Approved Program of Study for Undergraduate Minors  
Georgia Institute of Technology  
Office of the Registrar  
2017-2018  
Minor in Energy Systems  
(Track for ChBE students)

Please type or print in ink:

<table>
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<tr>
<th>Name (first/last):</th>
<th>GT Student ID Number:</th>
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<tr>
<td>GT Email Address:</td>
<td>Daytime Phone:</td>
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<td>Major:</td>
<td>Anticipated Graduation Date:</td>
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In addition to the guidelines listed below, you are responsible for reviewing and following the general guidelines for minors: [http://www.catalog.gatech.edu/academics/minorguide.php](http://www.catalog.gatech.edu/academics/minorguide.php)

The minor includes requirements for courses which cut across disciplines. These courses are intended to add breadth of knowledge in areas outside the student’s major but important to energy systems. A terminal “capstone” or project course provides an opportunity for students from multiple disciplines to work together in multidisciplinary teams on a significant project in the energy area.

The breadth courses and the capstone project course, courses taken by all students completing the minor, require one or more prerequisites; specifically, basic economics, mathematics, and lab science courses. List of required prerequisites and curriculum requirements and options for this minor are on the following pages. The minor must consist of at least 15 hours and all courses in the minor also must be 3000 level and above.

A multidisciplinary or other minor may contain courses in a student’s major field of study. A maximum of 6 semester hours of such courses may be used to satisfy the course requirements for the minor, provided these courses are not also used to satisfy any course requirement in the student’s major degree program.

A maximum of 6 semester hours of Special Topics courses may be included in a minor program or the student may complete 3 semester hours of Special Topics and 3 semester hours of either Special Problems or Undergraduate Research. Students may not use 6 semester hours of either Special Problems or Undergraduate Research for a minor.

A maximum of 3 semester hours of transfer credit may be used to satisfy the course requirements for a minor. This includes courses taken at another institution or credit earned through the AP or IB program, assuming the scores meet Georgia Tech minimum standards.

All courses counting toward the minor must be taken on a letter-grade basis and must be completed with a grade of C (2.00) or better.

It is the major advisor’s responsibility to verify that students are using only courses from the designated block(s) from the student’s major field of study that are allowed to satisfy a minor program, that they are not using any Core Area A-E courses (including humanities and social sciences), and that they are not using any courses for more than one minor or certificate. Any free elective course used to satisfy the course requirements of the student’s major degree program may also be used to satisfy the course requirements for a minor.

List the courses completed for the requested minor:

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<tr>
<th>Course and Section</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Grade</th>
<th>Semester Completed</th>
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<td>GT 4813</td>
<td>Project in Energy Systems</td>
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Student Signature: 

Major School Signature: 

Minor School Signature (Management):
**Prerequisite Courses**
The prerequisites needed for one or more of the courses required for the minor (breadth courses and the capstone project course) are (all existing courses):

a) Mathematics (MATH 1501, 1502, 2401)
b) Physics (PHYS 2211, 2212)
c) Chemistry (CHEM 1310 or 1211K)
d) Economics ECON 2100 or 2101 or (2105 and 2106)

Students ordinarily pursue the minor upon completion of the needed prerequisites. However, the depth course requirements (see below) may be taken as soon as students have met the relevant prerequisites.

**Depth Courses**
The minor requires **six hours of depth courses** related to energy systems. A list of acceptable courses which meet the depth requirement is provided by each major approving the minor. Depth courses may be taken in the student’s major to ensure the depth in that major needed to pursue a multidisciplinary minor. All acceptable depth courses must be consistent with the goals of the minor. Examples of acceptable courses include engineering courses covering a specific energy technology like solar or relevant engineering science.

**Menus of Depth Courses by Program**
The Depth Courses below may have additional prerequisites; please check [http://www.catalog.gatech.edu/courses/index.php](http://www.catalog.gatech.edu/courses/index.php) to view the current prerequisites.

**Chemical & Biomolecular Engineering**
- CHBE 4020 Chemical Engineering in Nanoscale Systems
- CHBE 4310 Bioprocess Engineering
- CHBE 4760 Biocatalysis
- CHBE 4803 Electrochemical Energy Storage & Conversion
- CHBE 6130 Electrochemical Engineering

**Breadth Courses**
The minor requires **six hours of breadth courses** (two courses). Students should strive to complete the necessary prerequisites and the depth courses prior to enrolling in the breadth courses. However, depth courses may be taken concurrently with the courses taken to meet the breadth requirement.

- ECON 3300 Economics of International Energy Markets
- PUBP 3350 Energy Policy
- CHEM 3700 The Science of Alternative Energy

**Capstone Course**
- GT 4813 Project in Energy Systems

Ordinarily, students must complete all minor requirements before they can register for the Project in Energy Systems course.