### Core
Select one course from each of the following three Core areas (12 credits).

<table>
<thead>
<tr>
<th>Concentration Area</th>
<th>Course/ Semester/ Grade</th>
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</thead>
<tbody>
<tr>
<td>A. Computational and Systems Biology</td>
<td>ENG BE 505 Molecular Biotechnology&lt;br&gt;ENG BE 561 DNA and Protein Sequence Analysis&lt;br&gt;ENG BE 562 Computational Biology: Genomes, Networks, Evolution&lt;br&gt;ENG BE 567 Nonlinear Dynamics in Biological Systems&lt;br&gt;ENG BE 647 Advanced Signals and Systems Analysis for Biomedical Eng&lt;br&gt;ENG BE 760 Structural Bioinformatics&lt;br&gt;ENG BE 767 Protein and Genomic Systems Engineering&lt;br&gt;ENG BE 777 Computational Genomics I</td>
</tr>
<tr>
<td>C. Energy and Environmental Systems</td>
<td>CAS EC 513 Game Theory (both semesters)&lt;br&gt;ENG SE/EC/ME 543 Sustainable Power Systems&lt;br&gt;ENG ME/MS 545 Electrochemistry of Fuel Cells and Batteries&lt;br&gt;CAS EC 571 Energy and Environmental Economics&lt;br&gt;CAS EC 572 Public Control of Business&lt;br&gt;ENG EC/MS 573 Solar Energy Systems&lt;br&gt;GRS GE 712 Regional Energy Modeling&lt;br&gt;GRS EC 716 Game Theory&lt;br&gt;GSM OM 845 Clean Technology Business Models</td>
</tr>
</tbody>
</table>

### Concentration
Select two courses from one Concentration area (8 credits).

<table>
<thead>
<tr>
<th>Concentration/Course/Semester/Grade</th>
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</table>

### Elective
Select 3 courses from the Concentrations listed above, if not used to satisfy the Concentration Requirement; from the other Suggested Electives listed on the reverse; or no more than one Engineering Management Course from the approved list (12 credits).

<table>
<thead>
<tr>
<th>Course/ Semester/ Grade</th>
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### Practicum
Indicate up to two courses (8cr), from the approved list on the next page, used to satisfy Core, Concentration, or Elective requirements.

<table>
<thead>
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<th>Course/ Semester/ Grade</th>
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| _________________________ | Fall 2015
ELECTIVE COURSES

Other Suggested Electives:
- CAS EC 513 Game Theory
- ENG MS 700 Advanced Special Topics
- GRS EC 716 Game Theory
- CAS CS 511 Object-Oriented Software Principles
- GSM OM 855 Project Management
- ENG SE 951 Independent Study
- ENG SE 954 MS Thesis

Engineering Management Courses (no more than one permitted)
- ENG ME 502 Invention: Technology Creation, Protection, & Commercialization
- ENG ME 517 Product Development
- ENG ME 525 Technology Ventures
- ENG ME 550 Product Supply Chain Design
- ENG ME 583 Product Management
- ENG ME 584 Manufacturing Strategy
- ENG EK 691 Lean and Agile New Product Development
- GSM OB 848 E1 The Leadership Challenge
- GSM SI 839 Design & Innovation Strategy
- GSM SI 852 Starting New Ventures
- GSM SI 871 Tech to Market
- GSM PL 870 Gov’t, Society, & the New Entrepreneur
- ENG EK 731/GSM HM 801 Bench to Bedside

Approved Practicum Courses:

1. SE 925 Graduate Project, OR

2. Two of the following, OR
   - ENG ME/MS 507 Process Modeling and Control
   - ENG ME/EC 514 Simulation
   - ENG SE/EC/ME 543 Sustainable Power Systems
   - ENG SE/EC/ME 544 Networking the Physical World
   - ENG ME 570 Robot Motion Planning
   - ENG SE/EC/ME 701 Optimal and Robust Control
   - ENG EC 702 Recursive Estimation and Optimal Filtering
   - ENG SE/ME 704 Adaptive Control
   - ENG SE/EC/ME 710 Dynamic Programming and Stochastic Control
   - ENG EC 715 Wireless Communications
   - ENG SE/EC/ME 724 Advanced Optimization Theory and Methods
   - ENG SE/EC/ME 725 Queueing Systems
   - ENG SE/EC/ME 732 Combinatorial Optimization and Graph Algorithms
   - ENG SE/EC/ME 733 Discrete Event and Hybrid Systems
   - ENG SE/ME/EC 734 Hybrid Systems
   - ENG SE/ME 740 Vision Robotics and Planning
   - ENG SE/EC 741 Randomized Network Algorithms
   - ENG EC 744 Mobile Networking and Computing
   - ENG SE/ME 755 Communication Networks Control
   - ENG SE/ME 762 Nonlinear Systems and Control
   - ENG SE/ME 765 Production System Design
   - ENG SE/ME 766 Advanced Scheduling Models and Methods

3. A Practicum Course from other College of Engineering departments:
   - ENG ME 526 - Simulation of Physical Processes
   - ENG ME 560 Precision Machine Design and Instrumentation
   - ENG EK 691 Lean and Agile New Product Development
   - ENG BE 700 Advanced Topics in Biomedical Engineering
   - ENG EC 952 Directed Group Project