites
530462	Computational Challenges in Biology and Biophysics	Hütt, Kleinekathöfer	Lecture, 5 Credits	Annually, Spring semester, Even Years	500321 and (560301 or 400301)
530461	Techniques for the Analysis and Structure Determination of Biomolecules I	Nau, Fritz	Lecture, 2.5 Credits	Biannually, Fall semester, Even years	
530561	Techniques for the Analysis and Structure Determination of Biomelecules II	Kuhnert, Fritz	Lecture, 2.5 Credits	Biannually, Fall semester, Uneven years	
530481	Models of Metabolism	Hütt	Seminar, 2.5 credits	Bi-annually, Fall Semester, Uneven Years	500321 or 550331
530681	Models of Gene Regulation	Hütt	Seminar, 2.5 credits	Bi-annually, Fall Semester, Even Years	
530532	Advanced Studies in Computational Biology	Hütt, Kleine-kathöfer, Preusser, Roccatano	Seminar, 5 Credits	Offered Each Semester	530471, 530451

Fundamental Lectures:

550321: Computational Systems Biology (Hütt
400301: Computational Chemistry & Biochemistry (Roccatano)
550331: Basic Concepts of Modeling Dynamics in Biology (Hütt)

Molecular Biophysics

Representative:	Prof. Winterhalter
Research groups for laboratory rotations:	Prof. Benz Prof. Fritz Prof. Kleinekathöfer Prof. Kuhnert Prof. Nau Prof. Winterhalter

Mol. Life Science Graduate Program Lectures:

Number	Title	Instructor	Type	Schedule	Prerequisites
530421	Biological Thermodynamics and Kinetics	Winter-halter, Benz	Lecture, 5 Credits	Spring 2012, Bi-annually, Uneven Years starting Fall 2013	
530461	Techniques for the Analysis and Structure Determination of Biomolecules I	Nau, Fritz	Lecture, 2.5 Credits	Biannually, Fall semester, Even years	
530561	Techniques for the Analysis and Structure Determination of Biomolecules II	Kuhnert, Fritz	Lecture, 2.5 Credits	Biannually, Fall semester, Uneven years	
530462	Computational Challenges in Biology and Biophysics	Hütt, Kleine-kathöfer	Lecture, 5 Credits	Annually, Spring semester, Even Years	500321 and (560301 or 400301)
530621	Advanced Studies in Molecular Biophysics	Fritz, Kleine-kathöfer, Lerchl, Nau, Winterhalter	Seminar, 5 Credits	Offered Each Semester	530431, 530451
530463	Enzyme Kinetics & Membrane Transport	Benz	Lecture, 2.5 Credits	Annually, Fall Semester	

Fundamental Lectures:

500351:	Biophysical Chemistry	(Winterhalter)
201321:	Biophysics	(Fritz)
400301:	Computational Chemistry & Biochemistry	(Roccatano)
500321:	Neuroendocrinology/Biorythms	(Lerchl)

Molecular Biotechnology

Representative: Prof. Fernandez-Lahore

Research groups for laboratory rotations: Prof. Benz
Prof. Fernandez-Lahore
Prof. Nevoigt
Prof. Winterhalter

Mol. Life Science Graduate Program Lectures:

Number	Title	Instructor	Type	Schedule	Prerequisites
530671	Microbial Engineering I	Nevoigt	Lecture, 2.5 Credits	Bi-annually, Fall Semester, Even Years	520251, 560101
530672	Microbial Engineering II	Nevoigt	Lecture, 2.5 Credits	Bi-annually, Spring Semester, Uneven Years	560102. 530671
530421	Biological Thermodynamics & Kinetics	Winterhalter	Lecture, 5 Credits	Bi-annually, Fall Semester, Uneven Years	560201
530651	Biotechnology: Science & Business	Fernandez-Lahore	Lecture, 5 Credits	Bi-annually, Fall Semester, Even Years	
530631	Advanced Studies in Molecular Biotechnology	Fernandez-Lahore, Winterhalter, Benz	Seminar, 5 Credits	Offered Each Semester	530431, 530451
530463	Enzyme Kinetics & Membrane Transport	Benz	Lecture, 2.5 Credits	Annually, Fall Semester	

Fundamental Lectures:

520252: Plant Biochemistry & Biotechnology (Ullrich)
560201: Advanced Biochemical Engineering (Fernandez-Lahore, Nevoigt)
400301: Computational Chemistry & Biochemistry (Roccatano)
560332: Industrial Biotechnology (Nevoigt)

Molecular Genetics

Representative: Prof. Muskhelishvili

Research groups for laboratory rotations: Prof. Muskhelishvili
Prof. Ullrich

Mol. Life Science Graduate Program Lectures:

Number	Title	Instructor	Type	Schedule	Prerequisites
530551	Molecular Genetics	Muskhelish-vili, Ullrich	Lecture, 5 Credits	Annually, Fall Semester	520342
530661	Molecular Evolution	Muskhelish-vili, Ullrich	Lecture, 5 Credits	Bi-annually, Fall Semester, Even Years	520251, 520202
530681	Models of Gene Regulation	Hütt	Seminar, 2.5 Credits	Bi-annually, Fall Semester, Even Years	520251, 520201
530601	Advanced Studies in Molecular Genetics	Muskhelish-vili, Ullrich	Seminar, 5 Credits	Offered Each Semester	530431, 530451

Fundamental Lectures:

520251: Microbiology (Ullrich)
520342: Molecular Biology & Genomics (Muskhelishvili)
520201: Advanced Biochemistry & Molecular Biology (Illenberger)

General Courses

General Lectures:

Number	Title	Instructor	Type	Offered
530431, 530432	MoLife Seminar	Weingart	Seminar, 2.5 Credits	Each Semester
530451, 530482	Research in MoLife Groups	Winterhalter	Lecture, 2.5 Credits	Each Semester

General Laboratory Courses: IoR Winterhalter

Number	Title	Instructor	Type	Offered
530401	Lab Rotation I	All	Laboratory Rotation	Each Semester, Content: Lab Rotations - MoLife Rules
530402	Lab Rotation II	All	Laboratory Rotation	Each Semester, Content: Lab Rotations - MoLife Rules
530403	Lab Rotation II	All	Laboratory Rotation	Each Semester, Content: Lab Rotations - MoLife Rules

To support the planning of the studies for students and their advisors the schedule for the MoLife graduate courses for the years 2011 - 2014 are summarized below. During their studies all students have to earn 10 credit points in each SA (15 if they plan to replace a fundamental lecture with a graduate lecture).

Course offers and credit points

Course Number	Course Name	Specialization Area	Instructor	Type	2011	2012	2012	2013	2013	2014
					Fall	Spring	Fall	Spring	Fall	Spring
530581	Cell BC	CMB	Springer	Lecures		2.5		2.5		2.5
530541	PhysEuk Cells	CMB	Brix	Lecture	2.5		2.5		2.5	
530591	MicPath	CMB	Ullrich	Lecture		2.5		2.5		2.5
530641	LitMollmm I	CMB	Springer, Hein	Seminar	2.5		2.5		2.5	
530642	LitMollmm II	CMB	Springer, Hein	Seminar		2.5		2.5		2.5
530462	CompBio	CompBio, Biophys	Hütt, Kleine-kathöfer	Lecture		5				5
530461	TechI	CompBio, Biophys	Fritz, Nau	Lecture			2.5			
530561	TechII	CompBio, Biophys	Fritz, Kuh-nert, Nau	Lecture	2.5				2.5	
530481	ModMet	CompBio, CMB	Hütt	Seminar	2.5				2.5	
530681	Mod Gene Reg	CompBio, MolGen	Hütt	Seminar			2.5			
530421	BiolTherm	BioPhys, BioTech	Winter-halter	Lecture		5			5	
530671	MicEngI	BioTech	Nevoigt	Lecture			2.5			
530672	MicEngII	BioTech	Nevoigt	Lecture				2.5		
530651	BiotechSB	BioTech	Fernandez-Lahore	Lecture			5			
530551	MolGen	MolGen	Muskhelish-vili, Ull-rich	Lecture	5		5		5	
530661	MolEvol	MolGen, CMB	Muskhelish-vili, Ull-rich	Lecture			5			
530601, 530611, 530621, 630631, 530532	AdvStudies	All	All	Seminar	5	5	5	5	5	5
530431, 530432	MoLife Seminar	All	Weingart	Seminar	2.5	2.5	2.5	2.5	2.5	2.55
530451, 530482	Research MoLife Groups	All	Winter-halter	Lecture	2.5	2.5	2.5	2.5	2.5	2.5
530401, 530402, 530403	Lab Rota-tions I-III	All	All	Lab Work	X	X	X	X	X	X
530463	Kinetics	BioPhy, BioTech	Benz	Lecture	2.5		2.5		2.5	

5 Admission to MoLife

- Application to MoLife is through the Graduate Office of the School of Engineering and Science. Application procedures are as for all Jacobs University graduate programs as published on the Jacobs University web site. As a specialty, MoLife requires that applicants submit a statement of their practical research experience and to select the first SA. In case of acceptance, this selection is binding for the student. Selection of the second SA is made after one semester of study at Jacobs University.
- Applications are screened and the MoLife Admissions Committee selects applicants for the program.
- Admission to MoLife is valid up to the award of the MSc (for two years at most). It does not imply admission and acceptance to PhD studies after the award of an MSc. Students who have completed their MSc or their qualifying examination may apply to individual investigators in the program to continue with PhD research. Funding for the PhD research then comes from the individual investigator's laboratory.
- The Admissions Committee cannot admit students to PhD studies. Students who seek admission to do a PhD by research must address individual investigators. Funding for the PhD research then comes from the individual investigator's laboratory.

6 General Academic Information and Rules

6.1 Advising

- When the admissions procedure is complete, the head of the MoLife admissions committee assigns an Academic Advisor to each beginning MoLife student. The assignment is made on the basis of the choice of the first SA that a student made at the time of application.
- The role of the Academic Advisor is similar to that of an Academic Advisor for a Jacobs University undergraduate. Especially, the Academic Advisor:
  - Advises the student on her/his choice of courses, and in the case of external students, helps to set up the mandatory plan of fundamental courses;
  - Agrees to the advisee's choice of courses in CampusWeb;
  - Serves as the first point of contact for the student in case of academic or other difficulties.
- Students can change their Academic Advisor using Jacobs University's standard Academic Advisor Change Form.
- For questions regarding courses and laboratory rotations students should approach the SA Representative.

6.2 Academic Integrity

- MoLife students are, like undergraduate students, bound by Jacobs University's Code of Academic Integrity (as published on Jacobs University's Website).
- Plagiarism (copying without attribution) in course work or reports carries an automatic grade of 5 (fail) in the respective course.
- In addition, when working in research, graduate students are subject to Jacobs University's "Guidelines to Ensure Good Academic Practice and for Handling Academic Misconduct in Teaching and Research" as published on Jacobs University's website.
- For violations, the sanctions outlined in the respective documents apply.

6.3 The Course Descriptions of MoLife Courses

Fundamental and MoLife course descriptions will be published on CampusWeb

6.4 ECTS Credits (German Legislation)

In general, one ECTS credit corresponds to 30 hours of student workload. This includes classes themselves, studying, and preparation time for examinations.

7 Laboratory Rotations (MoLife Rules)

Students select laboratory rotations from the list offered by the specialization area. Students carry out three research laboratory rotations each during the first three semesters. The name ”laboratory rotations” includes, of course, research rotations in computational and theoretical groups which have no laboratories. The rotations take place in the following time slots.

1. First rotation: September 1 - January 31 (including a Christmas break of two weeks) (course No. 530401)
2. Second rotation: February 1 - Apr 30 (course No. 530402)
3. Third rotation: May 1 - July 31 (course No. 530403)
4. Master thesis work: Sept 1 - April 30 (including a Christmas break of two weeks)

- The minimum working time for a single laboratory rotation (15 ECTS credits) is 56 full working days (including preparations and writing the protocol). The students are expected to spend a minimum of 3 full days per week in the laboratory of the host Principal Investigator (PI). The principal working hours are 8 am to 6 pm. Depending on the research project, the working hours may be adjusted. However, both students and PIs have to take into account that no one is allowed to work alone in the laboratory.
- Each laboratory rotation consists of the practical work and writing the report. Therefore, about 10 days before the end of the rotation the students have to stop their practical work and to start writing the laboratory report. The report is due to the PI on the first day of the next rotation.
- Laboratory decisions: About three weeks before the next rotation (exact dates given above) students have to decide in which laboratory they want to perform the next rotation. They have to make sure that the next host PI signs the official form that confirms acceptance and states the name, laboratory rotation number, and a running title as well as the deadline for the report. The form has to be handed to the Instructor of Record (IoR) of the laboratory rotation course. On that form, the laboratory supervisor of the previous rotation has to sign that the rotation has been finished.
- Laboratory report: Each laboratory rotation has to be summarized in form of a report. The reports should have the format of a small publication. The specific contents and length depend on the host PI. In addition, host PIs should have the student present their work in the group meeting and may ask for the laboratory book to be handed-in as well. The host PIs communicate the final grade to the IoR of the laboratory rotation in form of Jacobs University grades.
- Students who receive a stipend from Jacobs University (not from external research grants) must perform laboratory rotations in three different MoLife laboratories.
- Failing laboratory rotations: If a student is about to fail a laboratory rotation (grade 4.67 or worse), the responsible PI informs the representative of the SA, the academic advisor of the student and the student the latest 4 weeks before the end of the rotation about this prospect to allow for interference. When the attempt to avoid the failure is not successful, the student does NOT have the possibility to repeat the laboratory rotation. Failing a laboratory rotation unmistakably demonstrates a lack of seriousness in the pursuit of a scientific career. As a consequence, the administrator of the program will propose to the Dean that the student is expelled from the program immediately.
- Thesis laboratory: Before the end of the third rotation, students have to decide in which

laboratory they want to perform their Master's thesis work in.

- Internships: These are different from laboratory rotations. Internships are performed off campus, are not mandatory, not part of the MoLife program and do not earn credits. All MoLife students are allowed to perform internships during their vacation time (August).
- Vacation: If students want to leave Jacobs University for vacation or any other reason for more than 1 continuous week, the IoR of the laboratory rotation courses has to be informed in writing at least 2 weeks in advance. Any vacation in addition to the general summer vacation in August has to be applied for in written form with a) the host PI of the laboratory rotation and b) the representative of the SA.

8 The MoLife Fast Track

(MoLife Rules)

8.1 Admission to the Fast Track

- After admission to MoLife, Jacobs University graduates may apply to take the Fast Track. The Fast Track is accessible to Jacobs University graduates who:
  - have enough 'excess' undergraduate credits to transfer 15 credits in eligible courses into their graduate studies. Eligible credits are those from the courses specified in the respective SA the student will select.
  - can start their first laboratory rotation by June 1st of their year of admission (see below section 6.4.1).
- Admission to the Fast Track is decided upon by the Admissions Committee of MoLife. No later changes are possible. The coordinator of MoLife transmits this information to the Dean's Office.
- To students who hold a degree from another university, MoLife Fast Track is accessible only if they are available to start their first laboratory rotation on July 1st before their admission, and they pass an oral examination (to be held in orientation week at the latest) which demonstrates scientific standing in theory and practice equivalent to an Jacobs University graduate in BCE, BCCB, BICB, or Biology with a Grade Point Average ≤ 2.0 (where the scale is from 1.0 the highest to 5.0, failure is 4.6 and 5). Such students must contact the admission committee by their own initiative.
- Students are notified of their admission to the Fast Track by a letter from the Dean's Office.

8.2 Stipends in the Fast Track

- Fast Track stipends are 17 months in total and start from the 1^{st} June, with the first laboratory rotation, and end at the 31^{st} October in the following year.

8.3 Credit Transfer to the Fast Track

- Jacobs University undergraduates can take up to three graduate courses. These courses can be awarded transfer credits (TC) in the MoLife Fast Track. These courses must come from the list specified in the specific SAs that the student has already selected. These courses must not have been used for graduating with the BSc otherwise they are "used up" and cannot be used for transfer credits.
- Since some of the graduate courses in the MoLife program are held in a two-year cycle it will be necessary for Fast Track students to take these courses already during their third undergraduate year.
- The courses that receive transfer credits appear on a student's BSc certificate. Students must then identify to the MoLife coordinator the courses which they want to transfer. The coordinator will then certify the transfer to the Registrar.

8.4 Studying in the Fast Track

8.4.1 Summer laboratory Rotation

- MoLife Fast Track students do their first laboratory rotation in the summer after their BSc graduation, starting June 1st, for 56 full working days. (course No. 531401)
- They register for the rotation until May 30th. The drop-add phase is the first week of June.
- Fast track students have, from their undergraduate time at Jacobs University, still a Jacobs University enrollment certificate which is valid until the end of August. After this, they receive a new one.

8.4.2 Further Coursework

- Fast Track students then perform two additional laboratory rotations (September to January and February to April).
- They must also take all courses necessary to graduate within two semesters of study. It is important to note that some MoLife courses might be offered only every other year. Hence Jacobs University students have access to them already in the last year of their undergraduate studies.
- After the spring semester, students do their Qualifying Exam or start with the MSc work, which would take from May to end of October.
- Students may always switch back to the regular track of studies. However, the stipends will not be adjusted.

9 Summary of the Different Options for Studying MoLife

Year of Studies	Months	Fast Track with QE	Fast Track	Normal Track with QE	Normal Track
	June				
	July				
	Aug				
1	Sept				
1	Oct				
1	Nov				
1	Dec				
1	Jan				
1	Feb				
1	March				
1	April				
1	May				
1	June	Start with PhD work (not funded by MoLIfe)			
1	July				
1	Aug				
2	Sept				
2	Oct				
2	Nov		Start with PhD work (not funded by MoLife)		
2	Dec				
2	Jan			Start with PhD work (not funded by MoLife)	
2	Feb				
2	March				
2	April				
2	May				
2	June				Start with PhD work (not funded by MoLife)
2	July				
2	Aug				
		continued	continued	continued	continued

Abbreviation QE: Qualifying Examination

Note that stipends are given for 17 month in the fast track and 24 month in the normal track

10 Progress Monitoring

10.1 Jacobs University Rules

- Students in integrated PhD Programs who receive a semester grade point average worse than 3.0 or who do not receive at least 20 ECTS credit points in any single semester will be placed on Academic Probation. The University Registrar will inform the student, Academic Advisor and the Dean. Thereafter, the student must achieve a semester grade point average 3.0 or better and at least 20 ECTS credit points in the subsequent semester in which the Student is enroled at Jacobs University in order to be restored to good academic standing. Failure to do so will result in suspension from the University.
- Any Student whose Grade Point Average in any given semester is worse than 4.33 will automatically be suspended from the University.

10.2 MoLife Rules

- If a student is not conforming to the rules of the program (for example, by not attending mandatory courses) the coordinator must, in cooperation with the student's academic advisor and the instructor of record of the respective course, and after consultation with the student, ask the Dean to have the student's stipend terminated, and the student excluded from the program. The final decision is made by the Dean.

11 The Qualifying Exam

11.1 MoLife Rules

- The Qualifying Exam is held in public. The student and three faculty members attend. Faculty members will be the laboratory rotation supervisors. The future PhD supervisor of the student acts as the Head of the Examination Committee
- The duration of the Qualifying Examination is typically about 60 minutes (minimum 45 minutes).
- The Qualifying Examination deals with the laboratory rotation in the laboratory, where the student plans to conduct his PhD work. The examination starts with the student explaining the outline of the work, and the results achieved. This presentation should take at least 15 and 30 minutes at most. Questions of the faculty follow.
- The Qualifying Examination is graded with ”pass” or ”fail”. In case of failure, the qualifying examination can be repeated once. The Head of the Examination Committee provides a written report of the contents of the exam and the evaluation to the Dean.

12 The Master of Science Thesis and Defense

12.1 Contents of the Thesis

12.1.1 Jacobs University Rules

- The cover page needs to show the title of the Master's Thesis, the name of the School or Center, the University's name, the month and year of submission, the name of the Student and the names of the two Reviewers. Furthermore, the Thesis needs to contain a declaration signed by the Student submitting the Master's Thesis that the Thesis is independent work that has not been submitted elsewhere.

12.1.2 MoLife Rules

- The MSc thesis reports on practical work done in a laboratory of the MoLife faculty for at least 5 months.
- The thesis should in general be about 30 pages (Arial or Times 11 point, 1.5 line spacing, 3 cm margins) including everything. The absolute maximum is 50 pages.
- The thesis should have the parts Introduction, Materials and Methods, Results, Discussion, and References.
- Methods should be reported if they are different from published methods. Published methods must be referred to.

12.2 Time and Circumstances of Submission

12.2.1 Jacobs University Rules

- By the end of the fourth semester, Students must submit a Master's Thesis to the Registrar's Office. The following number of copies must be submitted:
  - one hard copy per Examiner (in MoLife, there are two examiners),
  - one hard copy and a pdf version for the Registrar's Office,
  - one hard copy for the Dean's Office.

12.2.2 MoLife Rules

- The regular date for the submission of the MSc thesis is May 15th, for graduation at the Jacobs University's graduation ceremony in the first week of June. In exceptional cases the submission of the MSc thesis may be delayed until August 15th.
- The student's MSc thesis supervisor (not: Academic Advisor) is responsible for fixing the submission date and for sending a note about the submission date to the program organizer and the student's Academic Advisor.
- At the time of submission, students need to identify a second reader (see below).
- Students who do not meet the submission date on August 15th are excluded from the program by default unless they can show to the registrar a written exemption from the Dean.

12.3 Grading of the MSc Thesis

12.3.1 Jacobs University Rules

- Each Examiner must submit the completed ”Master’s Thesis Evaluation” form to the Registrar’s Office within four weeks after receiving the Thesis. The grades of all Examiners are averaged and rounded to the next Jacobs University grade.

12.3.2 MoLife Rules

- The MSc thesis is graded by two MoLife faculty members. One is the MSc thesis advisor. The other is picked by the student. The student is responsible for finding a second reader before the submission date.
- The MSc thesis is graded within one week after the submission. It is the responsibility of the student’s MSc thesis supervisor (not: Academic Advisor) to ensure this.
- The thesis is graded and appears on the transcript with 30 credits.

12.4 Master’s Thesis Defense

12.4.1 MoLife Rules

- The Master’s Thesis Defense is conducted within two weeks after submission of the MSc work.
- It is the responsibility of the student to identify and notify the examiners, to find a time at which the examination can be held, and to communicate this to the thesis supervisor.
- The Master’s Thesis Defense is a thesis-oriented examination which deals with the experimental contents of the thesis, and its theoretical background.
- The Defense is public. The Thesis Defense committee comprises three faculty members. Two are those who read and graded the thesis. The third is another faculty member whom the student must select at least one week in advance of the examination date. The supervisor of the MSc work is the Head of the Thesis Defense committee.
- The duration of the Defense is typically about 60 minutes (minimum 45 minutes).
- The Defense starts with the student explaining the outline of the work, and the results achieved. The student’s presentation should take between 15 and 30 minutes at most. Questions of the faculty follow.
- The head of the Thesis Defense committee decides on the approval of media for the student’s presentation.
- The grade of the Master thesis comprises of the grades for the written thesis (given by the two readers), the grade for the practical work (given by the Master thesis supervisor) and the grade for the Thesis Defense. The weight of each component is one third.
- The committee decides on the final grade of the thesis immediately after the Defense.
- The grade is communicated to the student by the committee immediately after decision.
- In case of failure, the Thesis Defense will be repeated after one week.
- It is the responsibility of the student’s MSc thesis advisor (not the academic advisor) to pass on, in writing, the results of the grading of the MSc thesis, and the results of the Thesis Defense, to the Registrar.