HEALTH RESEARCH AND POLICY

Courses offered by the Department of Health Research and Policy are listed under the subject code HRP on the Stanford Bulletin’s ExploreCourses web site.

The Department of Health Research and Policy has two principal areas of scholarly interest:

1. Epidemiology is the study of the distribution and determinants of illness and impairment in human populations. Epidemiology training provides analytic tools for clinical and translational research, including studies of disease etiology, prevention, and therapy.
2. Health Policy/Health Services Research is concerned with many aspects of health policy analysis in the public and private sectors.

Graduate Programs in Health Research and Policy

The programs in Epidemiology and the programs in Health Policy are housed in the Department of Health Research and Policy. These programs offer master’s degrees and doctoral degrees in Epidemiology and Clinical Research and in Health Policy.

For additional information, send email to hrpadmissions@stanford.edu.

The department offers a Master of Science in Health Policy and a Master of Science in Epidemiology & Clinical Research.

Master of Science in Health Policy

University requirements for the M.S. degree are described in the "Graduate Degrees (http://exploredegrees.stanford.edu/graduatedegrees)" section of this bulletin.

The master’s degree program in Health Policy seeks to train students in the quantitative analysis of issues in health and medical care. The program is based upon an individual development plan, and includes both course work and completion of a master’s project under the direction of a program core faculty member. The typical student in the program is a physician who has completed residency training and is preparing for a research career, or the program also admits Stanford medical students and others with a strong background in health policy analysis. The core faculty interests include outcomes research, health economics, health care organization, health care access, implementation science, quality of care, decision analysis, clinical guidelines, and assessment of patient preferences and quality of life.

To receive the degree, students are expected to demonstrate knowledge of issues in health policy and the quantitative skills necessary for research in this area. Students must take at least 45 units of course work and write a University thesis. The course work requirements are:

Required Courses:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP 261</td>
<td>Intermediate Biostatistics: Analysis of Discrete Data</td>
<td>3</td>
</tr>
<tr>
<td>HRP 262</td>
<td>Intermediate Biostatistics: Regression, Prediction, Survival Analysis</td>
<td>3</td>
</tr>
<tr>
<td>HRP 391</td>
<td>Health Law: Finance and Insurance</td>
<td>3</td>
</tr>
<tr>
<td>HRP 392</td>
<td>Analysis of Costs, Risks, and Benefits of Health Care</td>
<td>4</td>
</tr>
</tbody>
</table>

Required for students funded by NIH training grants:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>MED 255</td>
<td>The Responsible Conduct of Research</td>
<td>1</td>
</tr>
</tbody>
</table>

OR

Concentration Requirements:  

Choose 1 of the following Concentration Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP 218</td>
<td>Methods for Health Care Delivery</td>
<td>2</td>
</tr>
<tr>
<td>HRP 252</td>
<td>Outcomes Analysis</td>
<td>4</td>
</tr>
<tr>
<td>HRP 256</td>
<td>Economics of Health and Medical Care</td>
<td>5</td>
</tr>
<tr>
<td>HRP 263</td>
<td>Advanced Decision Science Methods and Modeling in Health</td>
<td>3</td>
</tr>
</tbody>
</table>

Thesis Units:

At least 12 units of thesis units:

<table>
<thead>
<tr>
<th>Course</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HRP 399</td>
<td>Graduate Research</td>
<td>12-15</td>
</tr>
</tbody>
</table>

Pre-approved electives include:

Additional approved elective courses to complete the program total of at least 45 units. Other electives, consistent with the student's individual development plan, may be approved by the student's faculty adviser and the program director.

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<thead>
<tr>
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<tbody>
<tr>
<td>HRP 206</td>
<td>Meta-research: Appraising Research Findings, Bias, and Meta-analysis</td>
<td>3</td>
</tr>
<tr>
<td>HRP 214</td>
<td>Scientific Writing</td>
<td>2-3</td>
</tr>
<tr>
<td>HRP 219</td>
<td>Evaluating Technologies for Diagnosis, Prediction and Screening</td>
<td>3</td>
</tr>
<tr>
<td>HRP 223</td>
<td>Introduction to Data Management and Analysis in SAS</td>
<td>2</td>
</tr>
<tr>
<td>HRP 229</td>
<td>Spectrum Scholars Seminar</td>
<td>1</td>
</tr>
<tr>
<td>HRP 234</td>
<td>Engineering Better Health Systems: modeling for public health</td>
<td>4</td>
</tr>
<tr>
<td>HRP 249</td>
<td>Topics in Health Economics I</td>
<td>2-5</td>
</tr>
<tr>
<td>HRP 254</td>
<td>Quality &amp; Safety in U.S. Healthcare</td>
<td>3</td>
</tr>
<tr>
<td>HRP 251</td>
<td>Design and Conduct of Clinical Trials</td>
<td>3</td>
</tr>
<tr>
<td>HRP 258</td>
<td>Introduction to Probability and Statistics for Clinical Research</td>
<td>3</td>
</tr>
<tr>
<td>HRP 259</td>
<td>Introduction to Probability and Statistics for Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>HRP 264</td>
<td>Foundations of Statistical and Scientific Inference</td>
<td>1</td>
</tr>
<tr>
<td>GSBGEN 551</td>
<td>Innovation and Management in Health Care</td>
<td>2</td>
</tr>
<tr>
<td>MED 129</td>
<td>Health Care Systems Around the World</td>
<td>4</td>
</tr>
<tr>
<td>MED 236</td>
<td>Economics of Infectious Disease and Global Health</td>
<td>3</td>
</tr>
<tr>
<td>MED 273</td>
<td>Biodesign for Digital Health</td>
<td>3</td>
</tr>
<tr>
<td>PEDS 202A</td>
<td>Practical Applications for Qualitative Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PEDS 202B</td>
<td>Practical Applications for Qualitative Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STATS 216</td>
<td>Introduction to Statistical Learning</td>
<td>3</td>
</tr>
<tr>
<td>STATS 266</td>
<td>Advanced Statistical Methods for Observational Studies</td>
<td>2-3</td>
</tr>
</tbody>
</table>
For additional information on course requirements and admissions process, please see our department website (http://med.stanford.edu/hsr/grad_programs/mshsr.html).

Please address inquiries to the HRP Education Program Manager at 650-723-5456 or hrpadmissions@stanford.edu.

**Master of Science in Epidemiology and Clinical Research**

University requirements for the M.S. degree are described in the "Graduate Degrees (http://exploredegrees.stanford.edu/graduatedegrees)" section of this bulletin.

The Graduate Program in Epidemiology offers instruction and interdisciplinary research opportunities leading to the M.S. degree in Epidemiology and Clinical Research. Epidemiology is the study of the distribution and determinants of illness and impairment in human populations. Epidemiologic methods are used by clinical investigators and by other scientists who conduct observational and experimental research on the identification, prevention, and treatment of human disorders.

Core and affiliated faculty come from the Department of Health Research and Policy and other Stanford University departments. The program has particular strengths in cancer epidemiology, cardiovascular disease epidemiology, epidemiologic methods, genetic epidemiology, global health, infectious disease epidemiology, musculoskeletal disease epidemiology, neuroepidemiology, and reproductive epidemiology and women's health. Students can select an optional concentration in global health or infectious diseases.

The mission of the Stanford University School of Medicine is to be a premier research-intensive medical school that improves health through leadership, diversity, and collaborative discoveries and innovation in patient care, education and research. The Graduate Program in Epidemiology fosters this mission through the training of physician investigators in techniques of clinical research. The department also welcomes students from other disciplines who would benefit from formal training in epidemiologic methods. The master's degree in Epidemiology and Clinical Research provides students with the skills essential to patient-oriented clinical research, including epidemiologic methods and statistical analysis.

For undergraduates at Stanford University, the program offers a coterminal M.S. in Epidemiology and Clinical Research. Coterminal students have the opportunity to pursue epidemiological research at the intersection of public health, disease treatment, and disease prevention. Additional information on our coterminal M.S. program can be found on our department website (http://med.stanford.edu/epidemiology/co-term.html).

To receive the M.S. degree, students are expected to obtain a grounding in epidemiologic methods and applied biostatistics and to demonstrate research skills through the completion of a thesis. The master's degree program is typically completed in two years (four to six quarters).

Students must complete at least 45 units of approved course work as well as a master's thesis which is usually based on original research related to clinical epidemiology.

**REQUIRED COURSES:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP 225</td>
<td>Design and Conduct of Clinical and Epidemiologic Studies</td>
<td>3</td>
</tr>
</tbody>
</table>

**Biostatistics:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP 259</td>
<td>Introduction to Probability and Statistics for Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>HRP 261</td>
<td>Intermediate Biostatistics: Analysis of Discrete Data</td>
<td>3</td>
</tr>
<tr>
<td>HRP 262</td>
<td>Intermediate Biostatistics: Regression, Prediction, Survival Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research seminar:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP 236</td>
<td>Epidemiology Research Seminar (at least 3 units)</td>
<td>1</td>
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</tbody>
</table>

**Research:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP 399</td>
<td>Graduate Research (at least 12 units)</td>
<td>12</td>
</tr>
</tbody>
</table>

**Research conduct:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MED 255</td>
<td>The Responsible Conduct of Research OR MED 255C</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>The Responsible Conduct of Research for Clinical and Community Researchers</td>
<td>1</td>
</tr>
</tbody>
</table>

Other approved selective and elective courses to complete the program total of at least 45 units.

**Pre-approved Electives**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP 206</td>
<td>Meta-research: Appraising Research Findings, Bias, and Meta-analysis</td>
<td>3</td>
</tr>
<tr>
<td>HRP 212</td>
<td>Cross Cultural Medicine</td>
<td>3</td>
</tr>
<tr>
<td>HRP 214</td>
<td>Scientific Writing</td>
<td>2-3</td>
</tr>
<tr>
<td>HRP 216</td>
<td>Analytical and Practical Issues in the Conduct of Clinical and Epidemiologic Research</td>
<td>2-3</td>
</tr>
<tr>
<td>HRP 218</td>
<td>Methods for Health Care Delivery Innovation, Implementation and Evaluation</td>
<td>2</td>
</tr>
<tr>
<td>HRP 219</td>
<td>Evaluating Technologies for Diagnosis, Prediction and Screening</td>
<td>3</td>
</tr>
<tr>
<td>HRP 223</td>
<td>Introduction to Data Management and Analysis in SAS</td>
<td>2</td>
</tr>
<tr>
<td>HRP 231</td>
<td>Epidemiology of Infectious Diseases</td>
<td>3</td>
</tr>
<tr>
<td>HRP 234</td>
<td>Engineering Better Health Systems: modeling for public health</td>
<td>4</td>
</tr>
<tr>
<td>HRP 235</td>
<td>Designing Research-Based Interventions to Solve Global Health Problems</td>
<td>3-4</td>
</tr>
<tr>
<td>HRP 237</td>
<td>Practical Approaches to Global Health Research</td>
<td>3</td>
</tr>
<tr>
<td>HRP 238</td>
<td>Genes and Environment in Disease Causation: Implications for Medicine and Public Health</td>
<td>2-3</td>
</tr>
<tr>
<td>HRP 239</td>
<td>Statistical Methods for Group Comparisons and Causal Inference</td>
<td>3</td>
</tr>
<tr>
<td>HRP 244</td>
<td>Developing Measurement Tools for Health Research</td>
<td>2</td>
</tr>
<tr>
<td>HRP 249</td>
<td>Topics in Health Economics I</td>
<td>2-5</td>
</tr>
</tbody>
</table>
depends on the number of units and quarters as a registered student
Access to financial aid and other options for coterminal students
additional details. See also the Registrar's coterminal degrees
cotermdegrees)
their undergraduate degree. See the "Coterminal Degrees
Coterminal students must have at least one quarter of overlap
biotech.
programs, M.D. degrees, or to pursue careers in public health, pharma or
clinical research. The department anticipates that many go on to Ph.D.
towards the master's thesis.
their dual status as both undergraduate and graduate student.
For additional information on the application process, see the
department's coterminal page (http://med.stanford.edu/epidemiology/
coterm.html). Address inquiries to the HRP Education Program Manager at 650-723-5456 or hrpadmissions@stanford.edu.

University Coterminal Requirements
Coterminal master's degree candidates are expected to complete all
master's degree requirements as described in this bulletin. University
requirements for the coterminal master's degree are described in the
"Coterminal Master's Program (http://exploredegrees.stanford.edu/
cotermdegrees)" section. University requirements for the
master's degree are described in the "Graduate Degrees (http://
exploredegrees.stanford.edu/graduatedegrees/#masterstext)" section of
this bulletin.

After accepting admission to this coterminal master's degree program,
students may request transfer of courses from the undergraduate to the
graduate career to satisfy requirements for the master's degree. Transfer
courses to the graduate career requires review and approval of both
the undergraduate and graduate programs on a case by case basis.

In this master's program, courses taken during or after the first quarter
of the sophomore year are eligible for consideration for transfer to the
graduate career; the timing of the first graduate quarter is not a factor.
No courses taken prior to the first quarter of the sophomore year may be
used to meet master's degree requirements.

Course transfers are not possible after the bachelor's degree has been
conferred.
The University requires that the graduate adviser be assigned in the
student's first graduate quarter even though the undergraduate career
may still be open. The University also requires that the Master's Degree
Program Proposal be completed by the student and approved by the
department by the end of the student's first graduate quarter.

Ph.D. in Epidemiology and Clinical Research
Overview
The field of epidemiology is poised to undergo major changes, and this
Ph.D. program offers a cutting-edge curriculum that reflects this shift.
Driven by technological advancements, the availability of very large
datasets, and the omics revolution, epidemiology is moving toward what
some have called Big Epidemiology, where epidemiologists partner with
other scientists to study vast amounts of data. Thus, this program will
train epidemiologists and clinical researchers to be savvy in technology,
computing, data mining, bioinformatics, and genomics. The curriculum
capitalizes on Stanford's unique strengths in these disciplines.
After matriculating, students will meet with their academic advisers to
plan out an individually tailored curriculum. Students who matriculate
with prior training in epidemiology and statistics may replace

Any graduate level HRP courses with primary focus on epidemiology or
health services content or methods can be taken as electives, if approved
by the student's epidemiology advisor.

Notes:

• HRP 251 is recommended but not required for coterminal students
and students in designated tracks.
• Students are assigned a methodology mentor from the Division of
Epidemiology and they also select a research mentor, who may be
from another department. For physicians, the research mentor is
often a faculty member from the department of the student's clinical
specialty.
• See the Division of Epidemiology web site (http://med.stanford.edu/
epidemiology/grad_programs/MS-overview) for additional
information regarding our program and admissions process.
• Address inquiries to the HRP Education Program Manager at 650-723-5456 or hrpadmissions@stanford.edu.

Coterminal Master of Science in Epidemiology and Clinical Research
The coterminal master's degree is available only to current Stanford
undergraduates. The M.S. entails a minimum of 45 units of course
work but can require more depending upon the courses chosen and the
previous training of the student; a minimum of 12 units must be applied
towards the master's thesis.

The coterminal Master of Science program follows the same program
requirements as the Master of Science (academic), except that the
student is not required to take the course in Clinical Trials. Students who
desire to concentrate in a specific area can participate in one of the track
areas (Infectious Diseases, Global Health), although this is not required.
To pursue a research project, the student must make arrangements
with program faculty. Coterminal students are enrolled full-time and
courses are taken on campus. Graduates of this program are prepared
to contribute creatively to basic or applied projects in epidemiology and
clinical research. The department anticipates that many go on to Ph.D.
programs, M.D. degrees, or to pursue careers in public health, pharma or
biotech.

Coterminal students must have at least one quarter of overlap
in the undergraduate and graduate career prior to conferring
their undergraduate degree. See the "Coterminal Degrees (http://
exploredegrees.stanford.edu/cotermdegrees)" section of this bulletin for
additional details. See also the Registrar's coterminal degrees (https://
registrar.stanford.edu/students/coterminal-degree-programs) pages.

Funding Sources
Access to financial aid and other options for coterminal students
depends on the number of units and quarters as a registered student
at Stanford. Coterminal students have full access to undergraduate
sources of financial aid until their twelfth quarter or four years of study.
Coterminal students who have completed 180 units are eligible for
University fellowships and assistantships. However, many federal and
private fellowships and assistantships are awarded only to students
who have received the bachelor's degree. Even after the conferral of
the bachelor's degree, there is no guarantee that a coterminal student be
awarded financial support via a RA-ship, TA-ship, or fellowship.

Coterminal Master of Science in
Epidemiology and Clinical Research

Notes:

• HRP 251 is recommended but not required for coterminal students
and students in designated tracks.
• Students are assigned a methodology mentor from the Division of
Epidemiology and they also select a research mentor, who may be
from another department. For physicians, the research mentor is
often a faculty member from the department of the student’s clinical
specialty.
• See the Division of Epidemiology web site (http://med.stanford.edu/
epidemiology/grad_programs/MS-overview) for additional
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introductory core courses with more advanced courses, subject to approval. Beyond core course requirements, students select electives that delve deeper into a particular area of specialization of their choosing. Innovative online learning approaches will help meet the needs of physician-students, who will also be busy with clinical duties.

Students will take core courses in epidemiology and biostatistics. In addition to these core courses, Ph.D. students must additionally take 3 “big epidemiology” elective courses in three key areas:

1. an advanced quantitative course (encompassing statistics, computer science, or economics)
2. a big data course
3. a genetics/genomics/bioinformatics course

**Degree Requirements**

University requirements for the Ph.D. are described in the "Graduate Degrees ([http://stanford.edu/dept/registrar/bulletin/4901.htm](http://stanford.edu/dept/registrar/bulletin/4901.htm))" section of this bulletin.

Ph.D. students must complete a minimum of 135 units (as per University requirements), including 45 course units exclusive of HRP 236 Epidemiology Research Seminar, HRP 299 Directed Reading in Health Research and Policy, and HRP 399 Graduate Research.

### Units

<table>
<thead>
<tr>
<th>Epidemiologic methods sequence</th>
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<tbody>
<tr>
<td>HRP 225 Design and Conduct of Clinical and Epidemiologic Studies</td>
<td>3</td>
</tr>
<tr>
<td>HRP 226 Intermediate Epidemiologic and Clinical Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>HRP 251 Design and Conduct of Clinical Trials (Required of students in the clinical research concentration; other doctoral students may opt to replace HRP251 with an alternate epidemiology course.)</td>
<td>3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Biostatistics sequence</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>HRP 259 Introduction to Probability and Statistics for Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>HRP/STATS 261 Intermediate Biostatistics: Analysis of Discrete Data</td>
<td>3</td>
</tr>
<tr>
<td>HRP 262 Intermediate Biostatistics: Regression, Prediction, Survival Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

**“Big Epidemiology” elective course**

<table>
<thead>
<tr>
<th>Take one of the following advanced quantitative courses</th>
<th>3-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any 200-level STATS course (other than STATS 260)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Attendance at one meeting of the GCRC Protocol Review Committee.</td>
<td></td>
</tr>
<tr>
<td>3. R Proficiency: students must show proficiency in the computing language R or must take an approved course in R.</td>
<td></td>
</tr>
<tr>
<td>4. Attendance at the twice monthly Epidemiology and Clinical Research PhD workshops.</td>
<td></td>
</tr>
<tr>
<td>5. Doctoral students fulfill the remaining University unit requirements through doctoral dissertation work.</td>
<td></td>
</tr>
</tbody>
</table>

**Advising**

Academic advising by our faculty is a critical component of our graduate students' education.

All matriculating students will be assigned a faculty adviser from the group of core faculty to help them design their academic program. The program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education ([https://vpge.stanford.edu/academic-guidance/advising-mentoring](https://vpge.stanford.edu/academic-guidance/advising-mentoring)) and in the Graduate Academic Policies and Procedures ([https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3-page-3-3-1](https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3-page-3-3-1)) manual.

See the department's website ([http://med.stanford.edu/epidemiology/grad_programs/phd-ecr.html](http://med.stanford.edu/epidemiology/grad_programs/phd-ecr.html)) for additional information on degree requirements and admissions process. Address inquiries to the HRP Education Program Manager at 650-723-5456 or hradmissions@stanford.edu.

**Ph.D. in Health Policy**

Stanford Health Policy, through the Department of Health Research and Policy at the Stanford University School of Medicine, offers a Ph.D. program which promises to educate students to be scholarly leaders in the field of health policy, and to be highly knowledgeable about the theoretical and empirical approaches that can be applied in the development of improvements in health policy and the health care system. The curriculum offers courses across a wide range of

<table>
<thead>
<tr>
<th>Electives</th>
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</tr>
</thead>
<tbody>
<tr>
<td>M 255</td>
<td>The Responsible Conduct of Research</td>
</tr>
</tbody>
</table>

| Take electives chosen in consultation with the academic adviser to total 135 units. | 64-71 |

| Total Units Required | 135 |

---

**Genetics/genomics/bioinformatics course**

<table>
<thead>
<tr>
<th>Take one of the following genetics/genomics/bioinformatics courses</th>
<th>3-4</th>
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</thead>
<tbody>
<tr>
<td>BIOMEDIN 217/CS 275 Translational Bioinformatics</td>
<td></td>
</tr>
<tr>
<td>GENE 244 Introduction to Statistical Genetics</td>
<td></td>
</tr>
<tr>
<td>HUM BIO 151R Biology, Health and Big Data</td>
<td></td>
</tr>
<tr>
<td>GENE 224 Principles of Pharmacogenomics</td>
<td></td>
</tr>
<tr>
<td>BIOMEDIN/DBIO/CS 273A The Human Genome Source Code</td>
<td></td>
</tr>
<tr>
<td>GENE 210/DBIO 220 Genomics and Personalized Medicine</td>
<td></td>
</tr>
<tr>
<td>STATS 345 Statistical and Machine Learning Methods for Genomics</td>
<td></td>
</tr>
<tr>
<td>or GENE 245 Statistical and Machine Learning Methods for Genomics</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other core courses/requirements</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>MED 255</td>
<td>The Responsible Conduct of Research</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Take electives chosen in consultation with the academic adviser to total 135 units.</td>
<td>64-71</td>
</tr>
</tbody>
</table>

| Total Units Required | 135 |

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**Big data course**

<table>
<thead>
<tr>
<th>Take one of the following big data courses</th>
<th>3-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOMEDIN 215 Data Driven Medicine</td>
<td></td>
</tr>
<tr>
<td>CS 246 Mining Massive Data Sets</td>
<td></td>
</tr>
<tr>
<td>STATS 202 Data Mining and Analysis</td>
<td></td>
</tr>
<tr>
<td>CS 229 Machine Learning</td>
<td></td>
</tr>
<tr>
<td>COMM 382 Big Data and Causal Inference</td>
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</tr>
</tbody>
</table>
health policy areas including health economics, health insurance and government program operation, health financing, international health policy and economic development, cost-effectiveness analysis and the evaluation of new technologies, relevant statistical and methodological approaches, and health policy issues related to public health concerns such as obesity and chronic disease.

In addition to taking a set of core courses, students are expected to complete course work in one of two tracks:

- **Health Economics**: including the economic behavior of individuals, providers, insurers, and governments and how their actions affect health and medical care.
- **Decision Sciences**: with quantitative techniques to assess the effectiveness and value of medical treatments and for decision making about medical care at the individual and/or collective level.

**Requirements**

University requirements for the Ph.D. are described in the "Graduate Degrees" section of this bulletin.

More complete program requirement details are listed on the program website and in the program handbook (link on program website).

**Additional requirements:**

**First Year**

- Completion of first-year course work with minimum grades of 'B-' and an overall/average GPA of a B (3.0).
- Individual development plan (IDP) meeting with primary adviser within the first quarter.
- Meeting with adviser(s) on a regular basis, to be determined with adviser(s).
- Completion of course work in the responsible conduct of research.

**Second Year**

- Completion of second-year course work with minimum grades of 'B-' and an overall/average GPA of a B (3.0).
- Final course work (for both first and second year) must total at least 75 units for both core and track specific courses.
- Individual development plan (IDP) meeting with primary adviser before the end of Autumn Quarter.
- Meeting with adviser(s) on a regular basis, to be determined with adviser(s).
- Completion of second-year paper and funding proposal as part of the second-year tutorial.
- Taking and passing the Written Qualifying Exam.

**Third and Fourth Years**

- Advancement to Ph.D. Candidacy (see below).
- Taking and passing the department Ph.D. Oral Exam (see below).
- Individual development plan (IDP) meeting with primary adviser before the end of Autumn Quarter.
- Meeting with adviser(s) on a regular basis, to be determined with adviser(s).

**Course Work**

The minimum number of units required for a Ph.D. degree at Stanford (satisfied both through coursework and research units) is 135.

Complete course work in one of the following two tracks:

**Health Economics Track**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 270</td>
<td>Intermediate Econometrics I</td>
<td>2-5</td>
</tr>
<tr>
<td>ECON 271</td>
<td>Intermediate Econometrics II</td>
<td>2-5</td>
</tr>
<tr>
<td>ECON 272</td>
<td>Intermediate Econometrics III</td>
<td>2-5</td>
</tr>
<tr>
<td>MGTECON 603</td>
<td>Econometric Methods I</td>
<td>4</td>
</tr>
<tr>
<td>MGTECON 604</td>
<td>Econometric Methods II</td>
<td>3</td>
</tr>
<tr>
<td>MGTECON 605</td>
<td>Econometric Methods III</td>
<td>3</td>
</tr>
</tbody>
</table>

**Micro-Economics**

- Required - one year sequence in microeconomics:
  - ECON 202 Microeconomics I | 2-5
  - ECON 203 Microeconomics II | 2-5
  - ECON 204 Microeconomics III | 2-5
  - Or equivalent: GSBGEN 675 or MGTECON 600 can be substituted for ECON 202 and/or MGTECON 601 can be substituted for ECON 203.

**Decision Science Track**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 270</td>
<td>Intermediate Econometrics I</td>
<td>2-5</td>
</tr>
<tr>
<td>ECON 271</td>
<td>Intermediate Econometrics II</td>
<td>2-5</td>
</tr>
<tr>
<td>ECON 272</td>
<td>Intermediate Econometrics III</td>
<td>2-5</td>
</tr>
<tr>
<td>MGTECON 603</td>
<td>Econometric Methods I</td>
<td>4</td>
</tr>
<tr>
<td>MGTECON 604</td>
<td>Econometric Methods II</td>
<td>3</td>
</tr>
</tbody>
</table>

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Stanford Bulletin 2018-19


Micro-Economics
Required, at least one quarter:
- GSBGEN 675 Microeconomic Theory 3
- Or
- MGTECON 600 Microeconomic Analysis I 4
- MGTECON 601 Microeconomic Analysis II 3
- Or
- ECON 202N Microeconomics I For Non-Economics PhDs 2-5
- ECON 203N Microeconomics II For Non-Economics PhDs 2-5

Discipline-Specific Courses
Required:
- HRP 263 Advanced Decision Science Methods and Modeling in Health 3
- HRP 206 Meta-research: Appraising Research Findings, Bias, and Meta-analysis 3

Choose 4 methods courses such as:
- MS&E 201 Dynamic Systems 3-4
- MS&E 211 Introduction to Optimization 3-4
- MS&E 223 Simulation 3
- MS&E 252 Decision Analysis I: Foundations of Decision Analysis 3-4
- MS&E 263 Healthcare Operations Management 3

Health Policy
Required:
- HRP 252 Outcomes Analysis 4
- HRP 256 Economics of Health and Medical Care 5
- HRP 392 Analysis of Costs, Risks, and Benefits of Health Care 4

Choose 3 additional health-related courses such as:
- HRP 391 Health Law: Finance and Insurance 3
- LAW 3002 Health Law: Quality and Safety of Care 3
- LAW 3009 Health Law: Improving Public Health 3

Practice of Research
Required:
- First-year core tutorial (HRP 201A, HRP 201B, HRP 201C)
- Second-year core tutorial (HRP 800)
- Research in Progress Seminar
- MED 255 The Responsible Conduct of Research 1

GPA/Grade Requirement
Failure to meet grade/GPA requirements (i.e., minimum grade of 'B' in all courses and an overall minimum GPA of 3.0, equivalent to a grade of 'B') means the student is out of compliance with program requirements. In this case, the executive committee may ask the candidate to leave the program or may require other corrective courses of action, including, but not limited to, retaking a course. If progress remains unsatisfactory, the committee may ask the candidate to leave the program.

Ph.D. Candidacy Requirements
- Approval by adviser(s).
- Satisfactory completion of course work and program requirements in first two years.

Written Qualifying Exam
As part of their advancement to Ph.D. candidacy (as listed above), students must take and pass the Written Qualifying Exam. This is offered approximately two weeks after the end of Spring Quarter in the students' second year.

Oral Exam
- In accordance with the Stanford University Graduate Academic Policies and Procedures (GAP) (https://gap.stanford.edu/handbooks/gap-handbook/chapter-4/subchapter-7/page-4-7-1) manual, students must take and pass an Oral Examination as part of the Ph.D. degree requirements.
  - The Oral Examination (colloquially known as the "proposal defense") will be focused mainly on the student's dissertation proposal. As well as examining feasibility and understanding of the dissertation proposal, it tests the candidate's command of the field of study.
  - Students are required to take the Oral Exam after passing their Written Qualifying Exam, and when the adviser believes that the student is ready, however exam must be taken and passed no later than the end of Spring Quarter of the student's third year.

Further details regarding the Written and Oral Exam can be found on the Explore Degrees website (http://exploredegrees.stanford.edu/graduatedegrees/#doctoraltext), Stanford GAP (https://gap.stanford.edu) manual, and our program website (http://med.stanford.edu/hsr/grad_programs/phd.html) and handbook (link on program website).

Ph.D. Dissertation
- Students must present a Ph.D. dissertation that is the result of independent investigation and that constitutes a contribution to knowledge in health services research and health policy.
- Students must select a primary dissertation adviser and at least two additional faculty members to serve on the dissertation committee.
- A presentation of a prospectus outlining the proposed research to the committee is required.
- Receipt of written approval from the dissertation committee chair.
- Submission of a final draft of the work signed by all members of the dissertation committee.

Further details regarding dissertation requirements can be found on the Explore Degrees website (http://exploredegrees.stanford.edu/graduatedegrees/#doctoraltext), Stanford GAP (https://gap.stanford.edu) manual, and our program website (http://med.stanford.edu/hsr/grad_programs/phd.html) and handbook (link on program website).

Final Presentation
- Final presentation is required for graduation.
- The final presentation is a summary of the work accomplished on the Ph.D. research and should occur while the student is still matriculated, during the regular academic quarter.

Advising
Academic advising by our faculty is a critical component of our graduate students' education.
All matriculating students will be assigned a faculty adviser from the group of core faculty to help them design their academic program. Before or shortly after the time that they advance to candidacy for the degree, students are expected to identify a group of at least three thesis advisers (also known as the dissertation reading committee), including a primary thesis adviser. The thesis advisers are selected by the student on the basis of expertise relevant to the thesis project, and may or may not include the originally assigned faculty adviser.

advisers will meet with students within the first quarter of each year to discuss students’ Individual Development Plan(s) (IDPs). Additionally, students will meet with their adviser(s) on a regular basis throughout each year to discuss course selection, development of research projects, and career plans.

Academic progress and student completion of program requirements and milestones are monitored by the program staff and directors and also discussed at quarterly meetings of all PhD advisers.

Requirements and milestones, as well as more detailed descriptions of the program’s expectations of advisers and students, are listed in the Student Handbook, found on the program website (http://med.stanford.edu/hsr/grad_programs/phd.html).

Additionally, the program adheres to the advising guidelines and responsibilities listed by the Office of the Vice Provost for Graduate Education (https://vpge.stanford.edu/academic-guidance/advising-mentoring) and in the Graduate Academic Policies and procedures (https://gap.stanford.edu/handbooks/gap-handbook/chapter-3/subchapter-3/page-3-3-1.html).

See the department’s website (http://med.stanford.edu/epidemiology/grad_programs/phd-ecr.html) for additional information on degree requirements, advising, program milestones, and admissions processes. Address inquiries to the HRP Education Program Manager at 650-723-5456 or hrpadmissions@stanford.edu.

Graduate Advising Expectations

The Department of Health Research and Policy is committed to providing academic 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.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

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.


For a statement of University policy on graduate advising, see the "Graduate Advising (http://exploredegrees.stanford.edu/graduatedegrees/#advisingandcredentials#text)" section of this bulletin.
**Epidemiology**

Director: Steven Goodman (Professor, Medicine, and Health Research and Policy)

Core Faculty and Academic Teaching Staff: Mark Cullen (Professor, Medicine, Health Research and Policy, and Biomedical Data Science), Lisa Goldman-Rosas (Assistant Professor Health Research and Policy, and Medicine), Steven Goodman (Professor, Medicine, and Health Research and Policy), Victor Henderson (Professor, Health Research and Policy, Neurology and Neurological Sciences), John Ioannidis (Professor, Medicine, and Health Research and Policy), Abby King (Professor, Health Research and Policy, and Medicine), Allison Kurian (Associate Professor, Medicine, and Health Research and Policy), Yvonne Maldonado (Professor, Pediatrics, and of Health Research and Policy), Lorene Nelson (Associate Professor, Health Research and Policy), Michelle Odden (Associate Professor, Health Research and Policy), Julie Parsonnet (Professor, Medicine, and Health Research and Policy), Rita Popat (Clinical Associate Professor, Health Research and Policy), Kristin Sainani (Associate Professor, Health Research and Policy), Julia Simard (Assistant Professor, Health Research and Policy)

Affiliated Faculty and Staff by Department:

Biomedical Data Science: Ying Lu (Professor)

Medicine: Jason Andrews (Assistant Professor), Themistocles Assimes (Associate Professor), Michael Baiocchi (Assistant Professor), Sanjay Basu (Assistant Professor), Glenn Chertow (Professor), Ann Hsing (Professor), Erik Ingelsson (Professor), Jennifer Lee (Associate Professor), Mary Leonard (Professor), Stephen Luby (Professor), Latha Palaniappan (Professor), David Rehkopf (Associate Professor), Thomas Robinson (Professor), Marcia Stefanick (Professor)

Pediatrics: Suzan Carmichael (Professor), Bonnie Halpern-Felsher (Professor), Angelle (Desiree) LaBeaud (Associate Professor), Lee Sanders (Associate Professor), Gary Shaw (Professor)