Biomedical Physics
Graduate Student
Handbook
2022-2023
Welcome
Dear Incoming Biomedical Physics Students,

Welcome to Stanford Biomedical Physics! Each of you was carefully selected based on your accomplishments, skills, and personality to embark on your doctoral studies within our program. You have the strong support of the BMP faculty and academic community in these efforts, who have the utmost faith in your potential to do impactful work. We will do all that we can to guide you during this important stage of your career. Moreover, we are excited to get to know you! We warmly welcome each one of you to the BMP team.

Once you have settled in, we are certain that you will find limitless intellectual challenges and opportunities on this one-of-a-kind campus. The BMP faculty look to you and your classmates to enliven and invigorate our department with your enthusiasm for learning, curiosity about science, unique and creative ideas, and willingness to work hard to reach your personal and professional goals. It is our mission to nurture and develop a new generation of Biomedical Physics leaders, who will conceive of novel concepts, technologies, and therapies that will change the world for the better. With the new skills that we will help you to develop, we aim for you to become powerful new contributors to the field of Biomedical Physics.

As you prepare yourself for these new challenges, I urge you to take advantage of the many special opportunities at Stanford. Meet with your advisors and talk with other faculty, students, and staff to better understand the Biomedical Physics environment. Peruse the course offerings in departments throughout the university. Attend seminars and research meetings in labs of interest. Take time to explore various research groups to find a research area and style that suits your needs and interests. It is critically important for you to find a lab and advisor who will support your thesis work and whose research you are passionate about, and it takes energy and dedication to make this happen.

This handbook is designed to provide specific information and guidelines on the many aspects and stages of the PhD program. The goal is to demystify the Stanford campus, policies, and practices so as to make getting up to speed in your studies as painless as possible. If you have any questions during your transition, please do not hesitate to contact me (egaves@stanford.edu) or the BMP Student Services Manager, Sofia Gonzales (sofias@stanford.edu).

Our heartiest congratulations and warmest welcome!

Ted Graves
BMP Program Director
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1 Getting Started

1.1 Axess

**Axess** is a web-based service to display and update information in your electronic student records. It is generally available 24 hours a day, 7 days a week. You will need your *SUNetID* and password to login to Axess. Using Axess, you can

- Update your contact information address (e.g., phone numbers, email, mailing, permanent) and check which information in your record is public, and more.
- Enroll, add, or drop classes
- Review your grades, review your degree requirements status
- Submit **Student Eforms**
- Request transcripts (official and unofficial)
- View financial aid information, pay your university bill
- Apply for housing
- Sign the Patent Agreement (required)

**Service Now Tickets**

**ServiceNow** is the university online tool for requesting and supporting services across the Stanford community. You can read help articles and submit tickets for a range of services (enrollment, transcripts, billing, IT help, etc.) directly from this portal.

**Stanford Email and Email Lists**

Students are expected to check their Stanford emails daily. Email forwarding can also be set up through **Stanford Accounts**.

All BMP students are also added to the BMP announcement and degree listservs, which are used to communicate important information about degree progress, community events, and reminders.

1.2 Biomedical Physics Department Contacts

BMP Student Services Manager: **Sofia Gonzales**

**BMP Faculty** (list and contact information of the Biomedical Physics faculty and lecturers)

*Email: bmp-contact@stanford.edu*

*Web Site: https://med.stanford.edu/bmp.html*

*Contact info: https://med.stanford.edu/bmp/contact.html*

*Office: Lucas Center for Imaging, 1201 Welch Rd, Stanford, CA*

*Mail Code: 94035-5488*

*Phone: (650) 497-6820 Fax: 650-723-5795*

1.3 New Graduate Student Orientation and Training

**New Graduate Student Orientation**

All new graduate students are required to attend the department new student orientation held the week before Autumn quarter starts. Important information regarding new student orientation is sent out to incoming students in the months before Autumn quarter starts.
Training

Prior to working in a lab, new graduate students are required to complete a variety of trainings, generally available on AXESS via the STARS training tab (exceptions to this are identified below). The specific trainings needed will vary across different lab environments, however there are some common trainings that students should undertake as soon as possible to avoid delays in beginning lab work.

Required trainings

1. Staff respectful workplace (MHRG-1000)
2. Harassment prevention (VAWA 0001, SHP-2022)
3. COVID-19 hygiene best practices (EHS-2470)
4. HIPAA/Protecting Patient Privacy (PRIV-2022)

Laboratory training

1. General Safety, Injury Prevention (IIPP) and Emergency Preparedness (EHS-4200)
2. Life Sciences Research Laboratory Safety Training (EHS-4875)
3. Biosafety (EHS-1500)
4. Chemical Safety for Laboratories (EHS-1900)
5. Compressed Gas Safety (EHS-2200)
6. Research animal training (VSC-PROG-0001)
7. Radiation safety (EHS-5250)
8. Cabinet irradiator use and safety (EHS-PROG-1755)
9. Bloodborne Pathogens (EHS-1600)
10. DOT: Shipping Biological Goods or Dry Ice (EHS-2700)
11. Local Aerosol Transmissible Diseases Plan (EHS-PROG-1090)

Clinical research training

1. CITI (https://about.citiprogram.org/)

Miscellaneous

1. Ergonomics-Computer Workstation (EHS-3400)
2. Computer Security (SIO 0001)
2 Stanford Academic Policies

2.1 Fundamental Standard
The Fundamental Standard has set the standard of conduct for students at Stanford since it was articulated in 1896 by David Starr Jordan, Stanford's first president. It states:

Students at Stanford are expected to show both within and without the University such respect for order, morality, personal honor and the rights of others as is demanded of good citizens. Failure to do this will be sufficient cause for removal from the University.

2.2 Honor Code
The Honor Code is the university's statement on academic integrity written by students in 1921. It articulates university expectations of students and faculty in establishing and maintaining the highest standards in academic work.

2.3 Graduate Academic Policies and Procedures Handbook
The Graduate Academic Policies and Procedures Handbook (GAP) is a compilation of university policies and other information related to the academic progress of Stanford graduate students, from their application and admission to the conferral of degrees and retention of records. All students should carefully read the university’s policies regarding Registration, Enrollment and Academic Progress.

2.4 Stanford Bulletin
The Stanford Bulletin is Stanford University's official catalog of courses, degrees, policies, and University and degree requirements. All students are encouraged to review the Bulletin sections related to Biomedical Physics.

3 Registration and Enrollment

3.1 Stanford Academic Calendar
The Stanford Academic Calendar provides all university enrollment and related deadlines (e.g., study list, change of grading basis, withdrawal, dissertation, apply to graduate, etc.). Students are strongly encouraged to bookmark or print a copy of Stanford’s Academic Calendar to ensure they meet all university deadlines.

3.2 Enrollment
Preliminary Study List Deadline (first day of every quarter)
Students must be “in status” by 5:00 p.m. on the first day of classes each quarter. This means that, at the end of the first day of classes in each quarter a graduate student must be enrolled in no fewer than 8 units. Students not "in status" by 5:00 p.m. on the first day of classes are subject to a $200 late study list fee.
**PhD Students**
The Biomedical Physics program requires that all PhD students register for autumn, winter, spring and summer quarters. In most cases PhD students should register for 10 units unless Terminal Graduate Registration (TGR) status.

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Autumn</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**Final Study List Deadline (end of the third week of classes of every quarter)**
Students may add, drop, swap or adjust courses or units (if variable unit course) to their study lists through the end of the third week of classes. Courses or units (if variable unit course) may be dropped by students up until the Final Study List Deadline without any record of the course remaining on the student’s transcript. Courses may be swapped up until this deadline. No drops are permitted after this point. Last day for tuition reassessment for dropped courses or units.

Units for individual courses may vary depending on how the course is organized each year. Students need not register for research units (BMP 399) unless extra units are needed to reach 10 units of study. MSTP students should consult their Program Coordinator, Lorie Langdon regarding units and enrollment.

**3.3 Grades**
Stanford allows a student the option of taking a course for a letter grade or credit/no credit. Students are required to ask for grades in all courses when available. Please consult with the faculty member regarding the grading type for research courses (BMP 399).

Students are responsible for making sure grades are reported. If incomplete (I), grade not reported (GNR) or no credits (NC) appear on their transcripts, students should check with their instructor immediately. The Student Service Office can assist students in clearing any missing grades.

“I” grades must be changed to a permanent notation or grade within a maximum of one year. If an incomplete grade is not cleared at the end of one year, it is changed automatically by the Registrar’s Office to an ‘NP’ (not passed) or ‘NC’ (no credit) as appropriate for the grading method of the course.

For Medical Students Only:
Medical students are required to take courses Pass/Fail but need to keep a record of letter grades they would have received. Students should ask their instructors for an e-mail or letter stating the grade that was awarded, for purposes of computing the GPA.
4 Finances

4.1 Student Bills
University billing occurs monthly and students are expected to check their student bill regularly throughout the year (see billing dates & deadlines here). Stanford ePay, the University’s online billing and payment services, provides a convenient way for students to view their student bill and make a payment. Please refer to the Student Billing page here for more instructions on reviewing your bill and using ePay. If you have any questions regarding your student bill, please contact the Student Service Center.

4.2 Graduate Student Funding Resources
The University has created a variety of programs to help graduate students dealing with difficult financial situations. Please see below for a list of website and links for more details regarding these options:

Financial Aid Office
Stanford Support Programs
Information on the grad cash advance program, emergency grant-in-aid funds, graduate student aid fund, and Graduate family grant program.

Loans for graduate students
Information on loans available for graduate students.

4.3 Types of Graduate Student Funding
Graduate student support is typically disbursed as fellowship stipend and/or assistantship salary. Please review the details for both types of funding below. All graduate students should sign up for Direct Deposit (see below) to receive their funding payments in a timely manner.

Fellowship Stipend
Students must complete all registration and financial paperwork, pay registration fees, and satisfy all stipulated departmental requirements before receiving stipend checks.

Stipends are disbursed in one lump sum at the beginning of each quarter (see below disbursement schedule). University fees (health services fee, ASSU fees, and housing fees) are typically deducted from stipend payments but students should check their bills to see if a payment for charges such as Cardinal Care is needed.

<table>
<thead>
<tr>
<th>Fellowship Stipend Disbursement Schedule</th>
</tr>
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<tbody>
<tr>
<td>Quarter</td>
</tr>
<tr>
<td>Disbursement</td>
</tr>
</tbody>
</table>
**Assistantship Salary**

Students must complete all registration and financial paperwork, pay registration fees, and satisfy all stipulated departmental requirements before receiving salary payments.

Students on assistantship are encouraged to enroll by the appropriate deadlines for payroll deduction, which allows students to deduct a portion of their bi-monthly salaries for the purpose of paying fees. Note, BMP PhD students enrolled in payroll deduction should only select to have ‘housing and fees’ deducted.

Salary is paid via semi-monthly payroll checks distributed in 6 pay periods throughout the 3-month quarter. Salary checks post to accounts on the 7th and 22nd of each month (see below), or the preceding workday if these dates fall on a weekend or holiday.

<table>
<thead>
<tr>
<th>Assistantship Salary Disbursement Schedule</th>
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<tbody>
<tr>
<td>Quarter</td>
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<tr>
<td>Disbursement</td>
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</tr>
</tbody>
</table>

**Direct Deposit**

Stipend checks and bi-weekly assistantship checks may be direct-deposited in local banks. Students should enroll in Direct Deposit via AXESS.

**Holds**

Stipend payments and salary checks will not be issued if University requirements, such as submission of the federal employment eligibility form, federal and state tax withholding certificate, and patent agreement form or if departmental requirements, have not been fulfilled. Outstanding bills from the library, University, or Vaden Health Center will also result in holds. Holds must be cleared with the originating office before stipend checks will be issued.

**Taxes**

Please see Taxes 101 for Students for information regarding taxes. Please note the Biomedical Physics Student Services office cannot provide tax advice to students.

**Loans and External Awards**

Graduate Students who believe they will require loan assistance can apply for federal Stafford Student Loan, Federal Perkins Loan, and University loan programs. Inquiries for publications outlining loan program terms can be directed to the Financial Aid Office. International students who are not permanent residents are not eligible for long-term loans. Graduate Fellowships awarded by external sources (i.e. NSF, NDSEG, Ford) are also administered by the Financial Aid Office.
Applying for Predoctoral Fellowship Applications

Our BMP faculty maintain a list of common external and Stanford graduate fellowships here. All first-year PhD students who are eligible to apply for outside predoctoral fellowships such as NSF and NDSEG are strongly encouraged to do so. Check with Student Services and Financial Aid for further details and any questions concerning eligibility. Students are encouraged to consult with their faculty advisors when preparing fellowship applications.

5 PhD Degree Program Overview

Our goal is to create a unique interdisciplinary PhD program combining the fields of medical physics, diagnostic imaging, and molecular imaging and diagnostics. Synergistic with multiple departments and institutes from School of Medicine, Engineering, and Humanities & Sciences, the BMP program is a unique opportunity to leverage Stanford’s outstanding faculty, research, and resources to create a world-class training program. It will target physics, bioscience, and engineering students who are seeking to become the next generation of leaders focused on addressing the technical challenges of clinical medicine. This is the first PhD program at Stanford housed in clinical departments and will be leveraged this position at the intersection of basic and clinical science to train students in translational research.

The program can provide flexibility and can complement other opportunities in applied medical research at Stanford. Special arrangements may be made for those with unusual needs or those simultaneously enrolled in other degree programs within the University. Similarly, students with prior relevant training may have the curriculum adjusted to eliminate requirements met as part of prior training.

5.1 Curriculum

Specific Core and Depth graded course requirements for a PhD degree in Biomedical Physics (30 units) are listed below. In addition, the University's basic requirements for the doctorate (135 course or research units, residence, dissertation, examination, and so on) are discussed in the "Graduate Degrees" section of the Stanford Bulletin. Note many biomedical physics (BMP) courses are cross-listed with corresponding courses in Radiology (RAD) and Radiation Oncology (RADO).

Core Curriculum in Biomedical Physics (21 units)

All students are expected to fulfill the following core requirements with respect to basic principles of biomedical physics, professionalism and ethics, fundamental of the human body, and quantitative and computational competencies. Note, given nature of the subject matter, curriculum has a similar structure to engineering PhDs, with greater emphasis on coursework as compared to the School of Medicine Biosciences Program. Note: with advisor consent, a student may petition to alter the below list of required courses.

- **3 Core Courses (9 units, taken in the first year):**
  - Principles of Multi-modality Molecular Imaging, 3 units (BMP 222, Aut)
  - Imaging and Image-based Anatomy, 3 units (BMP 220, Win)
  - Radiation Biology and Protection, 3 units (BMP 253, Spr)
- **Biomedical Physics Seminar (1 unit, first year, BMP 210, Aut, Spr)**
- **Professionalism and Ethics course (1 of the following courses required)**
The Responsible Conduct of Research, 1 unit (MED 255, Aut, Win, Spr, Sum)
Ethics in Bioengineering, 3 units (BIOE 131, Spr)
Foundations of Statistics and Reproducible Research, 2 units (BIOS 217, Aut)
Ethics, Science, and Society, 1 unit (BIOS 258, TBD)
Responsible Conduct of Research in Medical Imaging, 1 unit (RAD 255, TBD)
Ethics, Rigor, and Reproducibility in Medical Imaging, 1 unit (RAD 256, TBD)

**Fundamentals of the Human Body (4 units required):**
- Clinical Needs and Technology, 1 or 2 units (BIOE 301B, Win)
- Cellular Biophysics, 3 units (BIOPHYS 294, Win, Spr)
- Molecular and Cellular Bioengineering, 3 units (BIOE 300A, Win)
- Quantitative Physiology, 3 units (BIOE 300B, Aut)
- Cellular Biophysics, 3 units (BIOPHYS 294, Win, Spr)
- How Cells Work: Energetics, Compartments, and Coupling in Cell Biology, 4 units (MCP 256, Win)

**Quantitation and Computation in Biomedical Physics (6 units required):**
- Biomedical Signals I, 3 units (BMP 211, Aut)
- Biomedical Signals II, 3 units (BMP 212, Win)
- Computational Methods for Biomedical Image Analysis, 3 units (BMP 260, Spr)
- Intermediate Biostats: Analysis of Discrete Data, 3 units (BIOMEDIN 233, Win)
- Machine Learning, 3 units (CS 229, Aut, Spr, Sum)
- Deep Learning, 3 units (CS 230, Aut, Spr)
- The Fourier Transform and Its Applications, 3 units, (EE 261, Aut, Sum)
- Introduction to Statistical Signal Processing, 3 units (EE 278, Aut)
- Digital Image Processing, 3 units, (EE 368, Win)
- Introduction to Statistical Inference, 4 units (STATS 200, Aut, Win)

**Depth Curriculum in Biomedical Physics (9 units)**
Each student will also be required to demonstrate depth in a chosen area, via the completion of 9 units within a single area of specialization, as given by the examples below or in consultation with their primary advisor. These depth areas are to be within the scope of the overall Biomedical Physics program and be comprised of courses that enable a student’s thesis research. Approved courses meeting this depth requirement are given below. Please see Explore Courses for more information about each course offering. Some courses may not be offered every year. Many other depth electives may be taken with approval from your academic advisor.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Units</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP 206</td>
<td>Mixed Reality in Medicine</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>BMP 211</td>
<td>Biomedical Signals I</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>BMP 212</td>
<td>Biomedical Signals II</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BMP 221</td>
<td>Radionuclide-based Medical Imaging</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BMP 223</td>
<td>X-ray Computed Tomography</td>
<td>3</td>
<td>TBD</td>
</tr>
<tr>
<td>BMP 224</td>
<td>Applications for Multi-modality Molecular Imaging</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BMP 225</td>
<td>Transcranial Ultrasound Neuromodulation</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>BMP 226</td>
<td>MRI Spin Physics and Relaxation Theory</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>BMP 227</td>
<td>Functional MRI Methods</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>Course #</td>
<td>Title</td>
<td>Units</td>
<td>Offered</td>
</tr>
<tr>
<td>----------</td>
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</tr>
<tr>
<td>BMP 228</td>
<td>MRI Programming Topics</td>
<td>3</td>
<td>TBD</td>
</tr>
<tr>
<td>BMP 229</td>
<td>MRI Sequences and Signals</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>BMP 235</td>
<td>Advanced Ultrasound Imaging</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BMP 236</td>
<td>Analytical Methods in Biotechnology</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BMP 236B</td>
<td>Analytical Methods in Biotechnology II</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>BMP 260</td>
<td>Biomedical Image Analysis and Interpretation</td>
<td>3-4</td>
<td>Spr</td>
</tr>
<tr>
<td>BMP 251</td>
<td>Medical Physics and Dosimetry</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>BMP 252</td>
<td>Physics of Radiation Therapy</td>
<td>3</td>
<td>Win</td>
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</tbody>
</table>

### Other Courses in the School of Medicine

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Units</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 224</td>
<td>Advanced Cell Biology</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BIOC 241</td>
<td>Biological Macromolecules</td>
<td>3-5</td>
<td>Aut</td>
</tr>
<tr>
<td>BIOMEDIN 212</td>
<td>Intro to Biomedical Informatics</td>
<td>3-5</td>
<td>Win, Spr</td>
</tr>
<tr>
<td>BIOPHYS 294</td>
<td>Cellular Biophysics</td>
<td>3</td>
<td>Win, Spr</td>
</tr>
<tr>
<td>CBIO 240</td>
<td>Molecular and Genetic Basis of Cancer</td>
<td>4</td>
<td>Aut</td>
</tr>
<tr>
<td>CBIO 242</td>
<td>Cellular and Clinical Aspects of Cancer</td>
<td>4</td>
<td>Spr</td>
</tr>
<tr>
<td>CBIO 243</td>
<td>Principles of Cancer Systems Biology</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>CBIO 275</td>
<td>Tumor Immunology</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>IMMUNOL 200</td>
<td>Intro to Cellular and Molecular Immunology</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>IMMUNOL 201</td>
<td>Advanced Immunology I</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>IMMUNOL 202</td>
<td>Advanced Immunology II</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>IMMUNOL 205</td>
<td>Immunology in Health and Disease</td>
<td>4</td>
<td>Win</td>
</tr>
<tr>
<td>MCP 256</td>
<td>Energetics, Compartments, &amp; Coupling in Cell Biology</td>
<td>4</td>
<td>Win</td>
</tr>
<tr>
<td>PSYCH 204A</td>
<td>Human Neuroimaging Methods</td>
<td>3</td>
<td>Win</td>
</tr>
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### School of Engineering

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Units</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOE 217</td>
<td>Translational Bioinformatics</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BIOE 279</td>
<td>Computational Biology</td>
<td>3-4</td>
<td>Aut</td>
</tr>
<tr>
<td>BIOE 300A</td>
<td>Molecular and Cellular Bioengineering</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>BIOE 300A</td>
<td>Quantitative Physiology</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>BIOE 450</td>
<td>Advances in Biotechnology</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>EE 238</td>
<td>Introduction to Fourier Optics</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>EE 261</td>
<td>The Fourier Transform and Its Applications</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>EE 262</td>
<td>Three-Dimensional Imaging</td>
<td>3</td>
<td>TBD</td>
</tr>
<tr>
<td>EE 278</td>
<td>Intro to Statistical Signal Processing</td>
<td>3</td>
<td>Aut</td>
</tr>
<tr>
<td>EE 368</td>
<td>Digital Image Processing</td>
<td>3</td>
<td>TBD</td>
</tr>
<tr>
<td>EE 369B</td>
<td>Medical Imaging Systems II</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>EE 369C</td>
<td>Medical Image Reconstruction</td>
<td>3</td>
<td>TBD</td>
</tr>
<tr>
<td>EE 469B</td>
<td>RF Pulse Design for Magnetic Resonance Imaging</td>
<td>3</td>
<td>TBD</td>
</tr>
<tr>
<td>School of Humanities &amp; Sciences Courses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
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<td></td>
</tr>
<tr>
<td><strong>Course #</strong></td>
<td><strong>Title</strong></td>
<td><strong>Units</strong></td>
<td><strong>Offered</strong></td>
</tr>
<tr>
<td>BIO 230</td>
<td>Molecular and Cellular Immunology</td>
<td>4</td>
<td>Aut</td>
</tr>
<tr>
<td>CS 229</td>
<td>Machine Learning</td>
<td>3</td>
<td>Aut,Spr,Sum</td>
</tr>
<tr>
<td>CS 231N</td>
<td>Deep Learning for Computer Vision</td>
<td>3</td>
<td>Spr</td>
</tr>
<tr>
<td>STATS 200</td>
<td>Intro to Statistical Inference</td>
<td>3</td>
<td>Win</td>
</tr>
<tr>
<td>STATS 261</td>
<td>Intermediate Biostats: Analysis of Discrete Data</td>
<td>3</td>
<td>Win</td>
</tr>
</tbody>
</table>

**Curriculum Examples**

**Example 1**: Representative first-year course selections for a student interested in MRI. Note, this is for a 50% RA appointment. In addition to formal courses, students are expected to particulate in laboratory rotations in the Aut, Win, and Spr quarters.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autumn Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 210</td>
<td>Biomedical Physics Seminar</td>
<td>1</td>
<td>BMP requirement</td>
</tr>
<tr>
<td>BMP 222</td>
<td>Multi-modality Molecular Imaging</td>
<td>3</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>BIOE 300B</td>
<td>Quantitative Physiology</td>
<td>3</td>
<td>BMP bio fundamentals</td>
</tr>
<tr>
<td>BMP 211</td>
<td>Biomedical Signals I</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td></td>
<td>Total course units</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Winter Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 301B</td>
<td>Clinical Needs and Technology</td>
<td>1</td>
<td>BMP bio fundamentals</td>
</tr>
<tr>
<td>BMP 220</td>
<td>Image-based Anatomy</td>
<td>3</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>EE 369B</td>
<td>Medical Imaging II</td>
<td>3</td>
<td>BMP depth</td>
</tr>
<tr>
<td>BMP 212</td>
<td>Biomedical Signals II</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td></td>
<td>Total course units</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Spring Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 210</td>
<td>Biomedical Physics Seminar</td>
<td>1</td>
<td>BMP requirement</td>
</tr>
<tr>
<td>BMP 253</td>
<td>Radiation Biology and Protection</td>
<td>3</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>BMP 229</td>
<td>MRI Sequences and Signals</td>
<td>3</td>
<td>BMP depth</td>
</tr>
<tr>
<td>CS 229</td>
<td>Machine Learning</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td></td>
<td>Total course units</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Summer Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 399</td>
<td>Graduate research</td>
<td>10</td>
<td>research</td>
</tr>
<tr>
<td></td>
<td>unit total</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**Example 2**: Representative first-year course selections for a student interested in Medical Physics. Note, this is for a 50% RA appointment. In addition to formal courses, students are expected to particulate in laboratory rotations in the Aut, Win, and Spr quarters.
<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autumn Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 210</td>
<td>Biomedical Physics Seminar</td>
<td>1</td>
<td>BMP requirement</td>
</tr>
<tr>
<td>BMP 222</td>
<td>Multi-modality Molecular Imaging</td>
<td>3</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>BMP 211</td>
<td>Biomedical Signals I</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td>BMP 251</td>
<td>Medical Physics and Dosimetry</td>
<td>3</td>
<td>BMP depth</td>
</tr>
<tr>
<td></td>
<td><strong>Total course units</strong></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Winter Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 301B</td>
<td>Clinical Needs and Technology</td>
<td>1</td>
<td>BMP bio fundamentals</td>
</tr>
<tr>
<td>BMP 220</td>
<td>Image-based Anatomy</td>
<td>3</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>BMP 211</td>
<td>Biomedical Signals II</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td>BMP 252</td>
<td>Physics of Radiation Therapy</td>
<td>3</td>
<td>BMP depth</td>
</tr>
<tr>
<td></td>
<td><strong>Total course units</strong></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Spring Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 210</td>
<td>Biomedical Physics Seminar</td>
<td>1</td>
<td>BMP requirement</td>
</tr>
<tr>
<td>BMP 253</td>
<td>Radiation Biology and Protection</td>
<td>3</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>BMP 260</td>
<td>Biomedical Image Analysis and Interpretation</td>
<td>3</td>
<td>BMP depth</td>
</tr>
<tr>
<td>CS 229</td>
<td>Machine Learning</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td></td>
<td><strong>Total course units</strong></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Summer Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 399</td>
<td>Graduate research</td>
<td>10</td>
<td>research</td>
</tr>
<tr>
<td></td>
<td><strong>unit total</strong></td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**Example 3:** Representative first-year course selections for a student interested in Molecular Imaging. Note, this is for a 50% RA appointment. In addition to formal courses, students are expected to particulate in laboratory rotations in the Aut, Win, and Spr quarters.
### Example 4: Representative first-year course selections for a student interested in Cancer Early Detection. Note, this is for a 50% RA appointment. In addition to formal courses, students are expected to participate in laboratory rotations in the Aut, Win, and Spr quarters.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autumn Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 210</td>
<td>Biomedical Physics Seminar</td>
<td>0*</td>
<td>BMP requirement</td>
</tr>
<tr>
<td>CBIO 240</td>
<td>Molecular and Genetic Basis of Cancer</td>
<td>4</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>BMP 211</td>
<td>Biomedical Signals I</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td>BIOE 300B</td>
<td>Quantitative Physiology</td>
<td>3</td>
<td>BMP bio fundamentals</td>
</tr>
<tr>
<td><strong>Total units</strong></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Winter Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOE 301B</td>
<td>Clinical Needs and Technology</td>
<td>1</td>
<td>BMP bio fundamentals</td>
</tr>
<tr>
<td>BMP 220</td>
<td>Image-based Anatomy</td>
<td>3</td>
<td>BMP touchstone</td>
</tr>
<tr>
<td>BMP 236</td>
<td>Analytical Methods in Biotechnology</td>
<td>3</td>
<td>BMP depth</td>
</tr>
<tr>
<td>BMP 212</td>
<td>Biomedical Signals II</td>
<td>3</td>
<td>BMP quantitation</td>
</tr>
<tr>
<td><strong>Total units</strong></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Spring Quarter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 210</td>
<td>Biomedical Physics Seminar</td>
<td>0*</td>
<td>BMP requirement</td>
</tr>
<tr>
<td>BMP 236</td>
<td>Analytical Methods in Biotechnology II</td>
<td>3</td>
<td>BMP depth</td>
</tr>
</tbody>
</table>
5.2 Overall Program Requirements in Biomedical Physics PhD Degree

1. Completion of the BMP Core and Depth Curriculum as described above.
2. Meet the University residency requirements for a PhD degree consisting of a minimum of 135 Stanford units with a maximum of 45 of these units being external transfer credits.
3. A cumulative GPA of 3.0 or greater to remain in good academic standing.
4. All required courses should be taken for a letter grade and must be passed with a grade of B- or better.
5. **Qualifying examination.** PhD students will be expected to take and pass an oral qualifying examination during their second year in the program (see details in Section 6.1).
6. **PhD candidacy.** To be admitted to candidacy for the Ph.D. degree, a student will be in good academic standing and have successfully completed the core course requirements, at least 20 units of coursework in an area of specialization and passed the qualifying examination. The student must fulfill these requirements and apply for admission to candidacy for the PhD by the beginning of the third year.
7. **PhD dissertation.** After completing the majority of their thesis work and when deemed appropriate by the student and the thesis advisor, typically several months before the expected end of the student’s research, the student will coordinate a thesis defense. The defense committee will typically consist of the thesis committee along with a defense chair from outside the program as per University rules, and one other faculty member. The defense will consist of an oral presentation of the thesis work, followed by questions about the thesis.
or other areas of research and scholarship deemed relevant to the research. Students must present a Ph.D. dissertation that is the result of independent investigation and that constitutes a contribution to knowledge in biomedical physics. The process for the preparation of a dissertation will include: the selection of a primary dissertation advisor and at least two additional faculty members to serve on the dissertation committee; the presentation of a prospectus outlining the proposed research to the committee (normally as part of the qualifying examination), and the receipt of written approval from the dissertation committee chair; passing of the University oral examination, taken after the student has substantially completed his or her research; and the submission of a final draft of the work signed by all members of the dissertation committee.

8. After application for Terminal Graduate Registration (TGR) status and completion of 135 units, the PhD candidate should register each quarter for BMP 802 TGR PhD Dissertation so that their research effort may be counted toward the degree.

Students who wish to pursue an MS degree in another academic field at Stanford must submit a request in writing with approval from their academic advisor and dissertation advisor. All requests are reviewed by BMP Student Services and Program Director. Students who fulfill the MS degree requirement outside of Biomedical Physics are still required to complete the BMP core courses and seminars.

5.3 Timetable for the Doctoral Degree
The doctoral degree requires a novel and creative research dissertation, and thus is difficult to schedule on an exact timeline. It is expected that the doctoral degree will require approximately five to six years of full-time study and research following enrollment into the program.
5.4 PhD Yearly Checklist
By the End of the First Year
Consult with Advisors; Identify research labs in the department Engage in research rotations in Autumn, Winter and Spring quarter Apply for graduate research fellowships in Autumn (e.g., NIH, NSF, AHA)
Complete BMP touchstone courses: BMP 222, BMP 220, and BMP 253
Complete additional coursework (10 units/quarter)
Identify a faculty member who agrees to supervise and support your doctoral research; submit a signed thesis lab agreement form by the end of Spring quarter
Define and start an initial research project Complete annual IDP with research advisor

By the End of the Second Year
Complete the MS degree requirements
Pass Qualifying Exam (see procedures below)
Take coursework for PhD degree (10 units required each quarter)
Submit application for Candidacy for Doctoral Degree Form
Complete annual IDP with research advisor

By the End of the Third Year
Complete all coursework for PhD degree (10 units required each quarter)
Submit your Dissertation Reading Committee form (see below); meet with committee
Submit additional research work for publication and define dissertation project
Complete annual IDP with research advisor

By the End of the Fourth Year
Submit additional research work for publication
Apply for Terminal Graduate Registration (TGR) for Spring quarter (see below)
Meet with dissertation reading committee
Complete annual IDP with research advisor

By the End of the Fifth+ Year
Submit additional research work for publication
Meet with dissertation reading committee
Before the final quarter, apply for Graduation Quarter (see below)
Submit the Oral Exam Form and defend doctoral dissertation
Complete and submit doctoral dissertation
Complete annual IDP with research advisor
5.5 Combined MD/PhD Degree

Students interested in a career oriented towards biomedical physics and medicine can pursue the combined MD/PhD degree program. Stanford has two ways to complete a MD/PhD degree. US citizens and permanent residents can apply to the Medical Scientist Training Program (contact Lorie Langdon) and can be accepted with funding from both MD and PhD with stipend/tuition. They can then select a Biomedical Physics laboratory for their PhD thesis work. Students not admitted to the Medical Scientist Training Program must apply and be admitted separately to the MD program and the BMP PhD program.

If you have any further questions, please contact BMP Student Services Manager, Sofia Gonzales (sofias@stanford.edu).

5.6 Advising

*Graduate Advising Expectations:* The Biomedical Physics Program is committed to providing academic and research advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program. The program’s student services staff is also an important part of the student’s advising team. They inform students and advisers about University and department requirements, procedures.

*First-year Advising:* Students admitted to the program will be assigned a “first-year advisor” chosen from the group of core faculty to help them design their academic program, including selection of classes and laboratories in which to rotate. This advisor will be specifically selected to be someone outside the student’s area of interest, minimizing the possibility that this advisor will be selected for a laboratory rotation or as a thesis advisor. While the formal term of the first-year advisor is only a single academic year, this advisor will provide ongoing mentorship as an unbiased, independent advisor not affiliated with the student’s research or thesis committee.

*Research Mentors:* Students are expected to choose their thesis research mentors by the end of the first year. Primary research mentors will usually be drawn from the core and affiliated BMP faculty, though students are free to select other mentors across the university depending on their research interests. Co-primary mentors may be selected when appropriate for the proposed research and/or in situations where one of the mentors is an MCL faculty member and cannot mentor the student individually per Stanford rules. After selecting a thesis laboratory and mentor, the student’s PI will thereafter serve as their principal advisor, along with their thesis committee after they have advanced to candidacy. In addition, the program director(s) will meet annually with each class of students to hear their collective concerns, to gauge the state of the program, and to identify any recommended adjustments.
To facilitate the choice of Research Mentor, the BMP program highly encourages lab rotations during their first academic year. Furthermore, Students will be exposed to program faculty through several organized events during their first year. A weekly seminar series will be held during the fall quarter that will be required for first-year students, in this series faculty will present overviews of their work. In addition, the program retreat will be held annually in the fall and will feature a variety of talks and mixers designed to allow first-year students to identify faculty of interest. The first-year advisor will serve to help students vet their faculty interests, to select laboratories in which to rotate, and to ultimately select their primary mentor. Once selected, students will be required to complete annual individual development plans (IDPs) and to discuss them with their mentor, so as to continually evaluate student progress and to draft plans for timely graduation and post-graduate activities.

**Thesis Committee:** Upon progression to candidacy, students will convene a thesis committee. Students are expected to identify a group of 3-5 thesis advisors to constitute this committee. This group will consist of the student’s primary mentor(s) as well as additional faculty selected for their expertise relative to the student’s research. One member of this committee must be drawn from outside the program. Students may identify potential second mentors on their own, and program faculty will also aid students in identifying individuals who may be of interest and facilitate contacts with these individuals. The program directors and executive committee will monitor advising arrangements to ensure that students receive adequate supervision and that advisors and committees selected are compliant with program guidelines. This committee will meet annually in years 3 and 4 to provide input on the student’s project and to guide the student towards graduation. At these meetings, the student will present a summary of their progress in their thesis research. The committee will provide oral and written feedback to this meeting, advising the student on possible modifications or adaptations of their work and guiding them in order to ensure ample progress is made towards graduation. After completing their fourth year in the program, thesis committee meetings will be required every six months so as to provide additional attention to senior students and avoid unreasonably long times to graduation.

**Advisor changes:** Once assigned or selected, advisors can be changed by appeal to the BMP Program Director. In general, there will be little restriction on changing of advisors to accommodate student educational goals as they may change over the course of the doctoral program. Additionally, the program adheres to the University policies, guidelines, and responsibilities that apply to all faculty-student advising relationships. For a statement of University policy on graduate advising, see the "Graduate Advising" section of this bulletin.

**5.7 Individual Developmental Plans**

Throughout the PhD, each student is required to fill out an annual Individual Developmental Plan (IDP), usually in the Summer. The IDP is then discussed with the research advisor, as a way to facilitate and advise the student, both during and beyond the PhD; establishing clear expectations on both sides with respect to degree progress and timely graduation; and emphasizing the importance of wellness in graduate school, together with access to University
wellness resources. Confirmation of the IDP and IDP meeting must be entered by the student and confirmed by their research advisor in the Graduate Tracking System.

6 University PhD Degree Milestones

6.1 Qualifying Exam

Prior to being formally admitted to candidacy for the PhD degree, each student must demonstrate knowledge of Biomedical Physics fundamentals and potential for success in research by passing a qualifying oral examination. Potential for success in research is demonstrated by completing an outstanding Biomedical Physics research proposal, testimony of the student’s research advisor of their research potential, and a detailed evaluation as described below.

Purpose of the Exam

The PhD qualification exam has several goals:

1. To motivate students to review and synthesize course work and research material.
2. To determine the student’s ability to understand and apply fundamental concepts.
3. To develop and test the student’s ability to communicate orally and to respond to questions and comments.
4. To evaluate the student’s potential to successfully pursue doctoral research.
5. To identify areas that need to be strengthened for the student to be successful as a PhD student, independent scholar, and teacher.
   To provide a mechanism for a range of faculty to come to know the student’s capabilities.

Exam Procedures

PhD students will be expected to take and pass an oral qualifying examination during their second year in the program. Candidates will assemble a qualifying examination committee of eligible faculty as per University rules. Following the general structure used in other SoM programs, the examination will consist of a written portion and an oral portion. The written portion will be a 5-page NIH-style proposal of the thesis research, to be distributed to the qualifying examination committee at least one week prior to the oral examination. At the oral examination the student will present the proposal in a short talk. Qualifying examination committee members will then pose questions to the candidate on the proposed research and the underlying science. The examination will cover both the proposal itself and foundational knowledge in medical physics, imaging, and clinical diagnostics. The examination committee will then grade the student’s performance as either pass or fail. Students failing the examination will be allowed to retake it once. Students who fail the qualifying examination twice will be offered the option to exit the program with a Master’s degree, having completed the extent of coursework required by Stanford University for this degree.

Exam Outcomes

Possible outcomes are that the student:

1. Passes unconditionally
2. Passes conditionally.
   a. In this case, the faculty will outline the weaknesses and how the conditions the student could (or must) fulfill before reconsideration (e.g., specific courses must be taken with the performance at a specified level; communication skills need to be improved as evidenced by ....). With the faculty sponsors’ endorsement, the student will later request a change from “conditional pass” to “pass” after he/she believes that the conditions have been fulfilled. The student will outline in this request the reasons for this belief. The faculty will confer again to act on the request.

3. Fails, with or without the option to retake.

4. The student’s sponsor will notify the student and the Student Services Office of the results of the examination.

Change in advisor
In rare cases a student may choose to change their primary research advisor. As mentioned above, this requires approval from the proposed new advisor as well as the BMP Program Director. In cases where the qualifying exam was passed while the student worked with their old advisor, the student will be required to submit a revised proposal detailing their new research project, and to appear before a panel of three faculty members who will examine her/him/them about this new project. The faculty panel will submit a recommendation to the BMP Program Director in order to help them make a final decision.

6.2 Candidacy
Students must be admitted to candidacy by end of the second year of the student’s PhD Program. Being admitted to candidacy signifies that the department considers the student capable of completing the requirements necessary for earning a PhD degree. Candidacy is valid for five calendar years (through the end of the quarter in which candidacy expires), unless terminated by the department for unsatisfactory progress.

Students who are unable to graduate within the allotted candidacy period for their degree program may request a maximum of one additional year of candidacy per extension. The department is not obligated to grant an extension. Extensions require advisor endorsement, and must include review of a progress report, a timetable for completion of any remaining degree requirements, and any other factors regarded as relevant by the department. Students must submit the Application for Extension of Candidacy form to BMP Student Services before the end of their program’s time limit, which is listed in the student’s record in Axess. Extensions are subject to final approval by the Director of Graduate Studies.

To apply for candidacy, students must submit the Application for Candidacy Form to BMP Student Services.

6.3 Dissertation Reading Committee
Each PhD candidate is required to establish a reading committee for a doctoral dissertation within six months after passing the department’s PhD Qualifying exams. Thereafter, the
student should frequently consult with all members of the committee about the direction and progress of the dissertation research.

Students must have at least three faculty members who read and certify their dissertation. At least two members must be on the Stanford Academic Council (see GAP 4.8.1 for membership requirements). It is also required that 2 members of the reading committee be Biomedical Physics faculty.

On occasion, the BMP Program Director may approve the appointment of a reader who is not on the Academic Council, if that person is particularly well-qualified to consult on the dissertation topic and holds a PhD or equivalent foreign degree. Approval is requested using the Petition for Doctoral Committee Form.

Example membership:
1. Principal dissertation advisor (BMP)
2. Co-advisor or reader (non-BMP)
3. Reader (BMP)

The Doctoral Dissertation Reading Committee Form is to be completed and filed with the BMP Student Services within 6 months of taking quals and no later than the end of the third year.

6.4 University Oral Exam and Dissertation Submission

University Oral Exam
The PhD candidate is required to take the University oral examination after the dissertation is substantially completed (with the dissertation draft in writing), but before final approval. The examination consists of a public presentation of dissertation research, followed by substantive private questioning on the dissertation and related fields by the University oral committee (four selected faculty members, plus a chair from another department).

Students should submit the University oral examination form and the Defense Information Form to the department student services office at least four weeks prior to the date of the oral for departmental review and approval. Once the oral has been passed, the student finalizes the dissertation for reading committee review and final approval.

Oral Defense Checklist:
Select your oral exam committee members. All committee members should be members of the Academic Council. In special circumstances it is possible to include an examiner who is not an Academic Council member, which requires prior approval via the petition for non-academic council members form. The Oral Examination committee consists of a minimum of five members:
- The University Chair is a faculty member outside the BMP department
- The other members of the committee are expected to be the members of the dissertation reading committee
- One additional examiner
Schedule your oral defense with your committee members. All committee members must but be present for the full defense. Schedule for the full three hours (even though most defenses are two and half hours)

Work with your advisor’s admin to book a room for your defense. Example: Lucas P083 and Cancer Center G109.

Practice! It is recommended that you practice with students and faculty outside of your lab

One month prior to your oral defense:
- Email the Oral Exam Committee Form to BMP Student Services (student services will obtain the chair signatures)
- Fill out the BMP Defense Webform

Three weeks prior to your exam:
- Provide a draft copy of your dissertation to each member of your oral examination committee
- Ask a lab member/friend to help with refreshments

Dissertation Submission

Please see the Dissertation and Thesis Submission info page for the current dissertation deadlines and procedures for completing and delivering dissertations. It is the student’s responsibility to obtain all required signatures/approvals on all forms and the dissertation.

There are many resources available to help you with the dissertation submission process, including:
- Dissertation Boot Camp
- Dissertation and Thesis FAQs
- University checklist for submission

Dissertation Submission Checklist:
- Review your reading committee members and designate your Final Reader in Axess. The Final Reader needs to certify the submitted dissertation in Axess by the deadline as the final step in the submission process. Please confirm your Final Reader will have internet access and will be available to certify your dissertation in Axess by the deadline.
- Submit your dissertation to your reading committee and collect their signatures on your signature page. The signature page and title page must be on acid free paper. All signatures must be in ink (not scanned or copied). *
- Submit your ink signed signature and title page in person to the Student Services Center.*
- Electronically submit your final dissertation to Stanford Libraries’ digital repository. It is highly recommended to submit at the latest by 10am the morning of the deadline so your Final Reader has some time to do the final certification in Axess prior to the Noon deadline.
- By Noon of the deadline the designated Final Reader certifies the submitted dissertation in Axess.

* Please see the registrar’s website for updates regarding the electronic submission of signature pages in 2020-21 during COVID-19.
7 Special Registration Statues

7.1 Terminal Graduate Registration (TGR)

Terminal Graduate Registration (TGR) status provides a special tuition rate for approved PhD students ($3672 in 2022-23. As course work is no longer considered necessary during this advanced stage of study, units are no longer counted towards residency. Within certain restrictions and after tuition adjustment to the appropriate unit rate, TGR students may enroll in additional courses at their expense. The TGR tuition rate will cover 3 units of tuition.

BMP PhD students are required and responsible for applying for TGR status as soon as they are eligible. Students are eligible to apply for TGR status if they have:
- Completed 135 units
- Completed all required courses and degree requirements other than the University oral exam and dissertation
- Been admitted to candidacy
- Submitted a Doctoral Dissertation Reading Committee form

To apply for TGR status students must meet the above criteria and complete the following items prior to the preliminary study list deadline of the requesting quarter:
- Enroll in BMP 802 for 0-3 units with their research advisor for the requested TGR quarter
- Submit the Request for TGR Status eform in Axess for the requested TGR

Students approved for TGR status must register for TGR Dissertation, BMP 802 (TGR Dissertation for zero units) each quarter through AXESS. TGR Grading is as follows: "N" for satisfactory progress, "N-" for unsatisfactory progress, and "P" for a final grade when everything has been finished. A hold on registration is placed for a student who receives an "N-" grade for more than two consecutive quarters.

7.2 Graduation Quarter

Registration is required for the term in which a student submits a dissertation or has a degree conferred. Students who meet the following conditions are eligible to be assessed a special tuition rate for the quarter ($150 in 2022-23) in which they are receiving a degree. Students on Graduation Quarter are registered at Stanford and, therefore, have the rights and privileges of registered students.

Only one Graduation Quarter may be requested for each degree program. Students who, for whatever reason, are not graduated during the Graduation Quarter will be assessed a higher, standard tuition rate in subsequent terms. Requests should be directed to the Student Service Office.

Students eligible to apply for graduation quarter if:
- All coursework, degree requirements, and residency requirements for all graduate degree programs, including joint degree programs, have been completed prior to the start of the requested Graduation Quarter.
The student has only to defend and/or submit the dissertation, project, or master’s thesis by the deadline for submission in the term designated as the graduation quarter. The student has filed all necessary forms regarding graduation quarter before the first day of the term chosen as graduation quarter.

To apply for graduation quarter students must complete the following prior to the preliminary study list deadline of the requesting quarter:

- Apply to graduate for the requested term in Axess (see here for details)
- Enroll in BMP 802 for zero units for the requested quarter (*graduation quarter rate only covers zero units of enrollment*)
- Submit the Graduation Quarter Petition eform via Axess.

A graduate student must have an active program status, which may include an approved leave of absence, in the term immediately preceding the term chosen as the Graduation Quarter (not applicable for undergraduates).

Commencement
Commencement is held once a year, in June. There are two ceremonies. The first one is the University ceremony (main event), and the department ceremony (diploma distribution) follows. Information about commencement is typically available starting in Spring quarter.

7.3 Leave of Absence
If a break in continuous formal study is needed, graduate students must request a leave of absence from the Director of Graduate Studies. Students interested in a Leave of Absence should carefully review the University Leave of Absence policy (see GAP 5.3.1) to learn about potential implications for graduate housing, health insurance, financial aid, visa status, and more. Leaves of absence do not stop the time limit for degree completion or clearing incomplete grades.

Leaves of absence are granted for a maximum of one calendar year, or four quarters. Leaves of absence for graduate students may not exceed a cumulative total of two years (eight quarters including Summer quarters). See GAP 5.3.1 for more information regarding leave lengths.

Students considering a Leave of Absence should schedule a meeting with the Student Services Manager and the Director of Graduate Studies to discuss the implications of taking a leave. International students must consult with the Bechtel International Student Center prior to requesting a Leave of Absence. Leave of Absence information for International Students is available on the Bechtel International Center website here.

Students who wish to take a leave of absence must submit the Leave of Absence eForm in Axess. In the form, students should explain the request and provide a proposed schedule for completion of the PhD degree. Students must also submit a letter of support from the research advisor. Students who wish to return after an approved leave of absence has expired, must apply for reinstatement (see GAP 5.4.1.)
7.4 Internship Requests
Biomedical Physics PhD students may request to pursue an internship during summer quarter after they have successfully passed the qualifying exam and be in good academic standing. Students who, with advisor consent, wish to pursue an internship in Autumn, Winter or Spring quarter are required to have TGR status and be in good academic standing.

8 Health Insurance
All students are strongly encouraged every year to take time to review Student Health Matters, which is the guide to your health at Stanford.

8.1 Health Insurance Requirement
Every registered student is initially automatically enrolled in Cardinal Care in their first registered quarter of each academic year. Students who wish to remain enrolled in the plan for the entire academic year (or remainder of the year, for students whose first registered quarter is not Autumn) need to acknowledge enrollment in the plan by the applicable deadline.

For students entering in Autumn Quarter, the waiver deadline is September 15 (August 15 for international students). All students need to act to either acknowledge enrollment in Cardinal Care for the academic year, or waive their enrollment, by this deadline. More information on the acknowledgement and waiver process, can be found here for domestic students and here for international students.

8.2 Cardinal Care
Cardinal Care, the University sponsored health insurance option, is a comprehensive plan specifically designed for Stanford students. The annual plan, which runs from September 1 through August 31, includes coverage in Summer Quarter (whether you are registered that quarter or not). The annual cost of Cardinal Care for the 2022-2023 academic year is $6,768 ($2,256 per quarter) and is now fully subsidized by the University:

For questions, please contact Vaden’s Health Insurance Office at 650-723-2135 or submit a ServiceNow Ticket.

8.3 Campus Health Services Fee
The Campus Health Service Fee is a quarterly fee ($241/quarter in 2022-23 that is mandatory for all undergraduate and graduate students enrolled on the Stanford main campus, including visiting student researchers and students who participate in high school summer programs that result in course credit at Stanford. This fee, which is charged on the student bill each quarter that tuition is charged, covers many of the services provided at Vaden Health Center including primary care visits, CAPS evaluation and short-term therapy, and health and wellness programs.

9 Program Contacts, Campus Partners and Resources
9.1 Biomedical Physics Program
## BMP Leadership and Staff Contacts

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP Program Director</td>
<td>Ted Graves</td>
</tr>
<tr>
<td>BMP Co-Directors</td>
<td>Dan Ennis, Dan Spielman, Sharon Pitteri</td>
</tr>
<tr>
<td>Student Services Manager</td>
<td>Sofia Gonzales</td>
</tr>
</tbody>
</table>

### 9.2 School of Medicine

**Biosciences Office of Graduate Education Leadership**

*A full listing of the Biosciences OGE can be found here.*

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Associate Dean for Graduate Education and Postdoctoral Affairs</td>
<td>Sheri Krams</td>
</tr>
<tr>
<td>Associate Dean for Graduate Education and Postdoctoral Affairs</td>
<td>Tony Ricci</td>
</tr>
<tr>
<td>Advising Dean for Graduate Education and Postdoctoral Affairs</td>
<td>David Schneider</td>
</tr>
<tr>
<td>Associate Dean of Educational Programs and Services Director of Finance of Administration</td>
<td>Julia Kennedy Tussing</td>
</tr>
<tr>
<td>Associate Dean for Graduate and Career Education and Diversity</td>
<td>Ayodele Thomas</td>
</tr>
</tbody>
</table>

### 9.3 Graduate Life Office (GLO)

The [Graduate Life Office (GLO)](#) provides comprehensive and impartial guidance and information about all aspects of life as a graduate student. The Assistant Deans can help you with personal issues, roommate problems, family issues, health concerns, academic challenges, financial difficulties, etc. The GLO team is available during office hours at 650-736-7078, or 24/7 at 650-723-8222, pager ID number 25085.

### 9.4 Academic Support and Resources

- [English for Foreign Students](#) language programs
- [Hume Center for Writing and Speaking](#) support for all stages of the academic program through writing of the dissertation
- [Office of Accessible Education (OAE)](#) support and services for students with disabilities
- [Vice Provost Graduate Education (VPGE)](#) fellowships and other funding, professional development, and networking
- [Vice Provost Teaching & Learning (VPTL)](#) resources to students as both learners and instructors, and academic skills coaching.

### 9.5 Mental Health and Wellness Resources

Stanford is dedicated to promoting students’ mental health and well-being. There are specialists on campus who can address your concerns in a confidential and supportive setting.
Confidential Resources

- Counseling and Psychological Services (CAPS)
- Confidential Support Team (CST) – support for students impacted by sexual assault and relationship violence
- Office of the Ombuds
- Religious Life Office
- The Bridge peer counseling
- Biosciences Peer Mentors (BioPeers) – BioPeers provide free and private peer-to-peer support for the Biosciences graduate student community

Health and Wellness

- Counseling and Psychological Services (CAPS)
- Confidential Support Team (CST) – support for students impacted by sexual assault and relationship violence
- iThrive
- Office of Sexual Assault & Relationship Abuse Education & Response (SARA)
- Recreation and Wellness – gym/athletic facilities, classes and intramural sports, etc.
- Religious Life Office
- Vaden Student Health Center - Point of contact for all things health related including medical care and health insurance
- Wellness Network directory
- Weiland Health Initiative – promotes wellness across gender identities and sexual orientations
- Windhover contemplation center

Professional Development Resources

- BEAM, Stanford Career Education – career development resources that include career counseling, job opening, networking, workshops and assessments
- BioSci Careers – career resources specifically supporting the professional development of medical and life science trainees
- Haas Center for Public Service
- HUME Center for Writing & Speaking
- Vice Provost for Graduate Education (VPGE)
- Vice Provost Teaching & Learning (VPTL) resources to students as both learners and instructors, and academic skills coaching

Safety Resources

- 5-SURE – safe escort on campus. Phone: 650-725-SURE (650-725-7873)
- Stanford Department of Public Safety (SUDPS). Phone: 650-329-2413

Student Organizations

There are a large variety of organizations on campus, and we encourage you to connect with your peers across campus. For a partial list of Stanford graduate student organizations, please see below:
10 Facilities Resources

10.1 Facilities and Space
Biomedical Physics is part of the School of Medicine. The facilities and personnel of the BMP program are housed in across the Stanford School of Medicine, including at the Richard M. Lucas Center for Imaging, the Center for Clinical Sciences Research, the James H. Clark Center, the Stanford Advanced Medicine Center, and the Porter Drive Research Park.

Room Reservations
BMP has access to a variety of meeting and classrooms that can be booked for student use. These spaces can be booked at no cost to you. To book a room, please first contact Sofia Gonzales (sofias@stanford.edu). Some spaces may be reserved online at https://25live.collegenet.com/stanford. When booking a room please remember:
- Choose a space that adequately fits your expected headcount
- To see if a room is available go online to 25live or scan the QR code outside the room
- Cancel spaces when your meetings get cancelled
- Some event spaces cannot be booked on 25live. To reserve these spaces please email SEQ services (seq-services@stanford.edu).

LKSC 4th Floor Student Lounge & Fitness Center
The LKSC 4th floor student lounge and fitness center spaces is restricted to current Stanford Medicine and BioSciences, graduate students, including co-terminal students. Visiting medical students, post-docs, staff, faculty and alumni are not granted access.

Local Eats
Below are a few local favorite eateries near the School of Medicine. For the full list of campus please see here.
- Blend Eatery (Gilbert Biology Building)
- Bytes Café (David Packard EE)
- Coupa Café (Y2E2&Huang)
- Forbes Café (Huang)
- Get Tha Fork Outta Here BBQ Restaurant & Pub (ChEM-H)
- Hospital cafeteria (500 Pasteur Dr.)
- Ike’s (355 Roth Way)
- Lutticken’s Deli (CCSR)
- Lutticken’s Mexican Café (Beckman Center)
- NEXUS Café (Clark)
- Peet’s Coffee and Tea (3rd floor Clark)
- Starbucks (LKSC)
- Zoom Coffee Truck (Hospital fountain)