

2024-2025
BIOLOGICAL ENGINEERING
GRADUATE HANDBOOK

UC **SANTA BARBARA**
Department of Bioengineering



<https://bioengineering.ucsb.edu/academics/graduate>

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1 Getting Started

1.1 The UCSB Campus

The University of California, Santa Barbara is a major research institution offering undergraduate and graduate education in the arts, humanities, science and technology, and the social sciences. Large enough to have excellent facilities for study, research, and other creative activities, the campus is also small enough to foster close relationships among faculty and students. The total student population is approximately 26,000, with 23,000 undergraduates and 3,000 graduate students. The UCSB faculty, which numbers 1,112, includes six Nobel Prize winners as well as many recipients of the National Medal of Science, members of the National Academies of Science and Engineering, as well as many Guggenheim fellows and Fulbright scholars. The 815-acre grounds include the main campus, the Santa Ynez and Storke apartments, the West Campus, and the North Campus. The student community of Isla Vista is surrounded by the UCSB campus and the Pacific Ocean.

1.2 The College of Engineering

The College of Engineering, which is the second largest of the five colleges and schools at UCSB, has become in recent years one of the most dynamic Engineering colleges in the nation. It consists of seven world-class, degree-granting departments and one interdepartmental program :

- Bioengineering (graduate degrees only)
- Chemical Engineering
- Computer Science
- Electrical and Computer Engineering
- Materials (graduate degrees only)
- Mechanical Engineering
- Media Arts Technology Program (graduate degrees only)
- Technology Management (graduate degrees and certificate program)

In addition to its academic departments, the college has nearly 20 organized research centers spanning a variety of multidisciplinary activities.

1.3 Biological Engineering Ph.D. Degree

Biological Engineering combines engineering *from* biology and engineering *for* biology– to integrate discoveries in the life sciences with the fundamental principles of engineering in furtherance of both. Biological Engineering sits squarely at the interface of Engineering and the Life Sciences. Thus, the Ph.D. program leverages the strong relationships that exist between these communities at UCSB, a unique strength of our campus.

1.4 Orientation

Please note that the Staff Graduate Advisor will send out an email to all newly admitted students during the summer with information regarding all new student orientations, arrival dates, registration information, recommended courses list, temporary advisors list, and other important beginning of the year details. All newly enrolled students are expected to attend Orientation.

- **Advising:** Until a student is matched with an advisor/PI, the Faculty Graduate Advisor will advise the student or assign a faculty mentor from the department.

- **Fees:** If you have received a letter of full financial support, the amount of support offered for registration fees, health insurance and tuition (for non-residents) will be paid by Bioengineering and/or the lab you ultimately join. You are responsible for all other fees incurred.
- It is essential that you review your Billing-Accounts Receivable or BARC statement each month for other charges incurred that you will be responsible for at <http://www.barc.ucsb.edu>. There is a fee deadline for all “now due” charges on your statement at the beginning of each quarter (the deadline date is posted on your online GOLD account). If you have any questions regarding your statement, please contact the Billing Office prior to this deadline. *NOTE: Late fees will be charged to the student account if there is a balance after the deadline.*
- **Registration:** All students must be registered each quarter to maintain student status. Registering for classes is done on-line on GOLD (<https://my.sa.ucsb.edu/gold/>) When you log into your GOLD account, check the [registration pass times](#), as you will be registering for next quarter’s classes during the current quarter.
- **Laboratory Safety Course:** All incoming graduate students are required to attend the Laboratory Safety Course, sponsored by the Environmental Health and Safety Department, which is held prior to the beginning of Fall classes. This course is mandatory for all personnel prior to working in any program laboratory. In addition, students are required to complete an online training, Fundamentals of Laboratory Safety.
- **Computer Accounts:** Each student is required to have an engineering email account and check their email on a regular basis. Please visit the following link to sign up for a LifeScience Computing Group (LSCG) account: <https://www.lscg.ucsb.edu/support/email>. We recommend that you forward your UMAIL account to your LSCG account.
- **Mailboxes:** Each lab has a mailbox for work related messages and mail; these are located in BioE 2006. Be sure to put the name of your lab on any official packages or correspondence. This should be checked weekly. The outgoing mailboxes in this room are for official on-campus mail only; the campus mail service will not pick up or send personal mail.
- **Access Card:** All students need to sign-up for an Access Card, which serves as a student ID, bus pass, building access, and other services. The department will cover the initial cost for the card (but not for replacements) and will notify students via email with the proper paperwork before Orientation.

More information can be found here: <https://www.accessid.ucsb.edu/>

2 Registration

2.1 Registration Information

All relevant information, including a listing of all deadlines, can be found at the [Office of the Registrar's website](#).

- Graduate students use [GOLD](#) to register for courses following the schedule of published [Registration Pass Times](#).
- Fees must be paid by the first day of instruction.
- Students may add and drop courses without a fee until the last day of instruction via GOLD.
- Graduate students have until the last day of instruction to change the grading option via GOLD. Please note that some courses are only offered on a letter grade basis or S/U basis and can't be changed.
- After the last day of instruction, students must use the [Retroactive Schedule Adjustment Petition-Graduate Students](#) to request changes to their schedule.

2.2 Registration and Full Time Status

To achieve official registration status during the academic year (Fall, Winter, Spring Quarters), students must be registered, with fees paid, in a minimum of 8 units (although **12 units per academic quarter is expected**). These units may include academic credit for directed research, mentored training, and the achievement of academic goals. There is no upper limit on the number of units a graduate student may take in their graduate career.

For Graduate Division's registration expectations and exceptions, see: <https://www.graddiv.ucsb.edu/registration-expectations>

2.3 Graduate Status/GPA Requirement

Maintaining graduate status involves paying fees, registering for **12 units each quarter**, and maintaining an overall GPA of **3.00 or better (3.25 or better in Core and focus area courses)**. Failure to maintain academic standards results in probation or dismissal; failure to pay fees and register (unless on approved leave of absence) results in lapse of status as a graduate student. Only work taken when a student is in graduate status may be counted toward a graduate degree.

Students who fail to pay fees and register for classes by the third week of classes each quarter lapse status as graduate students and must and must petition for Late Registration to re-enroll for the quarter they were lapsed from. If a student is lapsed for more than a full quarter, then they must petition for Reinstatement. More information here, <https://www.graddiv.ucsb.edu/registration-expectations#registration-forms-petitions>

2.4 Probation

For more information on Academic Progress and Probation, see: <https://www.graddiv.ucsb.edu/policy-procedure/academic-performance-and-progress>

2.5 Leave of Absence

Graduate students are required to maintain continuous registration until all degree requirements are completed, although a leave of absence may be considered for personal reasons or for thesis/dissertation filing. A Leave of Absence may be granted when students face personal issues that prevent them from

making academic progress. The Faculty Graduate Advisor's signature is an acknowledgement, the Dean of the Graduate Division has the authority to grant a leave of absence.

For more information on Leave of Absences for domestic students, see [the Grad Div Leave of Absence page](#) for instructions and the petition form. See the Office of International Students and Scholars (OISS) [website](#) for Leave of Absence petitions for international students.

3 Employment, Financial Aid, and Fellowships

3.1 California Residency

All eligible students must establish residency before the beginning of their second year as a graduate student. All non-resident students should begin the process of gaining residency when they arrive in California. Information and applications are available online from the Registrar. The department cannot advise on any decisions related to residency as it is determined by UC Regents policy. (See [Residency for Tuition Purposes](#).)

All inquiries regarding residency requirements, determinations, and exemptions must be directed to UCSB's Residence Deputy. Contact the Office of the Registrar (Residency@sa.ucsb.edu) for counseling on residency questions. The final authority on residency matters rests with the Registrar. Students who leave the state, either on leave of absence or with lapsed status, will have to file a residency statement when they return or reapply.

3.2 Reduced Non-Resident Tuition for International Students

The IDRf pays non-resident supplemental tuition (NRST) in full, commencing in the international student's fourth quarter of enrollment – typically the start of their second year – and continues until the student has advanced to candidacy, provided that the student stays within their program's official time-to-advancement standards approved by the Graduate Council and remains in good academic standing. Once advanced to candidacy, international students receive a waiver of non-resident supplemental tuition (NRST) for up to nine registered quarters while completing their degree.

Note that the IDRf does not cover NRST charged during the first year of doctoral study; however, many doctoral students receive other fellowships from either the Graduate Division or their academic departments that pays this cost. (See *Reduced Non-Resident Tuition for Doctoral Candidates* [website](#)).

3.3 Student Employment

Academic employment is the single largest source of graduate student support at UCSB. Graduate Student Researchers (GSR), Teaching Assistants (TA), and Readers/Graders must be currently enrolled with a minimum 8 units and must be in good academic standing (i.e., 3.0 GPA or better and less than 12 units of incomplete grades) to be employed.

For additional information on student employment, see <https://www.graddiv.ucsb.edu/academic-appointments> and the [Academic Personnel's website](#).

3.4 Financial Aid Information

Graduate students who are U.S. citizens or eligible non-citizens apply for federal financial aid by submitting the Free Application for Federal Student Aid ([FAFSA](#)) online. Direct Loans, Grad PLUS Loans, and work-study are available through this process. While students may submit this application throughout the year, graduate students wishing to be considered for work-study must submit their FAFSA each year by March 2 for the upcoming academic year. All domestic graduate students expecting campus support must file the FAFSA on time annually.

The combination of loans, work-study, fellowships, fee remissions, and health insurance awards cannot exceed the [budget](#) used for financial aid eligibility determination. Your aid package may change if you receive fellowships or awards during the year.

For more information about loans, work-study, and other financial aid, refer to the [Office of Financial Aid and Scholarships Graduate Student page](#) and the [Money Matters page](#).

3.5 Graduate Student Researchers (GSRs)

A GSR is a graduate student who is involved in the research project of faculty members. GSRs are selected for high achievement and promise as creative scholars; they may collaborate in the publication of research results as determined by supervising faculty members. GSRs duties will be communicated in writing to appointed students ahead of their employment. A graduate student must be registered in the previous Spring quarter to be eligible for a summer GSR appointment. See the [Academic Personnel's website](#) for additional resources on GSR appointments.

Fee and Tuition Remission for GSRs. Graduate Student Researchers (GSRs) qualify for full fee and tuition remission if they meet the following criteria: a) they are appointed for at least 35% (all GSR appointments combined) over the three months of the quarter, or who work at least 140 hours during the 10 weeks of instruction, b) have appointments that begin within the first three weeks of the quarter.

Full fee and tuition remission includes the payment of tuition, health insurance for all eligible students, non-resident tuition supplement for international students, and non-resident tuition supplement for domestic students during their first year only. See [Graduate Division website for Academic appointments](#).

3.6 Teaching Assistantships (TAs)

A Teaching Assistant may be assigned responsibilities that include, but are not limited to, the following duties: attending the assigned course, conducting section meetings, holding regularly scheduled office hours, reading and grading student papers, homework, and examinations, as determined by the job duties contract. Specific responsibilities for individual courses are determined by the faculty supervisor, department, or college. All department policies are informed by the current ASE contract, which can be found [here](#).

- TA appointments are communicated through TA Appointment letters, which outline job duties and expectations. TA responsibilities begin on the first day of the quarter and end when grades are due to the Registrar. TAs must gain instructor approval for planned absences well in advance of any leave. See the [Academic Personnel's website](#) for additional resources on TA appointments.
- **Department Teaching Experience Requirement.** All Ph.D. students are *required* to TA a minimum of 2 quarters as a part of their graduate training. No student will TA more than 5 quarters without the written permission of the Faculty Graduate Advisor.
- **TA Fee Remission.** Teaching Assistants whose appointment is at least 25% time qualify for full fee remission and payment of health insurance. Non-resident student tuition is not covered. The remaining fees are the sole responsibility of the students unless the department or an advisor has promised to cover these costs.

3.7 Central Fellowships

Several Central Campus Fellowships are awarded on the basis of merit and promise of productive scholarship. Types of university award and funding sources include central administered fellowships, department and campus gift and endowment funds, and departmental block grants. A fellowship is any

payment to a student that is not salary or direct reimbursement for out-of-pocket expenses such as travel costs.

With the exception of some continuing student fellowships, graduate students do not apply directly for central campus fellowships. The department nominates students for these awards and the decisions are made by the central faculty fellowship committee. See [Campus Fellowship page](#) for more info.

Please see the [Graduate Division's Financial Support website](#) for more information.

3.8 Tax Information

A determination by the Internal Revenue Service affects domestic UC student employees (this will not affect foreign students, who are exempt from paying Social Security taxes) whose wages have previously been exempt from Federal Insurance Contribution Act (FICA or Social Security) taxes. Graduate students employed by UCSB must meet both of the following criteria to maintain their exemption from Social Security taxes: (1) Must have an employment appointment of 50% time or less, and (2) must be enrolled for a minimum of 12 units during the academic year (4 during Summer).

This will affect students during the summer (July-September) because Biological Engineering students generally do not enroll for Summer Session and, therefore, do not meet the course load requirement. When you lose your exemption because you do not satisfy the work and course load requirements, you will contribute 7.50% of your UC salary to an individual account in the University's Defined Contribution Plan as an alternative to paying Social Security taxes. In addition, you are required to pay the 1.45% Medicare tax.

With the 1986 revision of the tax code, all wages (including stipends and those earned as a TA or GSR) are fully taxable. This law separates the major categories of graduate student support as follows:

- Fellowships, scholarships, and grants are now fully taxable except for that portion that is used for the payment of tuition and "course required fees, books, supplies and equipment." Thus, a student receiving a fellowship, which includes a stipend, the payment of tuition and non-resident tuition supplement, will pay taxes only on the stipend. A student receiving only a stipend will subtract the amounts used from the stipend to pay tuition and non-resident tuition supplement, and pay taxes on the remainder. Non-resident tuition fellowships, fee payment fellowships, and DOCFO payments will not be taxable. The university neither withholds taxes on fellowships nor reports fellowship payments to the Federal Government. Students are responsible for reporting fellowship income and arranging for estimated quarterly tax payments through the IRS office.
- Any earnings received in return for any expectation of work on the part of the student are now fully taxable. The exemption formerly allowing exclusion from taxes of stipends earned while pursuing a degree requirement for teaching or research was repealed effective January 1, 1987. The amount the student pays from these earnings for fees, tuition, books, etc. may not be excluded. All earnings are fully taxable.

4 Plans of Study

4.1 Goals of the Ph.D. Graduate Training:

- Provide students with solid knowledge in the fundamentals of the discipline;
- Provide students with skills and tools in math, the physical sciences and the life sciences necessary to carry out advanced research in the discipline;
- Provide students with the state-of-the-art knowledge in their research field of interest;
- Develop graduate students' critical thinking and analysis skills, and their ability to carry out significant independent research in the chosen field.

4.2 Selection of an Academic Advisor

New graduate students should take at least one quarter to become acquainted with faculty research activities before finalizing a choice of advisor. Some new students may have already developed a relationship, either formally or informally, with a particular faculty member even before arriving on campus. However, selection of the doctoral dissertation advisor is not made until the end of Winter or Spring quarter to allow each student opportunity to complete research explorations and at least one rotation. Dissertation advisors (Principal Investigators or PIs) need not be affiliated with Bioengineering, but if not, the student must have an academic advisor who is a member of the Bioengineering core faculty (i.e., with a 1/3 FTE or greater appointment).

- New graduate students participate in four 2-week Research Explorations in the Fall quarter. During each exploration, students will meet with the PI and lab members to develop a 1 to 2-page research proposal for a one-quarter project with a schedule of anticipated trainings, readings, experiments/analysis, and anticipated outcomes for the project.
- At the end of Fall quarter, new students are asked to select at least two possible advisors/PIs for research rotations. Students must complete at least 1 research rotation before formalizing the advisor/PI. Student and PI preferences for rotation projects and timing will be collected by the Staff Graduate Advisor and rotation schedules will be coordinated to provide efficient mentoring by the selected PIs/labs.
- The Staff Graduate Advisor will collect preferred choice(s) for research placements from students and faculty advisors in the second half of spring quarter. Students will also be asked to declare their Focus Area of study.
- The Graduate Affairs Committee will coordinate lab placements and confirm the faculty member can supervise and support the student.
- If a student's preference cannot be met and the student is unwilling to accept the supervisor assigned to him/her, the Faculty Graduate Advisor will discuss the matter with all parties to seek an acceptable arrangement.
- Until a student is matched with an advisor/PI, the Faculty Graduate Advisor will advise the student. Any deviations from this process must be petitioned and approved by the Graduate Affairs Committee.

4.3 Requirements for the PhD Degree

Candidates for the PhD Degree in Biological Engineering must fulfill all University requirements for the degree. These requirements are listed in the 'Graduate Education' section of the UCSB Catalog and include 6 quarters of residency at UCSB, passing a doctoral candidacy examination, completion of original research under the supervision of a faculty committee, a successful dissertation defense, and filing the completed dissertation with the UCSB Library. These requirements must all be fulfilled in a timely manner as discussed in the General Catalog. In addition, the following requirements must be satisfied for the PhD Degree in Biological Engineering:

Completion of 36 Units of Approved Courses. The requirements for the PhD degrees in Biological Engineering include the completion of 36 units of approved coursework (see Appendix II). A minimum **GPA of 3.25** must be maintained in the Core and Focus area courses. These classes must be completed prior to the Dissertation Defense Examination. Students are required to record these courses on the official PhD Study Plan.

Extension and Transfer of Credit. Only Extension courses approved in advance from both the Graduate Curriculum Committee and Graduate Division for transfer of credit, and taken while a student is in graduate standing, will be accepted for graduate credit. The student must petition before enrollment for approval and then petition again for transfer of credit when the class is completed. The second petition must be accompanied by an Extension transcript showing the grade earned. The second petition will be processed without additional fees.

Submission of an Approved PhD Study Plan. Students must submit an approved PhD Study Plan prior to taking the PhD Oral Candidacy Examination. In this plan, students select a major area of study from among the 3 fields offered by the program. This document must be submitted to the Staff Graduate Advisor and approved by the student's faculty advisor and the Faculty Graduate Advisor. If the original is outdated, a revised version of the Study Plan must be approved and submitted prior to the PhD Candidacy Examination. An electronic copy of the PhD Study Plan can be requested from the Staff Graduate Advisor.

Seminar. Students must enroll in and attend the Bioengineering seminar for 6 quarters after starting the PhD program, two quarters of BioE 230 and four quarters of BioE 225.

Publications and Presentations. Prior to completing their dissertation, students must submit at least one paper on their own research to a refereed journal (refereed proceedings of a disciplinary conference will be considered subject to petition by their PI/advisor to the Graduate Curriculum Committee). Students must provide the Staff Graduate Advisor with a copy of the paper, and this information needs to be noted on the PhD Study Plan.

TA Requirement. Students must be appointed for two quarters of at least 25% TA to obtain teaching experience. Students may not exceed 5 quarters as a TA without written permission from the Graduate Curriculum Committee.

Oral Candidacy Examination. Students must take the PhD Candidacy Examination by the 3rd year starting their degree. In this exam, students must demonstrate broad knowledge of the field of Bioengineering, superior competence in the areas of specialization related to their research, and satisfactory knowledge of science and engineering areas relevant to the dissertation topic.

4.4 The PhD qualifying process.

The process includes a Research Proposal Presentation, which will serve as an Oral Candidacy Exam:

- This will consist of a written research proposal, an oral presentation of this proposal, and an oral examination by the pre-candidacy thesis committee. This committee is composed of at least four academic senate faculty members: a chair, who is selected from among core BioE faculty by the Faculty Graduate Advisor, advisor/PI, and two or more faculty members (the committee must include at least two BioE faculty) selected by the student in consultation with their advisor/PI.
- The exam will start with a closed session discussion of the proposal and candidate degree progression (by the committee only)
- The exam will end with a closed session discussion by the student and the committee (without the PI/advisor) on degree progression
- **Exceptions** to the above rules regarding committee composition require the approval of the

Graduate Affairs Committee. To officially set up the PhD Committee the student should consult with their advisor/PI and the Staff Graduate Advisor. The *Committee Nomination Form I* and *Conflict of Interest (COI) Form* need to be completed online via GradPoint Students to officially set the PhD committee.

- **The written proposal**, which students prepare under the guidance of their research advisor, will outline and justify the student's anticipated research plan. The proposal, which will follow the format and page limits of the Specific Aims and Research Strategy of an NIH F31 style proposal, will be given to the Doctoral Committee at least three weeks prior to the oral examination. The student must inform the Staff Graduate Coordinator 3 weeks prior to the PhD Candidacy Examination of the time/date/place of the exam. The Doctoral Degree Form II *Report on Qualifying Examinations* needs to be completed at the time of the exam.
- **The candidacy examination** concludes with an oral presentation of the proposal before the Dissertation Committee. UCSB Graduate Division requires that all committee members be present for the exam. Upon approval of the research project by the committee, the student will be allowed to advance to candidacy. Possible outcomes of candidacy exam are:
 - Pass
 - Incomplete (major deficiency in one or more evaluation criteria, with remedy)
 - Fail (major deficiency across a range of evaluation criteria, with the option of one retake within one quarter)

Evaluation Rubric of proposal and oral presentation:

- Provides a clear overview and summary of background literature
- Provides a clear problem statement and identifies the knowledge gap
- Demonstrates familiarity with related approaches and their rationale for selected approaches
- Provides a clear explanation of proposed approaches
- Clearly describes the anticipated results and their significance
- Identifies potential pitfalls and alternative approaches to overcome them
- Explains and implements appropriate safety and ethical considerations of their work.

4.5 Dissertation Defense

A public defense of the dissertation will be required. This 45-minute seminar will be followed by an open question period, then a closed-session question period with the dissertation committee. Students must submit a dissertation of suitable quality to the dissertation committee prior to scheduling their defense to ensure the committee has adequate time to review the document. A public announcement by posted notice of the seminar must be made at least three weeks in advance. The Staff Graduate Advisor must be informed of the time/date/place of the exam. Once the student has addressed all questions on the dissertation work and defense, the *PhD Form III* needs to be completed and signed by all members once the degree is to be conferred.

Dissertation Submission. Following the defense, the student must have their dissertation signed by their committee. The dissertation will be filed with the Graduate Division, which issues an acceptance sheet. The student must also submit a copy of the abstract and title page to the Staff Graduate Advisor electronically.

4.6 Degree Checks

Students must initiate a final degree check at the beginning of the final quarter of study. The student should submit a request for the degree check in writing via email to the Staff Graduate Advisor.

The Graduate Division initiates degree checks for PhD students when the student turns in a dissertation and/or when notified on a PhD Form III that a student has either defended the dissertation.

4.7 Degree Dates

Degrees are granted four times a year, the last day of each quarter including Summer Session. The student must have finished all requirements by the final Friday of the quarter in order to get a degree dated that quarter. A dissertation filed between quarters (in late August or during the Winter break, for example) will not cost the student additional fees if they were enrolled the previous quarter. However, the degree will be dated as of the end of the next quarter. UCSB's Dissertation and thesis deadlines are listed on the Graduate Division's website, see here: <https://www.graddiv.ucsb.edu/filing/filing-deadlines-and-degree-conferral-dates>

4.8 Time-to-Degree

Time-to-degree for the PhD in Biological Engineering is six years with most students expected to complete their degree in five years. Time to advance to candidacy is 3 years with the target to complete their candidacy fall quarter of year 3. More information on time-to-degree standards can be found on the Graduate Division's website, here: <https://www.graddiv.ucsb.edu/policy-procedure/academic-performance-and-progress#Time-to-Degree-Standards>

5 Resources for Students

The Division of Student Affairs provides essential support services and resources to help UCSB students handle the challenges of university life.

5.1 Responsible Scholarship

Honesty and integrity in all academic work is essential for a valuable educational experience. The Office of Judicial Affairs has policies, tips, and resources for proper citation use, recognizing actions considered to be cheating or other forms of academic theft, and student responsibilities, available on the Office of Student Conduct. Students are responsible for educating themselves regarding these policies.

For UCSB's policy on Academic Integrity, see: <https://studentconduct.sa.ucsb.edu/academic-integrity>

5.2 Gender and Sex Discrimination Policy and Student Support

Under Title IX, university students are protected from harassment and discrimination based on gender and sex. If a student feels uncomfortable or in need of support at any time related to their gender, sex, and/or sexual orientation, please contact your TA and/or course instructor immediately. If a student would like to disclose information related to pronouns, name changes, or identities, we encourage you to do so. UCSB's Resource Center for Sexual and Gender Diversity on the 3rd floor of the Student Resource Building is also available to advocate and be of and support to students. (Link to Resource Center for Sexual Gender & Diversity from our BIOE website).

5.3 Academic Accommodations and Disability Services

Students with disabilities may request academic accommodations for exams online through the UCSB Disabled Students Program at <http://dsp.sa.ucsb.edu/>. Please make your requests for exam accommodations through the online system as early in the quarter as possible to ensure arrangement.

For general academic support, we encourage students to visit Campus Learning Assistance Services (CLAS) early and often. CLAS offers instructional groups, drop-in tutoring, writing and ESL services, skills workshops and one-on-one consultations. CLAS is located on the third floor of the Student Resource Building or by visiting [their website](#).

5.4 Mental Health Statement

Students may feel overwhelmed or depressed with coursework, stress and/or other personal challenges. Personal concerns such as stress, anxiety, relationships, depression, cultural differences, for example, can interfere with the ability of students to succeed and thrive. If you find yourself, or another student, in need of support, please do not hesitate to reach out to Counseling and Psychological Services (CAPS), 24/7 at (805) 893-4411.

5.5 Graduate Students with Families

UCSB offers two family housing complexes for graduate students. Priority is given to families with children, and it is recommended that interested students apply for the waitlist as soon as possible (even prior to admittance) to ensure their spot in these popular residences.

The campus also supports two Children's Centers that provide childcare for student, staff, and faculty families. Tiered tuition rates are offered as well as grants and scholarships for families with financial need. The Children's Center is heavily utilized, and thus getting on the waitlist early (e.g., as soon as you have a due date for childbirth or a placement date for adoption) is strongly recommended.

Graduate student parents also have access to several financial resources to offset childcare expenses. The Graduate Student Association offers quarterly childcare grants to all eligible graduate students, and Academic Student Employees and Graduate Student Researchers can take advantage of the childcare reimbursement program as well as a dependent care flexible spending account.

6 International Students

6.1 English Language Placement Exam (ELPE)

- All incoming international graduate students and permanent residents whose first language is not English must meet proficiency requirements in spoken and written English before registering at UCSB.
- This required English Language Placement Exam (ELPE) is conducted by faculty of the English as a Second Language (ESL) Program prior to the beginning of each quarter. This is comprised of both written and oral portions.
- Based on the ELPE performance, students are either placed into a compulsory ESL class with coursework aimed at helping improve the students spoken English or are exempted-out of the ESL Program.
- Students who take the ESL course progression are expected to complete it within three quarters.
- Students who fail the ELPE must register for and attend a prescribed ESL course and will have their registration blocked for future quarters until they re-take the ELPE and pass.
- Students who are exempt from the TOEFL or IELTS requirement are still required to take the ELPE.

6.2 Minimum Proficiency Requirements in Spoken and written English

In some cases, students must satisfy proficiency requirements in spoken and written English for the purposes of research and communication with colleagues before they are awarded a degree at UCSB.

- Coursework may be required to meet the department's proficiency requirements in English. If you have questions about this class, please contact the Graduate Advisor in the department.
- Continuing international students who need additional ESL coursework will be pre-registered in the appropriate ESL classes.
- Coursework in English is always conducted through the English as a Second Language (ESL) Program. More information can be found on www.ems.ucsb.edu/

6.3 TA Language Evaluation Exam

Graduate Council policy requires all prospective teaching assistants (TAs) whose first language is not English to take the TA Language Evaluation in order to be certified to hold sole classroom teaching or laboratory responsibilities.

- This required exam is scheduled by your department and conducted through the English as a Second Language (ESL) Program prior to the beginning of each quarter.
- The Language Evaluation exam requires the prospective TA to give a 5 to 10 minute oral presentation in English on an academic topic assigned in advance by the department. The evaluators will assess the student's ability to explain academic concepts, and ability to understand and answer questions of the type undergraduates frequently ask in class.
- The exam is coordinated by the Graduate Advisor who will notify the student of the details prior to the scheduled examination date. If you have any questions, please contact the Graduate Advisor in the department.
- Only students who demonstrate acceptable spoken proficiency in the English language evaluation will be eligible for classroom teaching responsibilities.
- TA's who fail the language evaluation will be assigned to alternate, non-teaching responsibilities determined by the department, as well as assigned to a compulsory ESL class with coursework aimed at helping improve the TA's spoken English.

- If university ESL requirements are not met, Graduate Division will enforce one or more of the following options: withholding of RA ships; withholding of degrees; blocking of registration for future quarters and/or blocking advancement to candidacy.

6.4 Office of International Students and Scholars

It is essential that students keep informed of matters pertaining to their visa. The Office of International Students and Scholars has counselors available to assist and advise international students in many areas, including: housing, visas and immigration matters, financial aid, cross-cultural programs and English conversation classes. <https://oiss.ucsb.edu/>

7 Diplomas and Transcripts

After the Graduate Division finishes a degree check, it notifies the Registrar who posts the degree to the transcript and orders diplomas. Degree checks and posting take 6-8 weeks from the end of the quarter. All students and alumni must order transcripts by logging into [Gold](#).

8 Graduate Student Dispute and Resolution Process

Occasionally, disagreements about decisions, deadlines, policies, procedures, and issues of academic judgment may arise among members of the Bioengineering community. Such issues may include a conflict between a student and a research advisor, or concerns over academic progress.

As in all such disputes, involved parties should attempt to resolve these issues internally and come to a collegial solution. Issues should be first brought to the Faculty Graduate Chair, Graduate Advisor, and Department Chair. If a resolution cannot be determined, students should look to Graduate Division, who offers resources and formalized resolution processes, which can be found here:

<https://www.graddiv.ucsb.edu/policy-procedure/graduate-student-rights-and-formal-stages-appeal>.

Please note that all campus faculty and staff are mandated reporters and are required to report any instances in which a student may face harm by others or themselves.

If the student seeks additional clarification or mediation, they may look to other University resources. The UCSB Office of the Ombuds (see the [Ombuds' website](#)) is a confidential, impartial, and informal resource to help students identify and clarify their options.

Additional confidential resources can be found at:

- [Campus, Advocacy, Resources, and Education \(CARE\)](#)
- [Counseling & Psychological Services \(CAPS\)](#)
- [Student Health Social Work Services](#)

Any issues related to Graduate Students as employees (ASEs or GSRs) should be addressed per the terms of the relevant bargaining agreement.

APPENDIX I: COURSEWORK

Required Core Courses

BIOE 201 (formerly BIOE 101) Bioethics and Responsible Conduct of Research: The responsible conduct of research (RCR) is essential to good science. Examples of goals of RCR education and training are to: Develop, foster, and maintain a culture of integrity in science; discourage and prevent unethical conduct; empower researchers to hold themselves and others accountable to high ethical standards; increase knowledge of, and sensitivity to, ethical issues surrounding the conduct of research by researchers with diverse backgrounds; improve the ability to make responsible choices when faced with ethical dilemmas involving research; provide an appreciation for the range of accepted scientific practices for conducting research; inform scientists and research trainees about the regulations, policies, and statutes.

BIOE 210 Biomolecular and Biochemical Methods: The goal of the course is to generate in our students an understanding of the logic behind the key tools used to characterize biomolecules and biosystems. Both the mechanisms by which these techniques work, and the rationale for why each would be employed (strengths, weaknesses, potential pitfalls).

BIOE 211 Quantitative Experiments: This course is centered around experiment/analysis workflow and case studies of: Designing an Experiment-Experimental design considerations and a priori assumptions. Topics include Probability (concept of power), sampling noise, DOE, Mutual information and dimensional reduction, selection of appropriate controls and null hypothesis, analyzing data and testing hypotheses. Students will learn the use of statistics (distributions, parametric, μ, σ, x, s , t-test, ANOVA) and when to use non-parametric analyses. Students will review papers with good and bad experimental and/or statistical design.

BIOE 212 Great Experiments: Reviews literature of seminal bioengineering experiments and assesses experimental methods relative to modern methods. Discusses the design of experimental planning, selection of experimental methods, statistical data analysis, and the application of methods to acquire multi-modal, quantitative data on cellular structure, function, and gene expression.

BIOE 596 Directed Research: Experimental or theoretical research undertaken under the direction of a faculty member for graduate students. Students should register for directed research under their advisor for at least nine units per year in years 2- 5; representing a minimum of an additional 36 units taken as directed research.

Additional requirements

BIOE 299 Independent Studies- Credit for First Year Lab Rotations: First-year research rotations which serve to promote interdisciplinary training and collaboration, are a near universal component of bioengineering graduate programs. Ph.D. students in Biological Engineering will participate in four different mini-rotations in the Fall quarter (at least 3 of which are performed in approved faculty member labs, including those of the Affiliated Faculty) to identify projects for quarter-long research rotations during the Winter and Spring quarters of their first year.

Appendix II: 2024/25 PhD Degree Sheet

BIOENGINEERING DEPARTMENT

www.bioengineering.ucsb.edu

College of Engineering

University of California, Santa Barbara

Student Name: _____

Perm: _____

Doctor of Philosophy – Biological Engineering 2024-25

In addition to departmental requirements, candidates for graduate degrees must fulfill University requirements described in the “Graduate Education” section of the UCSB General Catalog.

During the first year of study students are required to develop a formal study plan, which must be approved, by the student’s faculty advisor and the department graduate advisor. In this plan, students select a major area of study from among the 3 fields offered by the Program.

Ph.D. students must complete a minimum of **69 quarter units** of coursework: 15 units for letter grade in Core courses; A minimum of 12 units for letter grade in four additional courses with at least two drawn from one focus area, at least one from a second focus area, and one additional science or engineering elective, 6 units of graduate seminar, and an additional 36 units of directed research.

In addition, all students will complete a translational requirement for the degree which may consist of a) taking an existing course related to biomedical or bioengineering translation, **or** b) completing an industry internship, **or** c) participating in approved activities that provide exposure to industry and translational applications of Biological Engineering (e.g., engagement with the Biomedical Engineering Society student chapter, Biotechnology Industry Showcase. If students choose the latter, the proposed program of activities will be approved by the Graduate Coordinator or Graduate Advisor.

Students should register for directed research under their advisor for at least nine units per year in years 2-5; representing an additional 36 units taken as BioE 596.

Students who enter the program with a Master’s degree from a comparable department or program at another institution may receive subject credit, as approved by the Graduate Advisor. The department requires that students maintain a minimum grade-point-average of 3.25 in the Core courses and Focus Area courses. Time- to-degree: 3 years to advance to candidacy, 6 years to complete the Ph.D.

CORE COURSE REQUIREMENTS (15.0 units total)				
COURSE #	COURSE NAME	QUARTER	UNITS	GRADE
BIOE 210	Biomolecular and Biochemical Methods		3.0	
BIOE 211	Quantitative Experiments		3.0	
BIOE 212	Great Experiments		4.0	
BIOE 299	Independent Studies – “Lab Rotations” (3 quarters)		3.0	
BIOE 201	Bioethics and Responsible Conduct of Research		2.0	

FOCUS AREA 1: COMPUTATION, MODELING, AND SIGNAL PROCESSING

COURSE #	COURSE NAME	QUARTER	UNITS	GRADE

FOCUS AREA 2: SYNTHETIC AND SYSTEMS BIOLOGY

COURSE #	COURSE NAME	QUARTER	UNITS	GRADE

FOCUS AREA 3: CELL, TISSUE AND DEVICE ENGINEERING

COURSE #	COURSE NAME	QUARTER	UNITS	GRADE

APPROVED SCIENCE AND ENGINEERING ELECTIVES

Students must also take an additional **3.0 letter graded units** of science and engineering electives approved by the Graduate Coordinator

COURSE #	COURSE NAME	QUARTER	UNITS	GRADE

ADDITIONAL REQUIREMENTS

*All students will complete a translational requirement for the degree which may consist of a) taking an existing course related to biomedical or bioengineering translation, **or** b) completing an industry internship, **or** c) participating in approved activities that provide exposure to industry and translational applications of Biological Engineering (e.g., engagement with the Biomedical Engineering Society student chapter, Biotechnology Industry Showcase). If students choose the latter, the proposed program of activities will be approved by the Graduate Coordinator or Graduate Advisor.*

Directed Research

*Students should register for directed research under their advisor for at least nine units per year in years 2-5; representing a minimum of an additional **36 units** taken as BioE 596.*

COURSE #	COURSE NAME	QUARTER	UNITS	GRADE
BIOE 596	Directed Research			

GRADUATE SEMINAR (6.0 units total)

COURSE #	COURSE NAME	QUARTER	UNITS	GRADE
BioE 230A	Intro to BioE Research Topics Seminar		1.0	
BioE 230B	Professional Development Seminar		2.0	
BioE 225	BioE Current Topics Seminar		1.0	
BioE 225	BioE Current Topics Seminar		1.0	
BioE 225	BioE Current Topics Seminar		1.0	

ADVANCEMENT TO CANDIDACY EXAM

The PhD qualifying process will include a Dissertation Proposal Presentation, which will serve as an Oral Qualifying Exam. Students should complete this requirement by fall of the 3rd year in the PhD program, but no later than the end of year 3. This will consist of a written thesis proposal, an oral defense of this proposal, and an oral examination by the pre-candidacy thesis committee. This committee is comprised of at least four academic senate faculty members: a chair, who is selected from among the Program faculty by the Graduate Advisor, and three or more faculty members selected by the student, at least one of whom are members of the Department faculty. Upon successful completion of this examination, students advance to candidacy.

Chair: _____

Member: _____

Member: _____

Member: _____

DISSERTATION

A written dissertation is required, which must demonstrate the student's ability to contribute significantly and independently to the field. This will be guided by a dissertation committee comprised of at least four academic senate faculty members, at least two of who are members of the Department. This nominally consists of the members of the qualifying exam committee plus the student's thesis advisor, who serves as chair of this committee. Prior to scheduling the dissertation defense, the candidate must have submitted at least one refereed research manuscript. Candidates must complete the dissertation and pass a public thesis defense consisting of presenting a seminar talk and answering questions posed by the dissertation committee.

Doctoral Committee: Chair: _____

Member: _____

Member: _____

Member: _____

Dissertation Defense passed on: _____