

Program in Biophysics Graduate Student Handbook

Center for Biophysics and
Quantitative Biology

at the
University of Illinois
at Urbana-Champaign

2020-21

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

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To: New Biophysics Students

Hello and welcome to the Center for Biophysics and Quantitative Biology! We are pleased you have chosen to attend our Program and we hope your years with us will be exciting, challenging, and rewarding ones for you.

To help with your transition into the Program, and to alert you to its workings, we have compiled this *Biophysics Graduate Student Handbook*. Included is a list of the Biophysics requirements that must be met in order to obtain your doctorate degree in Biophysics and Quantitative Biology. The *Graduate College Handbook of Policy and Requirements for Students, Faculty and Staff* available on the web at www.grad.illinois.edu/gradhandbook covers the privileges and responsibilities you have as a graduate student at the University of Illinois. It also lists the Graduate College regulations that apply to all graduate students. You should read all handbooks and guides very carefully and return to them each year to ensure you are meeting the Program requirements. If you have any questions, please do not hesitate to ask me.

As you may already be aware, the Program in Biophysics & Quantitative Biology is an interdisciplinary one, with professors from many different departments on campus including: the Beckman Institute, Biochemistry, Bioengineering, Cell and Developmental Biology, Chemistry, Chemical & Biomolecular Engineering, Comparative Biosciences, Computer Science and Engineering, Institute for Genomic Biology (IGB), Microbiology, Molecular & Integrative Physiology, Nuclear, Plasma and Radiological Engineering, Pathobiology, Physics, and the College of Medicine. You will have plenty of opportunity in your first semester to choose your research advisor, topic, and the laboratory where you will complete your thesis work. The Biophysics website (<https://biophysics.illinois.edu/>) includes a list of current Biophysics faculty and their addresses. You can use this list when it comes time to contact professors for your rotations and tutorials.

I know you will have questions or concerns that are not addressed in this guide, please feel free to contact me at the Center, at 333-1630. My email address is wayoub@illinois.edu. You may also stop by my office in 318E RAL, between the hours of 8:30 a.m. - 4:30 p.m., Monday through Friday, including most lunch hours.

Best of luck to you in your studies here!

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I. REQUIREMENTS FOR THE DOCTORAL DEGREE

A. GENERAL REQUIREMENTS

The Graduate College recognizes three stages in a Doctoral degree program, each accounting for a minimum of **32 hours** of course work (including 590 and 599 credits for research, where appropriate). The total credit hours required for a Ph.D. is a minimum of **96 hours**.

Stage I: Course work taken in consultation with the first year advisor or research advisor, culminating in the successful passing of the Biophysics Qualifying Exam (BQE). Three lab rotations must be completed by the end of the first semester, resulting in the selection of a research advisor.

Stage II: Research (Biophysics 599), culminating in the successful passing of the Preliminary Exam. The Prelim must be passed by the end of the 3rd year.

Stage III: Research (Biophysics 599), culminating in the successful passing of the Doctoral Exam.

For the Ph.D. degree, a **total of 32 hours of credit** in Stage I must be obtained. The following courses are required[#]:

- i. MCB 580 – ethics course (1 hour, second semester)
- ii. Biophysics 595A (research seminar) and 595B (faculty seminar) (5 hours total, first two years)
- iii. Biophysics 581-83 (3 lab rotations, 2 hours each, first semester)
- iv. MCB 401 (3 hours, first semester)
- v. Biophysics 586 (2 tutorials, 1 hour each, completed before Preliminary Exam)
- vi. Two 500-level courses from the pre-approved Biophysics course list*
- vii. Quantitative biology course or experimental lab course**
- viii. Additional 400- and/or 500-level biophysics or science courses to make up a total of 32 hours in i. through vii.

[#]**Requirements i-viii must be completed in the first three years**, prior to the Preliminary Exam.

* The Biophysics & Quantitative Biology Office provides copies to students annually. 500-level courses in other departments may be petitioned to count towards the Biophysics and Quantitative Biology course requirement. The main content of the course must be biophysical in nature and a syllabus must be provided with the request. Center approval must be obtained by students **prior to** registration and receiving credit for non-approved courses.

** If research is computational/quantitative in nature, a lab course is required (BIOC 455, PHYS 498BP, CHEM 483, PATH 521 or equivalent). Conversely, if research is experimental in nature, a computation/quantitative course is required (BIOP 576, BIOP 586C, BIOE 598AGB, ANSC 449, MCB 432, or equivalent).

I. Tutorials and Lab Rotations

The basic requirement is **3 lab rotations** (5-weeks in length) **and 2 tutorials** (8-weeks in length). Tutorials may *not* be taken on the same topic as a lab rotation. Students may take a

rotation and a tutorial under the same professor, however, they may not complete a tutorial with their advisor.

All required **lab rotations** must be taken and **completed by the end of the first semester**. A short written report of 6-10 pages is expected for each rotation. On the basis of the lab rotations, students must select a research advisor by the end of the first semester. This includes ensuring acceptance by the advisor.

Students may not officially rotate through labs of faculty who are not current members of the Center. If a student wishes to explore a lab outside Biophysics, they are encouraged to meet with the faculty member unofficially throughout the semester. If the student ultimately joins a lab outside Biophysics, a Biophysics pro-forma advisor must also be selected.

Each **tutorial** consists of meeting with a faculty member at least once a week for a **8-week period**, and culminates in a written paper of 6-10 pages. Students should expect to submit two or more drafts, for advice on both scientific content and writing skills. It is possible to complete two tutorials in a single semester, with the second beginning the eighth week of classes.

II. Seminars

All first year students must take **Biophysics 595A** (Department Seminar) and **Biophysics 595B** (Faculty Research Topics Seminar). Biophysics 595B is only required in the first semester. Students are required to register for Biophysics 595A (research seminar) until the end of their second year, for a total of four semesters.

III. Ethics Requirement

Graduate students in the sciences at the University of Illinois are expected to have training in professional ethics. Graduate students in the Center for Biophysics and Quantitative Biology are required to take the ethics course offered by the School of Molecular and Cellular Biology, **MCB 580**. The course will be offered in the fall of the first year.

IV. Grades/Grade Point Average (GPA)

The University of Illinois grades on a 4.00 point plus & minus system (A=4.00; B=3.00; C=2.00; D=1.00; F(fail)=0.00). In order for the University to calculate the overall Grade Point Average (GPA), the number of hours for a course is multiplied by the numerical equivalent of the letter grade received. This is done for all graded courses and the sum of all graded courses is divided by the total number of graded hours. This is the GPA.

The Graduate College minimum GPA requirement for biophysics is 3.00 in all coursework. If a student's **overall GPA is below 3.00** for a semester, a warning letter will be sent from the Graduate College. If, after the completion of additional graded hours, the GPA has not been raised, the student will be placed on **limited status**. If the student is still on limited status the following semester, they will not be allowed to register for subsequent semesters. Students on limited status are also ineligible for degree conferral until the limited status is lifted.

In addition, the Center for Biophysics and Quantitative Biology has a minimum GPA requirement of 3.00 for the courses in i., iii.-viii above. If a student's **GPA in these courses falls below 3.00** for a semester, a **warning letter** will be sent from the Biophysics Office. If, after the completion of additional graded hours, the GPA has not been raised, the student will be placed on probation, and can be asked to leave the Program.

Grades of S (satisfactory) and U (unsatisfactory) are given for seminar courses, but not counted toward the GPA. Likewise, if a course is taken Credit/No Credit, it is not counted toward the GPA. *Hours* for these courses will be counted toward the total credit hours for the degree.

1. **Deferred grades** are *temporary grades* given for work not completed for a lab rotation and for Thesis Research (599). Thesis work will be graded DFR (deferred) until the final examination is passed, when an S or U grade will be granted. Incomplete work for a lab rotation should be completed by the semester following the receipt of a DFR grade. The professor must contact the Biophysics and Quantitative Biology office to assign a letter grade, before credit can be received for the course.
2. **Excused grades** (I for incomplete) are *temporary grades* given for courses where work is not completed before the end of the semester. These must be cleared up before the reading day of the following semester. "I" grades not cleared by the appropriate time will become "F" ("F by rule") and appear on the student's transcripts as such. These are counted as F when computing GPA. Once the work is completed, the professor must submit a grade change with the Biophysics and Quantitative Biology office to replace the F with a letter grade.

V. Petitions

To **request an exception** to a published Graduate College policy or deadline, an official on-line Student Petition Form must be completed by the student. These forms can be found on the Graduate College website (www.grad.illinois.edu/gsas/graduate-student-request-form). Student record requests, such as change of curriculum or add/drop will be completed on a Curriculum Change/Transfer of Credit Form. The outcome of these requests will be forwarded to the student and the Biophysics and Quantitative Biology Office electronically by the Graduate College.

Students who want to receive 500-level credit for courses in other departments or want to be considered for an exception to a program requirement may petition the Center for Biophysics and Quantitative Biology. These petitions only require the Center Director approval and a simple email request will suffice.

B. TEACHING

All Biophysics and Quantitative Biology students are **required to teach** for a **minimum of one semester** during their graduate career, though some students may be asked to teach for additional semesters if their advisors do not have an alternative means of support available. Students are strongly urged to complete this requirement in their first few years in the program. There is a limited number of Teaching Assistantships (TA) available through the Center for Biophysics and Quantitative Biology

itself. **Most TA appointments are made through other departments**, such as Molecular and Cellular Biology and Physics. These TAs are highly competitive.

The Biophysics and Quantitative Biology Office will inform students each fall and spring when the School of Molecular and Cellular Biology is accepting applications. Students will be asked to complete an application on-line. Students may also apply for TAs in other departments. Most applications are due the semester prior to the proposed assignment (MCB TA applications for fall are due in mid-April; those for spring are due in mid-November), so students should submit applications to the appropriate departments well in advance for full consideration. Sometimes TAs can be arranged through the advisor's lab. This option should be discussed with the advisor directly. TAs are appointed for one semester, though some departments offer an option to renew the next semester. **TAs are generally not offered over the summer**, so other means of support must be arranged.

I. TA Orientation

Before students are allowed to act as TAs for a University course, they must pass the **Graduate Academy for College Teaching** program. This program is held one week prior to the beginning of classes in the fall and spring semesters. Students will attend large and small group sessions; be videotaped teaching a short lesson; and have the tape reviewed. There are also follow-up sessions later in the semester that offer further training opportunities. Follow-up sessions are not required for Biophysics and Quantitative Biology students, but may be attended if of interest to the students.

II. English Proficiency Requirements

All non-native English speaking international students must pass the **English Proficiency Interview (EPI)** test before they can be enrolled in an orientation session or be appointed as a Teaching Assistant. It is also a graduation requirement of the University and of the Center for Biophysics and Quantitative Biology. Even U.S. citizens or permanent resident aliens must sit for the exam if English is not their native language. An exemption from the exam can be granted *only if* a student attended **both** high school **and** college in English speaking institutions.

If any of the following have been passed prior to enrollment at UIUC, the scores will be accepted in lieu of the EPI test:

TSE passed with a score of 50

iBT* speaking sub-section passed with a score of 24

IELTS* speaking sub-section passed with a score of 8

*scores must be less than 2 years old on the 1st day of class the semester the student enters the U of I

The EPI test is offered every semester during specified weeks. Information will be disseminated from the Biophysics and Quantitative Biology Office regarding test dates and times. The exam is held at the Armory and the exams start promptly at the time indicated. Students taking the exam must bring a picture ID card and will need to arrive at least 15 minutes early to check in.

Results of the exam are sent to the Biophysics and Quantitative Biology Office approximately two weeks after the test date. The exam is scored pass/conditional pass/fail.

If a passing grade is not earned, the exam must be taken again the following semester, but *only after* participation in language improvement activities have occurred. These improvement activities include: taking an English as a Second Language course (ESL 504, 506, etc., which may be repeated as needed); or hiring a private, OIR-approved tutor for a minimum of 10 hours to help improve English abilities. **Students are required to take the EPI test each semester until they pass it. It is also a requirement for successful passage of the BQE.** The University of Illinois only allows a student to take the EPI test three times. If the student fails the exam the third time, they will be required to take one of the alternate exams at their own expense until a passing score is achieved.

If a student receives a total score of 102 or less on the iBT, they will also be required to take the **English Placement Test (EPT)** when they arrive on campus. The score received on the EPT determines the need for any ESL courses at the University of Illinois. These courses must be completed before the student will be allowed to TA or graduate.

C. EXAMINATIONS

There are **three exams** leading to a Ph.D. degree in Biophysics and Quantitative Biology.

I. Biophysics Qualifying Examination

The **first** of these is the **Biophysics Qualifying Exam (BQE)**, which must be **passed by the end of the second year** in the program. Students are expected to sit for the exam in their first year. The exam is administered every spring.

Passage of MCB 446 and a biochemistry and physical chemistry course are strongly suggested before attempting to take the BQE. Regular attendance at seminars; study of past exams; and a good knowledge of the Center faculty's research have also proven to be helpful.

The BQE has **both written and oral components**:

- The written BQE tests the student's general knowledge of Biophysics and Quantitative Biology. It contains three sections (Experimental; Computational/Quantitative; Fundamentals of Biophysics). A total of six questions (out of 12 available) must be attempted, at least one question in each section must be attempted.
- The oral BQE reviews biophysics knowledge further, especially in areas not mastered on the written exam, and determines the student's progress in course work, research, and other programmatic matters.

The BQE committee recommends to the Director whether or not a student should pass and thus be admitted to Ph.D. candidacy. These recommendations are based not only on the exam performance, but also on the total academic record, the student's research potential, and the nature of the student's objectives and motivation. Formal admission to the Ph.D. candidacy also requires that the student be accepted into the research group of a Biophysics and Quantitative Biology faculty member who then serves as the student's official advisor.

As noted earlier, non-native English speaking international students must pass the EPI test in order to satisfy the requirements of the Qualifying Examination.

Rules for BQE Grading

In order to avoid confusion with complicated schemes of combinations of scores, here are the simple BQE Guidelines:

1. Four or more passes (out of 6 written questions attempted)

Students who receive 4 or more passes on the written BQE will not be required to retake the written BQE.

Students may be asked to retake the oral exam, depending upon their performance during the oral exam on any of the questions they did not pass, and/or any unanswered questions about their proposed research, progress with other program requirements, and related matters.

2. Three or more fails (out of 6 written questions)

Students who receive 3 or more fails on the written BQE must unconditionally retake both the written and oral portions of the BQE.

3. All other scores

Students receiving scores not falling into either category above should be prepared for a thorough oral examination on the BQE questions. The BQE Committee will decide the final outcome of the exam based on the performance at the oral: retaking the oral, or retaking both the written and oral parts of the BQE.

II. Preliminary Exam

The **second** exam, the **Preliminary Exam**, examines the student's thesis proposal and his/her knowledge and ability to pursue in-depth research in their chosen area. The primary purpose of the Preliminary Exam is to examine the validity of the thesis proposal and to test the student's fitness to carry out independent research. Students are expected to take the Preliminary Exam **before the end of their third year**. Students are also expected to have **completed all coursework and tutorials prior to their prelim**.

The exam is oral and is administered by an ad hoc committee recommended by the student's advisor, who serves as the chair of the committee. The committee is appointed by the Graduate College with the recommendation of the Center Director. The Chair and a majority of the committee must be members of the Graduate College and the Center for Biophysics and Quantitative Biology. At least half of the members must be tenured faculty.

It is the student's responsibility to ensure that the committee is appointed at least two weeks prior to the proposed exam date. The student, with the permission of his/her advisor, initiates the appointment of the committee through the Center for Biophysics and Quantitative Biology Office, who will complete the appropriate paperwork for the Graduate College. Additionally, the Biophysics Office requires a one-page, double-spaced **Project Summary Report** from the student for their file.

The Preliminary Exam is **based on a 20-30 page (double-spaced) thesis proposal** presented to the committee. The proposal should include an Introduction, Methods and Materials, Preliminary Results, Proposed Work, and References. Figures and captions should be incorporated into the text. It is the student's responsibility to see that the thesis proposal is in the hands of the committee at least two weeks before the committee meets.

At the start of the oral exam, the student presents a 20- to 30-minute outline of the proposed work. The committee then examines the student regarding facets of the proposal that need clarification and makes suggestions which may facilitate the approach to the problem. Finally, the committee may raise questions of a more general nature, to test the adequacy of preparation for the proposed work, and general knowledge of Biophysics and Quantitative Biology.

At the conclusion of the oral examination, the chairperson of the committee will initiate the approval of the Preliminary Examination Result (PER) form and announce one of three possible decisions:

1. Pass
2. Fail
3. Defer (the same committee must re-examine the student within 180 calendar days of the original exam and the outcome must be pass or fail)

III. Final Exam

The **third** exam is the **Final Exam**, which is a presentation and defense of the student's thesis work. The Final Exam committee is appointed by the Graduate College upon the recommendation of the Center Director. As with the Prelim, the student initiates the appointment of this committee through the Biophysics and Quantitative Biology Office, who prepares the paperwork for the Graduate College.

The composition of the committee for the Final Exam has the same requirements as for the Preliminary Exam and is usually the same as that for the Preliminary Exam; however, a change in the direction of the thesis or departure of original faculty may require changes in the committee.

The Final Exam may not be taken sooner than 6 months after the Preliminary Exam. Doctoral candidates must **complete all requirements for the degree so as not to exceed five years** after their first registration in the Graduate College. (See **Petition** section if there is need for exception to this rule, e.g., time extension.)

The final form of the thesis, at the time of deposit after a successful defense, must conform to the rules specified by the Graduate College. At the time of the defense, the thesis must be in essentially final form.

The Final Exam is a **public exam**, and the recommended format is a 50-minute formal presentation as a public seminar, with a short question period from the audience. The examination committee will then question the candidate in detail in a private meeting.

At the conclusion of the oral examination, the chairperson of the committee will announce one of three possible decisions:

1. Passed, and the committee will sign the FER/TDA forms.
2. Passed, but with revisions and the committee will sign the approval forms at a later date.
3. Failed, and the student will not be admitted to another examination.

Specific information on the Final Examination procedures can be found under F. Degree Conferral Procedure. The Graduate College also provides information regarding forms, thesis preparation, and electronic submission, which can be accessed via the web at: <http://www.grad.illinois.edu/thesis-dissertation>.

D. REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE

Students are not admitted into a program leading to a Master's degree. The Master's degree is not awarded to students continuing toward the doctoral degree in the program, or to students who are transferring to another Ph.D. program on campus. However, under certain circumstances, a student may be awarded a terminal Master of Science degree. The requirements are as follows:

- A total of 32 hours of credit in biophysics courses and related subjects.
- 10 hours of 500-level biophysics courses with a minimum GPA of 3.25. These 10 hours do **not** include seminar courses (Biophysics 595A/B) nor research units (Biophysics 590/599) and can include no more than 2 hours of tutorials (Biophysics 586). 500-level courses in other departments count towards this 500-level formal course requirement if they are on the approved Biophysics course list.
- At least 4 hours of research (Biophysics 590 or 599) is required, with the work presented as a thesis (which is submitted to the Graduate College after the advisor's approval) or research paper (which is submitted only to the advisor and/or Center Director). The paper should be a concise account of the student's research, in the style and format of an appropriate scientific journal, except that it should include a more detailed introduction to the area of investigation, and it may include a greater degree of speculation in the discussion. Bibliographic references should include complete titles. The paper should be between 10-50 typed, double-spaced pages, excluding figures and numbered references, which should be attached to the paper.

The evaluation of the paper will be made by the student's Biophysics 590/599 advisor. The advisor has the option of calling for an oral examination based on the research paper/thesis. Additionally, the Center Director can review the paper. After the evaluation of the paper, one of three possible decisions will be made by the Center Director:

1. The paper is approved, and the student will be granted a Master's degree.
2. The paper should be revised and resubmitted within one month.
3. The student failed and will not be granted a Master's degree.

E. SATISFACTORY ACADEMIC PROGRESS

Unless there are very unusual circumstances, the following conditions must be met for a graduate student to be making satisfactory academic progress, and to be eligible for reappointment as an assistant or trainee:

- A student should give **evidence of continuous effort and progress** in coursework and, beginning with the end of the first academic year and thereafter, the student should also give evidence of continuous effort and progress in research.

- A student must have a **primary research advisor by the beginning of the second semester** in the program. If a student leaves a lab, they must arrange for a new advisor within the same semester. The only exception is official leave from the University, such as medical leave.
- A student should **complete 32 hours of courses by the end of three semesters**, following the outlines of the program requirements above. If this condition is not met, he/she may not be appointed as a graduate assistant/trainee after that time without special permission from the Center Director. This rule does not apply to special status students.
- Students should **enroll for the maximum amount of course credit** (including 590 and 599) for which they are eligible, usually 12-16 hours per semester (4-8 hours in the summer). A minimum of 8 hours of course work is required at all times, except with permission from the Center Director. International students must maintain an enrollment of 12 hours for the fall and spring terms to maintain their visa status.
- A doctoral student should **complete all requirements for the degree not later than five years** after entering graduate school with the B.S. degree. Continuation beyond this time requires special permission from the Center Director and the Graduate College, in response to a petition from the student's research advisor.
- A student who has a **GPA below 3.0** after two semesters is making **unsatisfactory** academic progress and may be released from the program.
- A graduate assistant who **performs inadequately, or irresponsibly**, in a teaching or research position may be removed from the position with no commitment of alternative support and may be **released from the program**.

Annual Reviews

The Center for Biophysics and Quantitative Biology **conducts annual reviews for all students**. This process helps keep students on track toward the timely completion of their degree. The initial stage of review consists of a written Progress Report from the Biophysics & Quantitative Biology Office each year, which lists all requirements met and those still outstanding.

If deemed necessary, the director or advisor can call for a more thorough review by a small faculty committee, consisting of two to four members. This committee can be a potential Prelim and/or Final Exam committee. These reviews will help facilitate working relationships between faculty and students, and provide the student with more contacts who may be aware of new or alternative methods or studies, something a single advisor may be unaware of.

The **reviews by progress report and/or committee are mandatory for all students**. If requested, students are to provide their committee with a two-page synopsis of the work that has been completed, and the progress they have made each year. This synopsis will be reviewed by the committee and discussed with the student at a brief meeting, to be arranged by the student.

The Biophysics and Quantitative Biology Office will monitor the review process. The Office will remind the appropriate students to make preparations for these annual meetings, and keep records of the recommendations of their committees.

F. DEGREE CONFERRAL PROCEDURE

When preparing for their final defense, students should arrange to meet with the Center Graduate Program Coordinator, to verify that **all Center requirements necessary to graduate have been fulfilled**.

Students should **verify all deadline dates** with the Center office or Graduate College early *in the semester prior* to the planned graduation, to ensure the timely deposit of the appropriate forms and paperwork.

Ph.D. degrees are conferred three times a year: May, August, and December.

The Graduate College mandates official University policy and procedures in regard to student theses, including specified formatting of the document. Below are the specific procedures for the final defense.

- The **Final Exam** must be passed *at least one and one-half months* before the conferral date. **Students must be registered during the semester that the final defense is taken.**
[NOTE: If a student is registered for the summer and defends prior to the first day of the fall semester, the student does not need to register for the fall. Students do not need to deposit the same semester nor be registered to deposit. However, if the thesis is not deposited before the same semester as the defense, the decision not to register will affect student insurance and any RA appointments held, both of which require the student to be registered.]
- Students should indicate that they plan to graduate while registering **via UI Integrate/Enterprise**. If a student fails to meet the requirements for graduation, they must add their name the following semester – it will not be done automatically.
- Students, working with their advisors, should **select the faculty for the final committee**. Once all have agreed to a date and time, **students must reserve a location** for the exam. Once all arrangements have been completed, the student must inform the Biophysics and Quantitative Biology Office of the specific details, along with the **thesis title**. This must be done *at least two weeks* before the exam. Once the information is received, the office personnel will complete the required paperwork and submit it to the Graduate College on the student's behalf. Exams are public and will be announced to the Biophysics community prior to the examination.
- The Graduate College approves of the committee members and sends the **Final Examination Result (FER) form AND Thesis/Dissertation Approval (TDA) form** to the Biophysics and Quantitative Biology Office. Arrangements must be made to retrieve these forms from the office prior to the date of the exam, either via an email sent to the advisor or hard copies to be picked up in person.
- The **final committee members must sign both the FER/TDA forms** at the conclusion of the final examination. Results do not need to be unanimous, but both forms must be signed appropriately.

- The FER and TDA forms **must be returned to the Center office *immediately* after completion of the defense**, to secure the Director's signature, prior to submission to the Graduate College. Forms **are invalid without the Director's signature**.
- **After the final defense, a copy of the final thesis** must be submitted to the Center Office for the **department format check**. Once the check has been completed and corrections have been discussed with the student, the TDA will be submitted to the Graduate College. Without the departmental approval, the Graduate College will not perform any format checks or accept the thesis for deposit.
- The **student must electronically deposit the final thesis to the Graduate College** *at least two and one-half weeks* before the graduation date. **Other required Graduate College paperwork must also be submitted** by the deposit deadline. Check with the Thesis Office for other required forms.

II. REGISTRATION

University of Illinois students **register on-line** using the UI Integrate system (also referred to as Self-Service or Enterprise). This system allows greater flexibility for student registration, because of its ease of access from personal computer systems.

New students are required to follow the procedures below in order to register for the first time. Once enrolled, students may take advantage of the early registration period for subsequent semesters.

A. ENROLLMENT PROCEDURES

I. Log-on and Password

After students receive the official Notice of Admission from the University, they are eligible to register. However, they must first have their **Student ID card and log-on ID**. An email is sent to all new students from the Graduate College which includes their student email address, log-on ID, and password.

The Student ID card can be obtained from the Student ID Center located in the Illini Union Bookstore, 809 S Wright Street, in Champaign. A week prior to the beginning of classes, a temporary ID Center will also be set up in the Illini Union.

Once a log-on ID and password have been secured, it is possible to register on-line.

II. Advising

Before first-year Biophysics students begin on-line registration procedures, they **must meet with the Entrance Advisory Committee (EAC)**. The EAC will help determine what classes would be beneficial for each student based on their background and proficiencies/deficiencies. A short orientation meeting will also be scheduled prior to the first day of instruction, to provide an overview of the Center's program and will address course requirements. Registration should take place soon thereafter. Late fees will be charged if registration has not been initiated by 5:00pm on the first day of instruction.

After the first semester, coursework is usually determined by the advisor and student, with the Biophysics requirements in mind. First-year students may meet with any member of the EAC or BQE committee prior to spring registration to help determine spring courses that may be beneficial to passing the BQE, if they choose.

III. Lab rotation registration

Faculty interested in taking students will give **brief research presentations** (BIOP 595B) the week prior to fall classes. These presentations will provide information on research opportunities within faculty labs and will assist in the selection of lab rotations.

After presentations have been completed, students will **submit their top six (6) lab rotation choices** to the Biophysics Graduate Program Coordinator. Using the list provided by the student, the first of three required lab rotations will be determined by

committee before the first day of class. The other two rotations will be decided later in the semester.

Most students will receive their first rotation choice for at least one, if not all, of their rotations. Sometimes professors are unable to accommodate students for a particular semester. In that case, it will be necessary for the committee to assign a rotation with another professor from the student's list. If this happens, every effort is made to give students their first choice for the next rotation.

After the lab has been determined, it will be necessary to obtain the **course registration numbers (CRN)** for the course from the Biophysics and Quantitative Biology Office. **Each professor has his/her own unique CRN** for the independent study courses (581, 582, 583, 586, 590, 599). Without these numbers, it will not be possible to register for the correct section.

Near the end of the third rotation, students will begin to choose their permanent labs. If a professor and student agree on the partnership, both will sign an **agreement contract**, which states the professor will support the student for the duration of their studies. This signed agreement will be submitted to the Biophysics and Quantitative Biology Office and kept in the student's file.

IV. Use of the on-line class schedule for other courses

Not all courses are offered each semester or every year. Lists of courses offered by a department for a particular semester can be found by going to the **Course Explorer website**. The URL is: <https://courses.illinois.edu/>. The Class Schedule tab lists all courses offered for a particular semester, sorted by department. For a list of all courses offered by a department, students should follow the link to the Academic Catalog. The Biophysics and Quantitative Biology Administrative Coordinator also has information as to when or how often a Biophysics course may be offered.

V. Where to Register

With all the above steps completed, it is finally time **to go to a computer and register!** Students should go to the website: <http://registrar.illinois.edu/> and find the link for Student Self-Service (<https://apps.uillinois.edu/selfservice/>).

Students may register on-line from their home computers or from various on-campus sites. Go to <http://techservices.illinois.edu/services/computer-labs> for lists of public and walk-up sites available through Technology Services at Illinois. If problems occur while connecting, contact the Technology Services Resource Center, 1211 Digital Computing Lab (DCL), 1304 W Springfield Ave, Champaign, consult@illinois.edu; 244-7000. Walk-in hours are Monday-Friday from 8:30am-5:00pm. Phone/email support is also available during those hours and from 12:00-5:00pm on weekends.

There are also two computers in the Biophysics and Quantitative Biology Office that are available for student use as long as the building is open.

B. MISCELLANEOUS REGISTRATION INFORMATION

I. Encumbrances

If any money is owed to the University (library fines, parking fines, tuition, or fees) or a University requirement (official transcripts from previous University, non-compliance with state immunization laws) has not been completed, an **encumbrance** may be placed on a student's registration. These encumbrances *must* be cleared up by **5:00pm on the first day of instruction**, or registration will be cancelled for that semester and further registration will not be allowed until the encumbrances have been cleared.

II. Required hours

To be considered a **full-time** graduate student by the University, students must be enrolled for a **minimum of 12 hours**. Most Biophysics and Quantitative Biology students enroll for 12 hours per semester through the academic year. Enrollment for the summer session is 4-8 hours. Advanced students may register for 0 hours if they have met certain requirements and can still be considered full time. Keep in mind, however, that students who register for 0 hours are prohibited from using many University services and must cover their own insurance costs.

III. Summer Session

Biophysics and Quantitative Biology students are **required** to enroll for the **full summer session**. If there are extenuating circumstances which would prevent summer enrollment, the student **must receive prior permission to defer registration** from the Director of the Center. If an exemption from summer registration is granted, students must purchase optional health insurance available through the University of Illinois to cover them over the summer. This must be arranged through the Student Insurance Office during their open enrollment period.

III. SUPPORT

Students who **remain in good standing** in the Center, and continue to **make satisfactory academic progress** in the program based on their annual reviews, are guaranteed **financial support** for the duration of their studies, contingent upon the availability of funds. For most advanced students, support comes from a research assistantship in the laboratory of the student's research advisor, which implies an obligation to work in the laboratory providing the support. Other possible sources of support are: program scholarships, training grants, University fellowships, or teaching assistantships.

A. ASSISTANTSHIPS

I. Research Assistantships

Research Assistantships, or RA's, are usually given to a student **through the laboratory in which he/she has chosen to do thesis research work**. If a student changes labs, the funding source will also change. RA appointments are generally assigned at 50%, though under some circumstances, students receive 25% appointments, with the salary adjusted accordingly. A 25% appointment equals roughly 10 hours per week (based on a 40-hour work week); a 50% appointment is roughly equal to 20 hours a week. However, these are rough estimates, and students may be expected to put in more or less hours per week. The maximum appointment time allowed for graduate students is 67%, or about 26.5 hours per week. These summer-only appointments given only under special circumstances and with prior approval from the Director.

Some RAs are more demanding than others. Students will need to discuss with the professor what duties will be expected of them and what time commitment is involved. It is generally **up to the professor and student to work out the specifics of the RA**, and to make sure the appointment is in place for each semester. RA's are generally appointed for **11-month appointments**. The appointments cover the two academic semesters plus two months in the summer, and are based on the policies of the home department of the advisor.

Most students do not receive a paycheck in August. Students should make plans for this in advance in order to cover expenses. Some departments offer 33% appointments in the summer – with the summer salary divided over three months instead of two. The checks will be smaller, but the students receive a paycheck in August which they won't if the summer salary is paid out over two months.

II. Teaching Assistantships

All Biophysics and Quantitative Biology students are **required to teach at least one semester [see Sec I.B.]**. As with RAs, some **Teaching Assistant** appointments are more demanding than others. TA duties can run from grading of exams and papers, the supervision of lab experiments, running of discussion sections, to the actual teaching of courses. Generally, **the professor who is in charge of the course, and to whom the TA reports, determines the responsibilities of the appointment and is considered the TA's supervisor**. They are also the main source of information regarding coursework or

questions and provide the feedback to the student (and the Center for Biophysics and Quantitative Biology) regarding their job performance.

B. FELLOWSHIPS AND TRAINING GRANTS

There are a few **fellowships and training grants** available through the University. These awards are *competitive* and are based, primarily, on *scholastic achievement*. **Students must be nominated by the Center** to be considered for most of these awards.

If awarded one of these fellowships or training grants, students may have to meet certain criteria or fulfill certain requirements specific to the award. Notification of these requirements will be given upon receipt of an offer of support.

C. TUITION/FEE WAIVERS

Tuition waivers are automatically granted for graduate students in the College of Liberal Arts and Sciences who hold a University **25-67% TA or RA appointment**. The service fee is also waived, however, students are responsible for health service and miscellaneous University fees (some of which can be refunded, upon request). The student **must be enrolled for at least 12 hours** and must have **continuous employment for 91 days** to qualify for the tuition waiver for an academic semester. Over the summer, enrollment for 4-8 hours is required, with continuous employment for 41 days.

D. ILLINOIS RESIDENCY

The Center for Biophysics and Quantitative Biology strongly encourages all students to **apply for Illinois residency** as soon as possible. Tuition for non-residents is much higher (almost 3 times more!!) than for residents of the State, and advisors' funding can go a lot farther, and help more students, if the majority of Biophysics and Quantitative Biology students are residents. Students should visit the Residency website at www.usp.uillinois.edu/residency.cfm to determine if they qualify.

To apply for residency, students may pick up an application in the Office of the Registrar or go on-line to www.usp.uillinois.edu/residency/petition.cfm and follow the link to the petition form. Questions may be referred to the Registrar's Office at 333-6565 or registration@uillinois.edu.

It is possible that approval for residency may not be granted on the first, or second, attempt. If it is not, please try again as soon as possible.

IV. MISCELLANEOUS INFORMATION

A. PERSONNEL AND TAX FORMS

First-year students will need to complete the appropriate forms to have their University of Illinois employment initiated. Most of these forms will only need to be completed upon initial appointment. Forms like the I-9 or W-2 may need updated from time to time.

I. Employee forms

Students are required to **complete employment forms on-line** through the net-based employment web site -- NESSIE (<https://nessie.uihr.uillinois.edu>). The NESSIE password and a log-on ID will be issued and sent to the student's campus email address. The following *mandatory* forms must be completed on-line before the appointment is entered in the system.

- **Code of Conduct form**
- **Ethics Orientation form**
- **ANCRA Acknowledgement form**
- **I-Card Terms and Conditions form**
- **Insurance Marketplace Notice**
- **Direct Deposit form**
- **W2 Consent form**
- **Employee Information form**
- **Loan Default form**
- **W-4 tax withholding form***
- **Sexual Misconduct and Interpersonal Violence form**
- **I-9 Employment Eligibility Verification form**

*** Domestic students will complete their W-4's on-line. International students will complete their W-4 forms in the Payroll Office. (See 3. International Tax Laws)**

Some forms require only a simple confirmation while others require more in-depth personal information. Only complete the basic information needed. Employees may add additional information via NESSIE at a later date.

When completing the **Employee Information form**, **do not to use the "other" box for degree title or granting institution**, even if the correct choice is not available. It will delay the processing of the forms.

It is very important to remember to **hit the Submit button** when each form has been completed!!

All forms, especially the I-9, must be completed prior to receiving a first paycheck. To avoid delays in payments, all forms **MUST** be completed **prior to August 16.**

II. Fellowships

Fellowships for US citizens and permanent residents are **subject to income taxes, even though taxes are not withheld during the year.** Some items are tax-free, such as any

fees paid (which are deductible from the value of the stipend) or *required* educational supplies like books, materials and supplies for coursework. Unfortunately, computers are considered desirable, not required. Sorry! For more information about this, *Publication 520 - Scholarships and Fellowships*, can be obtained from the Internal Revenue Service (IRS) by calling: 800-829-1040 or 800-829-3676 or via the web at www.irs.gov/Forms-&-Pubs.

International students on temporary visas must have taxes withheld and must **make arrangements with the Payroll Office** (see below). *Publication 519 - Tax Guide for Aliens* has information that may help explain these taxes and can also be obtained as above.

III. International Tax Laws

Most international countries have special tax laws and treaties with the United States. Prior to completing the W-4 form, **international students must make an appointment with the University Payroll Customer Service office** (265-6363 or paying@uillinois.edu).

The International Student and Scholar Services (ISSS) web site has information on resources and lists some frequently asked income tax questions at <http://www.iss.illinois.edu/publications/resources/incometax.html>.

B. PAYCHECKS

Graduate students on RA, TA, or Fellowship appointments receive their pay on the **16th of each month**. If the 16th of a given month falls on a Saturday, Sunday, or holiday, their pay will be issued on the last working day *prior* to the 16th.

Students are **required to receive their earnings via direct deposit into a personal bank account** (which needs to be set up upon arrival in town). Having the earnings deposited directly into a bank account is more convenient and allows for a little more freedom. Students can rest assured that the money will be in their account on the 16th of every month. And, as an added bonus, some banks don't charge their customers for checking and savings accounts if they use direct deposit.

The first check should be directly deposited, though it is wise to verify with the banking institution that the money has been deposited before making transactions against the account. It can take one month, sometimes two, for the request for direct deposit to be processed.

C. EMAIL ACCOUNTS

An **email account** can be obtained **free of charge for all registered students**. The alias for student accounts is listed on the student ID cards. Accounts are maintained through the Technology Services at Illinois Customer Support Services Resource Center at 1211 Digital Computing Lab (DCL), 1304 W Springfield Ave, Champaign. phone: 244-7000. The address should be activated within a week of the request.

D. COMPUTER ACCESS

Some labs may give students who are rotating through access to a computer. Students will want to ask each professor about the **specific lab's policy on student use** of lab computers and related equipment.

Several of the **Technology Services at Illinois sites** used for registration are also available throughout the year for student use. Please visit the Technology Services website (<http://techservices.illinois.edu/>) or contact the Technology Services Customer Support Services Resource Center at the address/phone above. In some cases, it will be necessary to sign up in advance to use equipment (such as scanners), so students will need to plan ahead of time in case there is a waiting list.

E. US AND CAMPUS MAIL

All incoming students will have a **mailbox provided for them inside the Biophysics and Quantitative Biology Office**. Once a student has joined a laboratory, they have the option to receive their mail at their lab, if it is more convenient, or to continue to receive it at the Center Office. Please advise all correspondents of the correct addresses below.

The official **US mail** address
and **Fed EX or UPS** delivery address is:

The **campus** mail address is:

Center for Biophysics & Quantitative Biology
University of Illinois at Urbana-Champaign
318E Roger Adams Lab, MC-712
600 S Mathews Ave
Urbana, IL 61801
USA

Biophysics and Quantitative Biology
318E RAL
MC-712

Also, please **note the format** of the above addresses. It is important to use these formats when mailing items on or off campus.

- Campus addresses must contain the person's name, department, building location, and mail code (MC-###). **Campus mail, which requires no postage**, is to be used for *official University business only*. Greeting cards, catalogues, personal bills and letters, etc. are **not** acceptable. Campus mailboxes are located throughout the campus, and marked accordingly.
- **US mail, which requires postage**, must include a person's name, street address, city, state, and zip code.
- **Mail with an international address, may be sent via US mail, using the correct postage** (rates can be obtained at any US Post Office) and must contain the postal code/city, with *only* the country of destination on the bottom line of the address. For more information on the United States Postal Service, please visit their web site at www.usps.com

F. SEMINAR AND OTHER NOTICES

The Center Program Coordinator will disseminate information vital to students via e-mail. **Please keep the Biophysics and Quantitative Biology Office informed of all changes of home or lab addresses, email addresses, and home and lab phone numbers.**

Seminar notices will be posted on-line or announced via email. A **calendar** of most departmental seminars of interest is listed on the **Biophysics and Quantitative Biology home page**.

G. PRINTING/PHOTOCOPYING

For printing/copying **requested by an advisor**, access should be given for use of a printer/copier in their home department.

All printing **for personal use** should be done at a copy center (like Kinko's or FedEx) or on campus. The Center regrets that it cannot pay for personal copies.

H. STUDENT HELPERS

All first-year students will be assigned a senior student helper. These helpers are advanced Biophysics and Quantitative Biology graduate students who have been in the Program for at least one year. Helpers will be available to assist new students with questions they may have regarding registration, housing, courses, and the University or Biophysics and Quantitative Biology Program in general. Helper email addresses are sent to incoming students prior to their arrival on campus.

I. ILLINOIS BIOPHYSICS SOCIETY (IBS)

The **Illinois Biophysics Society** is an official U of I Registered Student Organization, run by Biophysics and Quantitative Biology graduate students. The group has elected officials, including a President, Vice-President, Secretary, and Treasurer. They have designed t-shirts, organized receptions and picnics, and have developed a Biophysics and Quantitative Biology newsletter. IBS has also sponsored successful research symposiums for over 10 years.

We **encourage new students to become active members of the IBS** and to attend the group's activities. Meeting with other students on a regular basis will help students to learn about other areas of Biophysics and Quantitative Biology perhaps otherwise unknown to them. It may also help with networking opportunities after graduation. Who knows, we may have future Nobel-prize winning scientists in our Program right now!

J. SOCIAL EVENTS

In an attempt to keep the Biophysics and Quantitative Biology Students and Faculty in contact with others in the Center, which is hard to accomplish since everyone is spread out over the campus, we arrange social events and get-togethers throughout the year.

In the past, we have sponsored picnics and pancake brunches and at least once a semester, we will hold Biophysics reception at a local establishment. We also host an all-Biophysics reception during student recruitment in the Spring. **Students are expected to attend ALL Biophysics social events.**

K. MEDICAL SCHOLARS PROGRAM (MSP)

The **Medical Scholars Program**, or MSP, is a joint program between the College of Medicine and the Graduate School. This program allows students to **pursue both Ph.D. and M.D. degrees**. Most students complete all degree requirements, except their thesis work, first. They then pursue medical school courses, returning to obtain their Ph.D. after they finish their core medical courses. This program is restricted to US citizens and permanent residents. For more information, visit: www.med.illinois.edu/MSP. NOTE: The MSP program is not accepting applications at this time.

V. SAFETY PRECAUTIONS

A. PERSONAL SAFETY

Although Urbana-Champaign is a relatively safe environment, sometimes unfortunate incidents occur, which prompted us to include a section on safety precautions. Many of these precautions have been disseminated campus-wide by the University Police and the Chancellor's office to keep U of I students as safe as possible. It is important to **always be alert!**

Unfortunately, we live in a world today where, in order to protect our possessions and ourselves, we must be suspicious and *always* on guard. Predators are everywhere and are looking for an opportunity to strike. This doesn't mean we have to live in constant fear, just **constant awareness of what is happening around us.**

We hope our students never have to use these safety tips, but everyone should familiarize themselves with the information in this section. It may seem unusual to have this section included in a student handbook, however, we feel it is important to make students aware of the possible dangers that do exist in a campus setting, even at a relatively quiet Midwestern university. We hope it will give our students peace of mind to be informed of how to protect themselves in an emergency, whatever the situation. It may even save a life.

I. Reporting criminal activity

If something unfortunate should happen, it is important to **report the incident *immediately* to the appropriate local authorities** (all numbers are in the 217 area code).

Life-threatening Emergency	911	9-911 from campus phones
University Police	333-1216	Non-life threatening situations
Emergency Dean of Students	333-0500	5:00pm-8:30am
Urbana/Champaign Police	333-8911	Non-emergency
Crimestoppers Program	373-TIPS	To anonymously report a crime

Current crime statistics on and around campus must be reported by law and can be found at: police.illinois.edu, under Crime Reporting. Urbana-Champaign and campus area crime reports are also available through the local newspapers or the Daily Illini (the campus paper).

If someone has been victimized, they should try to remain calm; call the police immediately; and get as detailed a description of the assailant as possible (hair color, eye color, clothes, height, weight, race, tattoos, scars, marks, skin complexion). If a vehicle was used, take note of the license plate number and description of the car.

II. Be prepared

It is a good idea to **plan ahead for an emergency situation**. The Division of Public Safety has a website with some helpful suggestions: police.illinois.edu/emergency-preparedness. Check out their Run>Hide>Fight video police.illinois.edu/emergency-preparedness/run-hide-fight/ for tips.

All students should **sign up for Illini Alert** to receive notification via text messages, emails, social media, and web alerts regarding any campus emergency: police.illinois.edu/services/stay-

[informed/illini-alerts](#). Types of alerts include fires, chemical spills, tornado warnings, bomb threats, criminals at large on campus. Luckily, all of these occurrences are rare.

III. Be proactive

Included below are some general tips on **staying aware while walking on campus (or anywhere)**. These precautions were gathered from various sources and are widely disseminated annually.

- **Walk alertly** and *keep your mind on your surroundings*, and on who is in front and behind you.
- Communicate the message that **you are confident** and know where you are going. *Stand tall, walk purposefully, and make eye contact* with people around you.
- **Trust your instincts!** If you feel uncomfortable in *any* situation, leave as quickly as possible.
- Use *well-lit* and *busy sidewalks*. Try to avoid deserted sidewalks, vacant lots, alleys, construction sites, and wooded areas. **Always take the safest route**, even if it's a little longer.
- **Walk facing traffic** to see approaching cars.
- **Don't wear headphones or talk on cell phones** while walking or jogging - they prevent you from hearing what is going on around you.
- If you **feel you are being followed**, **cross the street; head for nearest well-lit, populated area; yell for help; and call the police using 911 (9911 from campus phone)**.
- Take note of the **emergency call boxes** located around campus.
- **Carry a cell phone, whistle, or personal alarm** to alert people you need assistance.
- **Put an ICE (In Case of Emergency) entry in your cell phone**, with the name and phone number of a loved one who can be contacted by emergency services workers in case of an emergency.
- **Walk in pairs or groups** whenever possible.
- **Never, never, never hitchhike** (take a ride in a vehicle of someone you do not know).
- **Drink responsibly!!!!** Many crime victims on the U of I campus are intoxicated and are easy prey for criminals. Drinking can diminish your ability to respond quickly and can impair your judgment when it comes to acting responsibly.
- **Do not establish a set pattern of behavior** - Remember, variety is the spice of life! If you leave at a set time every night, try to vary it somewhat and have two or three well-lit routes to take and vary them often.
- **Use a security escort. Escorts are available** for University employees walking at night (see table on following page).

Office	Number	Type of Escort
<p>Motorist Assistance Program</p> <p>www.parking.illinois.edu/about-us/motorist-assistance</p> <p>Campus Parking general number: 333-3530</p>	244-HELP (-4357)	Runs from 7:00am-5:45pm M-F (no holidays). Will escort students from campus <i>buildings</i> to any <i>campus parking lot</i> . They will also help with car problems/lock outs <i>in campus lots</i> during normal University hours.
<p>Mass Transit District (MTD) SafeRides</p> <p>www.cumtd.com/riding/saferides</p> <p>MTD general information: 384-8188</p>	265-RIDE (-7433)	Runs from 7:00pm-6:00am beginning in Fall (begins at 5:00pm Nov-Mar), excluding breaks. Will give rides across campus and to some close off-campus locations. Max 3 person pickup. May wait 15-30 minutes for pickup.
<p>SafeWalks Escorts</p> <p>police.illinois.edu/services/safewalks-saferides</p>	333-1216	Student Patrol Officer will provide late night escorts on campus 9pm-2:30am Sun-Wed; 9pm-3am Th-Sat during fall and spring semesters only. Need 15 minute notice.

IV. Miscellaneous Safety Tips

- Keep your **doors and windows locked at all times** in your lab, office, home, or dorm room. Also, keep your blinds closed at night.
- When driving, keep your **car doors locked and the windows rolled up**, especially at night. *Always* lock your door when you leave your car. *Never* leave your keys in the ignition or leave your car running if you leave. Park your car in areas that will be well-lit and heavily traveled when you return. Before entering your car, **always check under and around the car and in the back seat** to make sure no one is hiding there. And *never* pick up hitchhikers or stop for strangers. If someone flags you down, get to a secure area and call the police. Let the police check it out.
- If taking a bus, **use popular and well-lit bus stops**; sit near the driver; be aware of who gets off the bus with you. If someone bothers you while on the bus, tell the bus driver. If you feel uncomfortable after exiting the bus, walk to a place near other people.
- When using an elevator, **always look into the elevator before entering**. If a passenger looks suspicious, don't get on. If you are waiting for the elevator and you are uncomfortable about someone waiting with you, walk away. If already on the elevator and someone suspicious enters, get off. Stand near the controls. If you are threatened and/or attacked, hit the alarm and as many buttons as possible so the elevator will stop and you can escape.
- **Let roommates or friends know where you are going and with whom, and when you expect to return**, whenever possible.

- **Never leave personal property unattended**, even for a few minutes. Take your backpacks and laptops with you when you leave the area – or make sure they are locked in a desk or locker.

B. PERSONAL SAFETY TIPS FOR WOMEN

University campuses are known by criminals to be easy places to carry out their illegal activities. They are large, somewhat impersonal, places where criminals can easily slip in and out, virtually unnoticed. But it is not only strangers women need to watch out for...the truth is that many assaults – sexual or otherwise – are perpetrated by *someone the victim knows*, either casually or even quite well!

If someone feels their rights have been violated, they can **file a criminal and/or University complaint** against the offending party. A few years ago, a female Biophysics student was sent threatening emails from a male student who was in a class with her. She was very scared and we filed a complaint with the Dean of Students, who contacted the male in question and told him to cease and desist. The University took the incident very seriously. After their intervention, the Biophysics student was never harassed again.

I. It's On Us

The University also takes sexual misconduct very seriously. In Fall 2014, students help launch a local chapter of the **"It's On Us" campaign** in partnership with the White House/Generation Progress. Over 3000 students on campus have joined over 300,000 students across the US who have taken the pledge to prevent sexual assault/misconduct (www.itsonus.org/pledge) on college campuses. For more information on sexual assault prevention and training, visit **At Illinois We Care** website at wecare.illinois.edu/prevention/students.

Here are some ways to be proactive:

- If you are studying or working in an area, make sure the **doors are properly locked**. This includes dorm room doors!
- **Never let a stranger in** to your room, office, or building, *especially if you are alone* in that area.
- If you are working alone and someone walks in and makes you feel uncomfortable, **trust your instincts** and **leave the area**.
- When possible, **study or work with a friend** or group.
- **Study in populated areas**.
- Do not let a service or delivery person enter your area if you are by yourself. **Ask for proper identification** and if you **feel uncomfortable, don't open the door** or entrance.
- **Locate the emergency phones and fire alarms** in case you need help. Fire alarms are to be used for getting help in fires and *any life-threatening emergencies*.
- **Don't isolate yourself in an open, easily accessible area**. This provides the criminal with the opportunity to commit the crime.
- When possible, **study or work in an area that has several exits**. The more exits you have, the more options of escape you have.
- Remember -- **awareness and risk reduction are 90% avoidance!!** Stay alert and don't take risks! If you believe something is wrong, *it is*. Trust your instincts.

One of the recurring themes is for women to **trust their instincts!** If you *feel uncomfortable about someone*, there is probably a *very good reason* to be and you should leave *immediately!* Don't worry

about whether you will seem silly or if you'll hurt someone's feelings...if someone is making you uneasy, get out. Women's intuition is not a myth, it is reality, and you have to learn to trust in it. If you think you are in danger or feeling threatened, you probably are.

For information regarding women's safety issues, crime statistics, sexual assaults, and counseling information, contact the **Women's Resources Center at 333-3137** or visit their website at oiir.illinois.edu/womens-center.

Information on women's self-defense training courses can be obtained through **Division of Public Safety, at 333-1216**. Info on the Rape Aggression Defense System, or RAD, can be found at www.dps.illinois.edu/universitypolice/rad.html.

II. If an assault has occurred

If someone has experienced sexual misconduct/assault, they should **seek assistance immediately**. If there is still a threat of danger, **call 911**. Where it is strongly encouraged to report the incident to the authorities, it is not mandatory. As mentioned before, **try to remain calm and get as detailed a description of the assailant as possible** (hair/eye color, clothes, height, weight, race, tattoos, scars, marks, skin complexion). If a vehicle was used, get the license plate number and description.

If there are any **medical concerns**, assistance should be sought as soon as possible at any of the local emergency medical facilities.

Medical Facilities

McKinley Health Center	1109 S Lincoln Ave, Urbana	333-2700
Carle Foundation Hospital	611 W Park St, Urbana	383-3311
Presence Covenant Medical Center	1400 W Park St, Urbana	337-2131

Sexual assault is **never the fault of the survivor!** Survivors will experience a wide array of emotions after the incident. That is perfectly normal. It may be very beneficial to talk to someone about the experience, even if there is no intention of formally reporting it. Below are a few confidential resources available. And the Biophysics office is always a resource in a time of need/confusion.

Rape Crisis 24-Hour Hotline	384-4444	Rape Advocacy, Counseling & Education Services (RACES)
Counseling Center	333-3704	
McKinley Health Center	333-2705	

For a complete list of resources, including how to report a sexual assault, go to wecare.illinois.edu.

C. MENTAL HEALTH

Graduate school can be a very stressful time. Even students who feel they are well prepared for the rigors of studying while working in a lab full-time can get overwhelmed. There are services available, both on campus and in the community, for students who may need assistance coping with the stress. There is no longer a stigma attached to asking for help. Everyone gets stressed and it is very beneficial to have someone to talk to who is impartial and who can help put things in perspective. **No matter how bleak the situation, things will**

get better eventually. That tough class will be over at the end of the semester; experiments will get easier with a little practice; graduate school itself will be over in a matter of years.

For those times when things get to be too much, **reach out for help!** Here are a few numbers that might come in handy. The Biophysics office is always here to help, too.

Crisis Line	244-7911	rosecrancechampaignurbana.org	
Local suicide prevention hotline	359-4141		
Counseling Center	333-3704	counselingcenter.illinois.edu	
McKinley Health Center	333-2701	www.mckinley.illinois.edu/medical-services/mental-health	
The Prairie Center	356-7576	www.prairie-center.com	contact@prairie-center.com
Local alcohol/substance abuse			

D. TORNADO SAFETY

Students will need accustomed to living in the Midwest and the unusual weather here. March through October is "tornado season" in Central Illinois, but they can occur any time of the year. **A tornado is a funnel-shaped cloud that touches the ground.** Tornadoes can be up to 1 mile wide and can remain on the ground from seconds to minutes. These storm clouds can destroy everything in their paths. In November 2013, an outbreak of tornadoes rumbled across the width of the state and right through the area, causing millions of dollars worth of damage to property, and almost entirely wiping out the small town of Gifford, north of Champaign. It goes to show tornadoes can occur anytime. There is no need to panic every time there is a thunderstorm, but a *very real danger* exists when these storms come through. Listen to radio/TV/social media when bad weather is in the area for information on severity of storms and potential for tornadoes.

The Central United States' "Tornado Alley" is the area of maximum tornado frequency, with **Illinois ranking 4th** in the Nation in number of reported tornadoes in 2015, which is consistent with the 2012 Weather Channel top 10 list of tornadoes from 1991-2010! We have had plenty of practice dealing with the tornado threat. Here's what you need to know to stay safe (this information has been collected from various expert sources).

- When a **Tornado WATCH** is issued by the National Weather Service, it means **conditions are optimal for a storm outbreak.** At this level of alert, you should watch for changing weather conditions and you **should stay tuned to local television and radio stations, social media links to local weather stations, or Illini-Alert messages** for up-to-the-minute weather reports. Emergency Civil Defense workers are in the fields, watching the skies for funnel clouds aloft and weather forecasters are in front of their radar screens looking for tell-tail tornado "hook echoes". If a funnel is spotted aloft, on the ground, or indicated on radar, a warning goes into effect immediately.
- As soon as a **Tornado WARNING** has been issued in your area, you should **seek safe shelter immediately.** When tornado-spawning thunderstorms roll though, electric power can be disrupted. You should have a flashlight with you and a battery-powered radio or cell phone to listen to for information on the path of the tornado. ***Emergency Sirens** will go off around town -- a long 3-minute blast with a siren -- that is repeated every 30 minutes while the warning is in effect. In some cases, there is not enough time to issue a siren, which is why you **must be prepared on your own to seek shelter when**

conditions look threatening. It only takes a few seconds for a tornado to touch down, wreak havoc, and return to the skies.

[Note: ***Emergency sirens are tested on the 1st Tuesday of every month at 10:00 a.m.** Listen at that time so you know what to expect when an actual tornado is spotted. When you hear the siren at any other time, you should respond as if it is the real thing, until you have had time to determine if it is a false alarm or a real threat.]

- **Ideal shelter** would be a **basement or crawl space** of a house or building, in the southwest corner (or whatever direction the tornado is coming from), under a sturdy table, away from glass and exterior walls or doors, covered with a blanket. Unfortunately, this is not always possible, so here are your best alternate choices:

Inside options:

Go to the **lowest level possible** in a building, **using the stairs** (do *not* use the elevator), to an **interior hallway or other enclosed area**, such as a closet, staying **away from windows, exterior walls and doors**.

Do not go to a large room, such as an auditorium or gymnasium, as the roof may collapse or be ripped off.

In a wooden structure, such as a house, the basement is the safest place. **If a basement is not available, get under a heavy piece of furniture in the center of the house. Interior hallways or in the bathtub** are the next safest places.

Remember to stay away from glass and exterior walls.

Outside options:

Outside is the worst place to be, as the debris field thrown off by a tornado is as dangerous, if not more so, as the tornado itself! If you hear a siren and you are outside, the **best thing is to take cover immediately *inside*** a steel-framed or concrete building or building marked with the Tornado Shelter sign (see pictures below).



If you are not near a building, **take cover in a ditch, ravine, or lowest ground depression** you can find...something that is not always easy in basically flat Central Illinois.

If you are **in a car and are in the path of a tornado, get out!** Get in a building or low-lying area. **Don't try to out drive the tornado** if it is coming toward you, as they are unpredictable and fast. If you can drive at a 90° angle away from the path, you may be able to avoid it. Be safe!

E. FIRE SAFETY

Fires are something we ***all* need to be prepared for**, especially for those living with roommates, in multi-apartment complexes, or working in labs with flammable or combustible materials. Fires can start in an instant

and spread quickly. Sometimes fires can be contained right away with minimal damage. Other times, unfortunately, people are in shock and slow to react and the fire can cause major damage or worse.

Many years ago, a Biophysics student was living with roommates who started a fire in their kitchen while cooking dinner. She said the flames were out of control in seconds! Luckily, through quick actions, the fire was extinguished quickly and no one was hurt.

Unfortunately, in 2011, a neighbor of the Biophysics Administrative Coordinator was not so lucky. The neighbor awoke to find flames creeping up the side of her couch. After trying, unsuccessfully, to douse the fire herself, she went across the street to call 911. Within minutes her entire living room was engulfed in flames, while the neighbors watched helplessly outside. The scariest thing is she did not hear her smoke alarm until after she noticed the smoke/fire! Even though the fire department was there in less than 5 minutes from the call, the house and all her belongings were completely destroyed by the fire, the smoke, and the water used to put out the fire. The cause of the fire was never determined, though a short in an electrical outlet/surge protector was suspected.

The examples above show that everyone **must have precautions in place to protect themselves and their property**. Below are some preparation tips gathered from various sources.

- **Install one or more dual sensor smoke (both ionization AND photoelectric smoke) detectors** (one in the kitchen, others near bedroom doors, in your lab...) and check the batteries once a month.
- **Locate several exit routes and study them carefully.** You may become disoriented in a fire and your chances are better of escaping if you know the fastest, safest way out. Remember, do ***not* use elevators during a fire** -- make sure you are familiar with the location of the stairwells.
- Know the **location of fire extinguishers** and **know how to use them**. Read instructions before an emergency.
- **Post emergency phone numbers** on or near your telephone. To report a fire or a life-threatening emergency **call 911** (9-911 from campus phones).
- **Report any unsafe conditions/safety hazards** in campus buildings to the Division of Research Safety at 333-2755 (www.drs.illinois.edu). These conditions include: obstructed aisles, corridors and egress routes; illegal storage in corridors, fan or equipment rooms, or under stairs; improper handling and/or storage of flammable materials and chemicals; wedging open of fire doors; improper smoking habits or smoking in non-permitted areas; overloading of extension cords, ungrounded plugs and un-fused multiple outlet adapters for appliances.

If, after all your efforts to prevent it, a fire does occur here are some rules to follow to keep everyone as safe as possible:

- **Remove everyone** in the immediate area of the fire.
- **Activate** the nearest **fire alarm** box.

- **Call 911** to report the fire (or 9-911 from campus phones). Tell the 911 Dispatcher your exact location and situation. Tell them as calmly and as clearly as possible. Time is of the essence.
- **Confine the fire** by closing doors and windows.
- **Attempt to extinguish the fire *only* if it is safe to do so.** If it is out of control, you should leave it to the experts.
- **If there is smoke or heat, stay low to the ground.** Smoke and heat rise, so the air is cooler and clearer the lower you are. Most fire injuries are caused by smoke inhalation, so **avoid breathing the smoke**. Also, many household items can emit poisonous gases when heated and you want to avoid breathing the noxious vapors.
- If you must **evacuate the building, use the stairwells**, always moving down and out until it is safe to exit. **Do not use elevators.** Elevators can stop during power outages and you could be trapped; or the elevator could stop on the floor with the fire, the doors could open, and the fire could enter the elevator or elevator shaft and spread to other floors.
- **Before opening any door, feel it near the top.** If the door or door handle are *hot*, do *not* open the door. Put a *towel or sheet, preferably wet, under the door* so the smoke doesn't come into the room. *Close as many doors as possible between you and the fire. Hang a light-colored cloth out the window to attract the attention of the firefighters below. Do not jump from an upper story - you could be hurt or killed in the fall. Help is on the way, try to be patient and remain calm. If the door is not hot, open the door cautiously - stand behind the door and be prepared to close it quickly if there is excessive smoke. Do a final check before leaving - if it is safe to do so and do not go back for your things if ordered to leave. Assemble outside and do not go back into the building once outside, until notified by the proper authorities that it is OK to re-enter the building. If you are unable to vacate the building due to physical limitations, stay where you are inside and call 911. If there is not a phone available, go to the stairwell landing, if clear and safe, and wait for help.*

F. IDENTITY THEFT

Identity theft is on the rise around the world. Predators do not even need any physical identification in order to steal your identity. The important thing is to **safeguard your information**. Do not give out social security numbers or credit information to just anyone. Shred credit card receipts and old banking statements – anything with identifying information that could be used to open a fraudulent account.

If one's **wallet is stolen**, they need to make sure they **contact the credit card companies and banks immediately** to cancel their cards and put a fraud hold on their accounts. Several years ago, two Biophysics students had their wallets stolen from *locked* lockers at the Activities and Recreation Center on campus. One had his credit card stolen and used within hours of the burglary! He immediately put a fraud hold on his account and was not responsible for those fraudulent charges.

Everyone is entitled to **one free credit check a year** with three of the credit consumer reporting companies. Go to one convenient website: www.annualcreditreport.com and obtain one free report from *each* of the following companies per year:

- **Equifax:** 1-800-685-1111; www.equifax.com; Equifax Credit Information Services, P.O. Box 740241, Atlanta, GA 30374
- **Experian:** 1-888-EXPERIAN (397-3742); www.experian.com
- **TransUnion:** 1-877-322-8228; www.transunion.com; Annual Credit Report Request Service, P.O. Box 105281, Atlanta, GA 30348-5281

For more information, visit the Federal Trade Commission website at: www.ftc.gov/bcp/edu/microsites/idtheft

G. CONCEALED CARRY

Illinois became a concealed carry state in July 2013. This means individuals are allowed to carry concealed handguns in public, as long as they have the proper training and a license to carry. However, concealed weapons are **not allowed** on the University of Illinois campus.

VI. APPENDICES

1. BIOPHYSICS REQUIREMENTS TABLE
2. FALL SEMESTER CALENDAR
3. BIOPHYSICS COURSE DESCRIPTIONS

Appendix 1**Biophysics Requirements for Fall 2020** (condensed – see main handbook for complete requirements)

(revised August, 2020)

Requirement	Time Allotted	Comments
BIOP 401(Intro to Biophysics)	1 st semester	3 hours.
MCB 580 (Res Ethics&Responsibilities)	2 nd semester	Minimum of one semester course on ethics in science. MCB 580 meets requirement; 1 hour
32 hours of coursework	end of 1st year	Met by registering full-time fall, spring, and summer. Must complete before allowed to register for BIOP 599 after passage of BQE.
500-level Biophysics coursework	end of 3rd year	2 courses from pre-approved list. The Director may approve other 500-level courses upon request if a syllabus is provided and main content of course is biophysical in nature.
Quantitative Biology OR Lab Course	end of 3rd year	If research is: <ul style="list-style-type: none"> quantitative in nature, lab course required (BIOC 455, PHYS 498BP, PHYS 598BP, PHYS 598OM, CHEM 483, PATH 521, or equivalent); experimental in nature, quantitative course required (BIOP 576, BIOP 586C, BIOE 598AGB, BIOE 505, ANSC 449, MCB 432, CHBE 571, STAT 530 or equivalent).
400- & 500-level science coursework	prior to Prelim	2-3 courses required. Hours combined with all coursework listed here (excluding BIOP 590/599) to total 32 hours of coursework required by Graduate College for graduation.
BIOP 581, 582, 583 (Lab Rotations)	end of 1st semester	2 hours (3 rotations required)
BIOP 586 (Tutorials)	end of 3rd year	1 hour (2 tutorials required)
BIOP 590 (Individual Research)	spring semester 1st year until passage of BQE	at least 1 semester required before taking BIOP 599
BIOP 595 A (Seminar)	1st and 2nd year	1 hour (4 hours required)
BIOP 595 B (Faculty Research Seminars)	fall semester 1st year	1 hour
BIOP 599 (Thesis Research)	after passage of BQE through graduation	Graded DFR until graduation, then graded S or U. At least 32 hours of 599 required for graduation.
Qualifying Exam (BQE)	before end of 2nd year – offered spring only	Passage based on: written exam, oral exam, total academic record, student's objectives and motivation, research potential, acceptance into research group (additionally, international students must pass EPI).
Preliminary Exam	end of 3rd year (If more than 5 years elapse before the final exam, a 2nd prelim must be passed before allowed to defend.)	20-30 minute oral exam to examine the validity of the research & test the student's fitness to carry out independent research. Does not require publishable data! 20-30 page proposal submitted to committee; 1-page project summary report submitted to Biophysics office.
Final Exam	not sooner than 6 months after Prelim, but before end of 5th year	Public presentation and defense of thesis work. 50-60 minute presentation, then Q&A session.
Teaching	2nd or 3rd year	Minimum of one semester. Preferably 50%.
English Proficiency Interview (EPI) International students only	1st – 2nd year (3 attempts allowed)	International students with less than 24 on iBT are required to pass EPI before serving as TA. Also required for passage of BQE.
Annual Review by faculty or Director	annually	Students receive Progress Report from BIOP office annually. If requested, students must provide 2-page synopsis of work completed/progress toward degree.

NOTES: Tutorials may NOT be taken on the same topic as a lab rotation and cannot be taken with advisor!! Tutorials = Meet with professor to determine subject to research. Write a 6-10 page paper on readings agreed upon upon by student and the professor. Lab Rotations = Meet with professor weekly to determine research work and progress.

Day	Date	Event
Thursday	August 13, 2020	Biophysics Orientation, 9:00-11:00am Entrance Advising Meetings, 11:30am-3:00 pm
Monday-Tuesday	August 17-18, 2020	Faculty Presentations (Monday: 8:30-11:45am; Tuesday: 8:55-10:05am)
Wednesday	August 19, 2020	Computational Boot Camp, see Computational Boot Camp schedule
Thursday	August 20, 2020	Student Helper Lunch, 12-1pm, Hessel Park
Thursday	August 20, 2020	1 st Lab Rotation requests to Biophysics Office by Noon
Friday-Friday	Aug 21-Sept 25, 2020	Student insurance enrollment period
Monday	August 24, 2020	First day of Instruction for Fa20 First rotation begins (through Sept 25) Last day to register without late fee - 5pm
Tuesday-Monday	Aug 25-Sept 7, 2019	Late registration for Fa20 begins at 8am 8/25 thru 5pm 9/7 (you will be assessed at least a \$15 late fee). After 9/7, you lose the opportunity to register on-line.
Friday	August 28, 2020	Deadline to suppress directory information
Monday	September 7, 2020	<i>Labor Day Holiday</i>
Thursday	September 10, 2020	Grad Assistant Employee Orientation, Illini Union, Room 314 B, 3-4:30pm (also offered on Tuesday, September 15 from 9-10:30am, Illini Union, Illini Room A)
Friday	August 28, 2020	Last day to add first half-semester course
Friday	September 4, 2020	Last day to add semester course without approval
Wednesday	September 16, 2020	<i>Receive first paycheck! ☺</i>
Monday	September 28, 2020	Tuition fee payment due (in full if not enrolled in payment plan). Register by 8/24, or late 8/25-9/7, fees are due by 12:00pm. Register on or after 9/7, fees due by 4:00pm day of registration.
Monday	September 28, 2020	Second rotation begins (through Oct 30)
Friday	October 16, 2020	Last day to drop semester course on-line
Monday	October 19, 2020	Second half-session courses begin
Monday	November 2, 2020	Advance enrollment for Sp21 begins
Monday	November 2, 2020	Third rotation begins (through Dec 11)
Friday	October 23, 2020	Last day to add second half-semester course
Friday	November 13, 2020	Last day to drop a semester course without "W" Last day to withdraw without "W" grade Last day to opt for credit/no credit for course Last day to take final exam for December doctoral degree
Sat-Sun	Nov 21-Nov 29, 2020	<i>Fall Break</i>
Monday	December 7, 2020	Begin to give decisions on thesis advisor to Biophysics Office
Wednesday	December 9, 2020	Last day of instruction
Thursday	December 10, 2020	Reading Day Last day to drop second half-semester course/semester course
Friday-Friday	Dec 11-18, 2020	Final Examination period
Monday	December 21, 2020	Winter Holiday Break begins for <i>undergraduates</i> . Graduate students only entitled to employee holidays! Check with new advisor before scheduling vacations.

Courses Offered by the Biophysics and Quantitative Biology Program

401. Introduction to Biophysics

Same as PHYS 475. Review of membrane and cell biophysics designed to introduce the theoretical and mathematical bases of bioelectricity, photobiology and biomolecular motors. *Prerequisite: One year each of college-level mathematics and physics; one year each of college level biology and chemistry recommended.* 3 hours.

419. Brain, Behavior & Information Processing

Same as MCB 419, BIOE 419, and NEUR 419. Exploration of the neural basis of animal behavior. Emphasis on the information processing problems that animals face in complex natural environments and how nervous systems have evolved to solve these problems. Introduction to the use of computer modeling and simulation techniques for exploring principles of nervous system design and function. Current literature in computational neurobiology and neuroethology will be incorporated in readings and class discussion. *Prerequisite: CS 101; and PHYS 102 or PHYS 212; and MCB 252; or equivalent or consent of instructor.* 3 hours.

432. Photosynthesis

Same as CPSC 489, and IB 421. Comprehensive description of photosynthesis. Topics include: the photosynthetic membranes, light absorption, electron and proton transfer, photophosphorylation, water oxidation, RUBP carboxylase/oxygenase, photorespiration, whole plant photosynthesis, gas exchange and atmospheric interactions, and impacts of global environmental change. *Prerequisite: IB 420, MCB 354, MCB 450, BIOP 401, or equivalent; or consent of instructor.* 3 hours.

550. Biomolecular Physics

Same as MCB 550, and PHYS 550. Physical concepts governing the structure and function of biological macromolecules; general properties, spatial structure, energy levels, dynamics and functions, and relation to other complex physical systems such as glasses; recent research in biomolecular physics; physical techniques and concepts from theoretical physics emphasized. Designed for students without appreciable background in biology and chemistry. *Prerequisite: CHEM 104 or equivalent; PHYS 485 or PHYS 487 or equivalent; or consent of instructor.* 4 hours.

576. Computational Chemical Biology

Same as CHEM 576. Hands-on introduction to the simulation of biological molecules and bioinformatics. Topics included the principles of molecular modeling, molecular dynamics and monte carlo simulations, structure prediction in the context of structural and functional genomics, and the assembly of integrated biological systems. Course counts towards the CSE option. *Prerequisite: One semester of undergraduate biology and organic chemistry and statistical thermodynamics or consent of instructor. Recommended: proficiency in Matlab and CS 101 or equivalent.* 3 or 4 hours.

581. Lab Rotation #1

Laboratory research methods; familiarization of first-year graduate students with experimental methods used in research in Biophysics & Computational Biology. Required of all first-year students majoring in Biophysics & Computational Biology. *Prerequisite: First-year graduate status and consent of department; concurrent registration in BIOP 582 and BIOP 583.* 2 hours.

582. Lab Rotation #2

Laboratory research methods; familiarization of first-year graduate students with experimental methods used in research in Biophysics & Computational Biology. Required of all first-year students majoring in Biophysics & Computational Biology. *Prerequisite: First-year graduate status and consent of department; concurrent registration in BIOP 581 and BIOP 583.* 2 hours.

583. Lab Rotation #3

Laboratory research methods; familiarization of first-year graduate students with experimental methods used in research in Biophysics & Computational Biology. Required of all first-year students majoring in Biophysics & Computational Biology. *Prerequisite: First-year graduate status and consent of department; concurrent registration in BIOP 581 and BIOP 582.* 2 hours.

586. Special Topics in Biophysics (Tutorials)

Advanced course/tutorials on topics of interest in biophysics, such as electrophysiology, radiation biology, bioenergetics, protein structure, or the physics of muscular contraction. *Prerequisite: Consent of instructor.*
1 to 4 hours.

586C. Hands-On Course in Computational Biology

The course will explore physical models and computational approaches used for the simulation of biological systems and the investigation of their function at an atomic level. The course will be based on case studies including the properties of membranes, mechanisms of molecular motors, trafficking in the living cell through water and ion channels, signaling pathways, visual receptors, and photosynthesis. Relevant physical concepts, mathematical techniques, and computational methods will be introduced, including force fields and algorithms used in molecular modeling, molecular dynamics simulations on parallel computers and steered molecular dynamics simulations. The course is designed for graduate students biophysics who seek to extend their research skills to include computational and theoretical expertise. Theory sessions in the morning will be followed by hands-on computer labs in the afternoon where students will be able to set up and run simulations. *Prerequisite: Consent of instructor.* 3 hours.

590. Individual Topics

For graduate students wishing to study individual problems or topics not assigned in other courses. *Prerequisite: Consent of department.* 2-10 hours.

The current topics covered in BIOP 590 are listed below, with the names of faculty members you should contact if you are interested. These topics can also be used for BIOP 586 (tutorial) topics and BIOP 599 (thesis research).

1. **Bioelectricity**—Grosman, Y Lu, and Sligar.
2. **Bioenergetics**—Y Lu, Pogorelov and Sligar.
3. **Cellular Biophysics**—Belmont, Chemla, Dar, Gruebele, Hergenrother, Jin, Kong, Kuhlman, Leckband, Y Lu, Oldfield, Schroeder, Z Schulten, and K Zhang.
4. **Dynamics of Macromolecules**—Aksimentiev, Belmont, Chemla, Grosman, Gruebele, Huang, Leckband, Y Lu, Martinis, Nair, Oldfield, Pogorelov, Rienstra, Z Schulten, Schroeder, Selvin, Shukla, Silverman, Sligar, Tajkhorshid, and Y Zhang.
5. **Fluorescence Spectroscopy**—Dar, Gruebele, Leckband, Y Lu, Schroeder, Selvin, and Zimmerman.
6. **Kinetics**—Dar, Das, Gerlt, Grosman, Gruebele, Leckband, Y Lu, Martinis, Oldfield, Pogorelov, Shukla, Silverman, Sligar, and Y Zhang.
7. **Computational Biophysics**—Aksimentiev, Dar, Hergenrother, Huang, Leckband, Y Lu, Maslov, Nair, Oldfield, Olsen, Pogorelov, Rienstra, Z Schulten, Shukla, Sinha, Tajkhorshid, and Y Zhang.
8. **Membrane Biophysics**—Aksimentiev, Das, Fratti, Grosman, Kraft, Leckband, Oldfield, Pogorelov, Rienstra, Selvin, Shukla, Sligar, and Tajkhorshid.
9. **Molecular Biophysics**—Aksimentiev, Belmont, Chemla, Das, Gerlt, Grosman, Gruebele, Huang, Jin, Leckband, Y Lu, Martinis, Nair, Oldfield, Olsen, Pogorelov, Rienstra, Schroeder, Z Schulten, Selvin, Shukla, Silverman, Sligar, Tajkhorshid, Y Zhang, and Zhao.
10. **Photosynthesis**—Pogorelov and Shukla.
11. **Protein-Lipid Interactions**—Das, Fratti, Kong, Oldfield, Pogorelov, Rienstra, Sligar, and Tajkhorshid.
12. **Macromolecular Structure**—Aksimentiev, Belmont, Das, Gerlt, Grosman, Huang, Jin, Kong, Leckband, Y Lu, Martinis, Nair, Oldfield, Olsen, Pogorelov, Procko, Rienstra, Schroeder, Selvin, Silverman, Sligar, and Tajkhorshid.
13. **Cerebral Energy Metabolism**—Hergenrother.
14. **Magnetic Resonance**—Jin, Oldfield, and Rienstra.

15. **Complex Systems**—Anastasio, Dar, Gruebele, Kuehn, T Lu, Maslov, Pogorelov, Rienstra, Z Schulten, and Y Zhang.
16. **Computational Neurobiology**—Anastasio, Hergenrother, Nair, and Nelson.
17. **Statistical Mechanics of Genomes**—Kuehn, Maslov, Olsen, Z Schulten, and Sinha.
18. **Systems Biology**—Anastasio, Dar, Gruebele, Kuehn, Kuhlman, T Lu, Y Lu, Maslov, Pogorelov, Z Schulten, Sinha, Y Zhang, and Zhao.
19. **Matrix Biophysics**—Kong.
20. **Stochastic Gene Expression/Gene Regulation**—Belmont, Dar, Kuhlman, T Lu, Z Schulten, and Sinha.
21. **Nanobiophysics**—Aksimentiev, Y Lu, Pogorelov, Schroeder, and Sligar, and Y Zhang.
22. **Transmembrane Transport**—Aksimentiev, Grosman, Pogorelov, Procko, Tajkhorshid.
23. **Bio-Imaging Development**—Gruebele, Y Lu, Rienstra, Schroeder, Selvin, and Sligar.
24. ***In vivo* Transport and Diffusion**—Kong and Z Schulten.
25. **Bio-Inspired Materials**—Kong, Y Lu, Pogorelov, Schroeder, Y Zhang, and Zimmerman.
26. **Computational Genomics**—Maslov and Sinha.
27. **Stem Cells**—Kong and Z Schulten.
28. **Ion Channels**—Grosman, Selvin, Shukla, and Sligar.
29. **Single-Molecule Biophysics**—Chemla, Grosman, Kuhlman, Leckband, Schroeder, Z Schulten, Selvin, and Sligar.
30. **Synthetic Biology**—T Lu, Y Lu, Pogorelov, Silverman, K Zhang, and Zhao.
31. **Protein-DNA and/or Protein-RNA Interactions**—Chemla, Huang, Kuhlman, Y Lu, Pogorelov, Schroeder, Z Schulten, Silverman, Sinha, and Zimmerman.
32. **Live Cell Imaging**—Belmont, Dar, Gruebele, Kuhlman, Y Lu, Schroeder, and K Zhang.
33. **Drug Discovery**—Dar, Das, Hergenrother, Oldfield, Shukla, Tajkhorshid, Zhao, and Zimmerman.
34. **Experimental Evolution**—Kuehn, Y Lu, Procko, Silverman, and Zhao.
35. **Microbial Ecosystems**—Kuehn, T Lu, and Maslov.
36. **Virus Biophysics**—Evilevitch.

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