

# Statutes

## BioInterfaces International Graduate School

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The BioInterfaces International Graduate School (BIF-IGS) is a Helmholtz Graduate School that is linked with both the University of Heidelberg and the Karlsruhe Institute of Technology (KIT). These two universities are the main institutions where the students graduate with their PhD. We also consider affiliation of students with other universities where the conditions for graduation match those required by the BioInterfaces International Graduate School.

### Organisation

The organization is comprised of the following:

- a) **Dean of Graduate Studies:** The Dean of Graduate Studies presides over the Graduate Committee Assembly. The Dean of Graduate Studies is Prof. Dr. Nicholas-Simon Foulkes, who receives support from the speaker of the Graduate School, Prof. Dr. Uwe Strähle.
- b) **Graduate Committee:** This assembly meets at least once a month to discuss all matters relevant to the school and to make recommendations. The graduate committee consists of the following members:

Dean:	Prof. Dr. Nicholas-Simon Foulkes
Speaker:	Prof. Dr. Uwe Strähle
Manager:	Dr. Larissa Kaufmann
Administrative assistant:	Dagmar Klimmek
Student representatives:	(elected each year at the students assembly)
- c) **Manager:** The manager supports the Dean of the Graduate Studies and is responsible for the daily management of the school. The Manager also organizes the invitation and evaluation of applicants, as well as the school's representation on the internet. With the help of an administrative assistant the manager organizes the curriculum that is offered by the school and supports student initiatives. The Manager and assistant are also responsible for helping students to resolve problems that may directly hinder their participation in the graduate school. Notably this includes helping foreign students to

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Prof. Dr. Uwe Strähle  
Spokesman

Prof. Dr. Nicholas-Simon Foulkes  
Scientific Dean

Management  
Dr. Larissa Kaufmann  
Hermann-von-Helmholtz-Platz 1  
76344 Eggenstein-Leopoldshafen  
Larissa.Kaufmann@kit.edu  
Tel. +49 (0)721 608- 2 6091

Assistance: Dagmar Klimmek  
Dagmar.Klimmek@kit.edu  
Tel. +49 (0)721 608- 2 9077

[www.BIF-IGS.kit.edu](http://www.BIF-IGS.kit.edu)

overcome the bureaucratic hurdles to setting in Germany (also with the help of the International students office of KIT, INTL)

- d) Student Assembly:** All PhD students are members of the student assembly, which convenes twice a year to discuss matters relevant to the students and introduce the Graduate School to new students. Once a year it elects the student representative and vice representative.

### *Selection of Students and Admission to the Research School*

All PhD positions are allocated via the BioInterfaces International Graduate School assuring a high level of education and efficient information exchange at the same time fostering trans-disciplinary ideas and projects.

The following selection possibilities are available:

- a) Admission to the open positions offered by the BIF-programme is competitive and contingent on participation in the selection procedure that takes place whenever there are open positions and an open call.
- b) If additional PhD positions are available in a research group of the BioInterfaces programme they can also be awarded during the year outside the context of an open call. The PI, responsible for the offered position must discuss with the management, when there are new candidates for school entry and these students are enrolled according to the normal procedure described below (Ad hoc panel-interviews). All BIF-IGS rules also apply to these students.
- c) Ad-hoc panels are organized for students that a PI has already selected. Also diploma students that have already worked in a research group associated with BioInterfaces should submit their application and participate in the normal Graduate School selection procedure. The supervising PI serves as a member of the Selection Committee for these students to assure that all aspects of the application are taken into consideration.
- d) Students willing to join the programme with their own funding which covers their salary also need to apply for enrolment in BIF-IGS.
- e) BIF-IGS participation for students who have already been studying for longer than one year and who are supervised by PIs joining the BioInterfaces programme should be decided on a case-by-case basis by the Graduate committee.

## *Application process*

### **1. Application**

Applicants must hold a university degree that can be accepted by the partner universities for registration as a graduate student. They must be aware that they should complete their thesis studies within three years.

The applications are made on-line or send by mail and include the CV, an outline of the scientific interest, motivation for the application, academic transcripts and two letters of reference. Non-German students need to have a proof of English language ability by being awarded one of the following certificates:

- a) a TOEFL certificate ([www.TOEFL.org](http://www.TOEFL.org)) (Score requirements: Paper based: 570+, Computer based: 230+, Internet based: 90+).
- b) an IELTS certificate ([www.ielts.org](http://www.ielts.org)) (Score requirements: band 6.5+).
- c) a Cambridge Certificate in Advanced English (CAE).
- d) Applicants who took part in an undergraduate programme in which the language of instruction was English are asked to provide a suitable certificate from their faculty.

### **2. Pre- Selection**

For **open calls**, all complete applications that have been received by the deadline are subjected to a multi-step evaluation. An initial assessment and pre-selection of applicants are carried out by the PIs in the institutes selected by the candidates (Selection committee). Based on this pre-selection, the Graduate Committee invite the short-listed candidates as a group for interviews. The additional twinning projects have to be included in this process.

**All** students that have already been selected by PIs are evaluated by the PI members of the next available **ad-hoc panel** meeting.

The BioInterfaces International Graduate School has a strong commitment to promote women in science.

### **3. Panel interviews – open call**

The Interviews start with a panel interview to evaluate the general scientific knowledge and intellectual capacity of the candidate. The panel consists of 5 PI representatives from at least three research areas (Chemistry, Biology, Physics, Engineering, Informatics, Mathematics). Each panel member has to fill out one evaluation sheet per candidate to judge their knowledge and capacity. Furthermore, one panel consensus form is completed in which different candidates are compared.

This is followed by one-to-one interviews with the potential PhD supervisors from the research areas selected by the candidate. At the end of the review process candidates express their preferences. The selection committee then finds out the best matches, makes the final assignment of students to PIs and finally accepts the selected candidates to the school.

#### **4. Ad-hoc panel**

The ad-hoc panel consists of at least three PIs from at least two different scientific backgrounds. The Dean or spokesman is also a member of the ad-hoc panel. The PI that hires the PhD students must not be part of the panel. Each panel member has to fill out one evaluation sheet per candidate and contribute to one panel consensus form (see above). Critical points raised during this interview are passed to the TAC of the candidate to assist them in assessing the candidate

#### **5. Guest PhD students**

It is possible to be enrolled as a "guest PhD student" in BIF-IGS.

This means that although the guest student will not be registered for their final PhD exam as part of the BIF-IGS graduate school, they will be engaged in a cooperation with a BIFTM institute and PI during their PhD studies (usually for a period of between 2 and 24 months). The students do not have to perform a panel interview, but a registered BIFTM PI should officially host the guest student and the PI should approach the Grad school administration beforehand for specific advice on this matter.

Curriculum courses can be attended by the guest students, although attendance of some courses will require payment of a fee: In our Curriculum course list all courses marked in green are free, while for all others a course fee should be paid. The Introductory course is free for guest PhD students, however attendance of the annual BIF-IGS retreat is only possible after payment of fees for transport and accommodation.

Please contact : [Larissa.Kaufmann@kit.edu](mailto:Larissa.Kaufmann@kit.edu) for course booking and more information.

### *BIF-IGS Training*

The students' Curriculum consists of several courses in different fields. The teaching language for all courses and lecture series is English. The KIT, Campus South (Universitätsbereich) and the University of Heidelberg have both agreed to permit thesis defenses in English.

The Curriculum consist of the following elements

#### **1. Introductory course**

Due to its interdisciplinary nature, students join the school with different educational backgrounds in disciplines such as physics, chemistry, engineering, informatics, mathematics and biology. The students therefore have different levels of knowledge and training. To broaden the experience of

each student in different scientific disciplines, the students first attend the Introductory course. This 3 weeks course takes part at the end of each year and introduces the students to the BioInterfaces programme. The main research topics of the programme's partner institutes are introduced to the students. The course also provides the students with an understanding of the different technical possibilities offered by the various disciplines. This course must be attended during the first year of the PhD.

Basic lectures are held in the morning and in the afternoon the students have time to visit the different groups during rotating tours, mainly organized at KIT, Campus North.

#### Week 1-2 : Biological systems

The lectures cover the following topics: A basic introduction to microbiology, biotechnology methods, molecular biology, genetics and cell biology, tumor biology and animal model systems.

In rotating afternoon tours the students gain more detailed knowledge of the research of individual groups within the BioInterfaces programme including one specialized practical technique from the field in each group: basic methods in molecular biology, genetics, microbiology and biotechnology.

#### Week 2: Analytical systems and data analysis

The following topics are introduced: Basics of physics, optics and fluorescence microscopy, X-Ray and infrared spectroscopy, NMR, advanced spectroscopy for surface and structure analysis, databases and data harvesting, as well as bioinformatics. Also the students are introduced to TEM, REM and mass-spectrometry. On one day of this week, the students visit KIT Campus South. This teaching section also includes theory and practical application of the synchrotron radiation source at the ANKA facility (Campus North).

#### Week 3: chemistry and engineering

The aim of this final part of this course is to familiarize the students with the basic knowledge that is required for the design and production of synthetic tools as used in the BioInterfaces programme and for the structural analysis of synthetic and biological molecules. Aspects of basic chemistry and biochemistry are covered. Also the biofunctionalization of nano-particles, advanced 3D cell culture techniques and tissue engineering are introduced.

## 2. Training Modules

Following the Introductory course, various training courses are offered to the students. To be more flexible, these courses are offered throughout the year. They can be divided into three different types of "module".

### a) Soft skill Modules

Training in soft skills is a key part of the graduate school (such as presentation and negotiation skills, scientific writing/ publishing, career development, patent application, literature management and communication)

b) Transdisciplinary Modules

In transdisciplinary module courses, a student is taught techniques outside of his/her direct field of study: For example, an organic chemist might take such a course in tissue culture techniques. These courses assume little or no background experience in the subject. Previous Transdisciplinary module courses have included: surface analysis (SIMS), surface modification, statistics, image analysis, genotyping, cell culture wound healing assay, confocal microscopy, protein expression and purification, MATLAB, Photoshop course, PCR-course.

c) Specialist Modules

These specialized training modules offer in-depth training in the field of expertise of the student. For example, a biologist may learn how to microinject zebrafish embryos. Previous Specialist Modules have included atomic force microscopy, animal handling (zebrafish), animal handling (mice), deep sequencing, advanced deep sequencing, mass spectrometry, Combinatorial Chemistry.

Each student must complete three courses from each module. When there are external organized courses held in English or German, these courses can also be taken into account in the students' Curriculum. They will be partly financed by the graduate school if the main goal: the education and career development of the student, is fulfilled.

**3. BIF Seminar**

The BIF-Seminar is a lecture series, given once by month, by the PIs and their groups to provide the students with additional in-depth knowledge about the ongoing research of their field. This provides the students with an important means of furthering their scientific knowledge on relevant research topics. Furthermore, importantly, it gives students invaluable experience in presenting their work to a multidisciplinary audience.

**4. Research Reports / Group meetings**

In addition to the seminars, the students attend internal group meetings. This allows the students to develop their presentation skills and also helps them to obtain a detailed overview of their topic.

**5. BIF-IGS Retreat**

The students organize an annual summer retreat for the entire BIF-IGS. For this retreat they prepare lectures and posters to present their work to each

other and to foster discussion. They can also invite speakers who then give lectures on certain topics they wish to learn about. This is a unique opportunity to promote scientific awareness that reaches beyond the individual's field of interest.

## **6. Evaluation**

The Curriculum is constantly under a process of evaluation. In order to ensure that it serves as an important complement to core research activities, the criticism and wishes of the students are frequently evaluated and are used to guide the future development of the curriculum.

### *BIF-IGS Supervision*

The BioInterfaces International Graduate School aims at a close and intensive supervision of the PhD student by the PI. Thus, the PI is required to be available on a regular basis for discussion and advice. As a complementary measure, a thesis advisory committee (TAC), selected by each student, monitors and guides them during their entire PhD training. The TAC meets once a year with the student to evaluate their progress report (TAC proposal), which consists of a short written report (max .5 pages) and an oral presentation (20 min). The TAC consists of the supervising group leader and at least two other PIs. At least one PI should be from a different scientific discipline. The TAC proposal has to be submitted to the TAC and the BIF-IGS administration at least three days before the meeting. Based on these meetings, the TAC evaluates both the student's work and the supervision given by the PI, and provides written recommendations for future directions. The TAC report must be signed by all the participants. The first TAC meeting is held six months after the PhD student starts his training, and then subsequently, once per year. The TAC is responsible for assessing both the suitability of the project as well as the progress of the candidate. The TAC also finally decides when a given project has advanced sufficiently to be submitted as a PhD thesis. The TAC holds the responsibility of ensuring that the thesis work can be finished within the anticipated three years. Extensions can be granted only by the TAC in close cooperation with the Dean in exceptional cases only.

### *BIF-IGS Alumni and Career*

The BIF-IGS Alumni are maintained in contact via the BIF-IGS Administration. There is also the opportunity for alumni to join the regular school events and in this way help contribute career advice in the areas of basic research and industry for the PhD students on-site.

Many soft skill courses offered by the Graduate School (See BIF-IGS - Training) are intended to assist students with their future career development. The BIF-IGS management also places as a priority helping students with their questions regarding the choice of the further career steps.

### *BIF-IGS Help*

If problems develop within a research group between the PhD student and their group leader concerning their project or training, the BIF-IGS management routinely offers to serve as a mediator in on-going discussions. BIF-IGS also provides advice and support to students who experience difficulties during the course of their curriculum and training programme.

### *BIF-IGS Grading System*

As a measure of the students progress through the BIF-IGS training programme, they are awarded “credit points” (CPs). CPs are also awarded for TAC meetings as well as authorship. The table shows the different modules and the credit points that can be collected during the three years of PhD.

<b>Mandatory modules</b>		<b>SUM</b>
<i>Introductory course</i>	3 weeks	7 CPs
<i>BIF-Seminar</i>	9x 3h per year	1 CP per year 3 CPs
<i>BIF-IGS retreat</i>	3 retreats during PhD	1 CP per retreat 3 CPs
<i>Retreat talk</i>	1 time during PhD	1 CP
<i>TAC proposal</i>	3 TACs during PhD	1CP per year 3 CPs
		17 CPs
<i>Curriculum courses</i>	(The equivalent of 3 courses for each module MUST be taken)	
These CPs are NOT equivalent to the international standard CP system (due to their length and information content within the programme)		
<b>Extra Credit points</b>		
<i>BIF-seminar Talk</i>		1CP
<i>Retreat Organization</i>		1CP
<i>Talk at a conference</i>		1CP
<i>Poster at a conference</i>	(to be judged by the PI, only posters made by the student are considered)	1CP
<i>Patent</i>		2CPs
<i>Publication first author</i>		2CPs
<i>Publication second author</i>		1CP
<i>KSOP* lectures</i>	Case by case (e.g. 3CPs per semester)	certificate required
<i>HBIGS* lectures</i>	Case by case	certificate required

\*KSOP (Karlsruhe School of optics and photonics, Graduate School of KIT Campus South)

\*HBIGS (Hartmut Hoffmann-Berling International Graduate School of Molecular and Cellular Biology, Heidelberg)



A handwritten signature in black ink, appearing to read "N. S. Foulkes". The signature is fluid and cursive, with a prominent initial "N" and "S".

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Signature Scientific Dean Prof. Dr. N.S. Foulkes