## Degree Codes: ES PhD BIEN

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| Course Category | Number | Course Name |  | SCH |
| :---: | :---: | :---: | :---: | :---: |
| Core Courses | BIEN 500 | Systems Physiology (fall) | 4 | 15 |
|  | BIEN 510 | Biomedical Instrumentation (winter) | 4 |  |
|  | BIEN 501 | Physiological Modeling (spring) | 4 |  |
|  | STAT 620 | Theory of Probability | 3 |  |
| Qualifying Examinations | BIEN 685 | Doctoral Qualifying Exam | 0 |  |
|  | BIEN 686 | Oral Comprehensive Exam ${ }^{1}$ | 0 |  |
| Doctoral Seminar | BIEN 611 | Doctoral Seminar (taken three times in a student's first three quarters) | 1 | 3 |
| Electives ${ }^{2}$ | Take 30 SCH of electives following the protocol described below ${ }^{2}$ |  |  | 30 |
| Research and Dissertation ${ }^{3}$ | BIEN 651 | Pre-Candidacy Doctoral Research | 1-6 | 6 |
|  | BIEN 751 | Post-Candidacy Dissertation Research | 1-9 | 9 |
|  |  |  |  | Total 63 |

${ }^{1}$ BIEN 686 is a presentation of preliminary research achievements and a defense of proposed PhD research. A written proposal, uploaded in a student's plan of study and approved by their committee, is required before a student may enroll in BIEN 686.
${ }^{2}$ Taken under the supervision of the faculty member with the following guidelines.

- At least 15 credit hours must be in Engineering
- At least 3 credit hours must be in Mathematics or Statistics.
- Up to 12 credits total can be taken in Physics, Chemistry, Mathematics, Biology, or Computer Science, and up to 6 credits can be taken in other disciplines that are appropriate to the student's dissertation topic.
- Up to 6 credits total can be taken in Special Topics (BIEN 557) and Directed Study (BIEN 650).
${ }^{3}$ Complete 6 SCH of BIEN 651 prior to BIEN 686. After successful passing BIEN 686, complete 9 SCH of BIEN 751. Registration in any quarter is for 1 to 3 semester hours or multiples thereof, up to a maximum of 6 SCH for BIEN 651 and 9 SCH per quarter for BEIN 751.
Students are expected to have published one or more peer reviewed journal publications or conference proceedings by the time they graduate.
Plan of Study Important Information: When entering information in the plan of study, it is important to note that only core courses and all core courses need to be put in Section 1.1, while all others are put in Section 1.2 (i.e. special topics, seminar, and research courses).
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