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# Energy Engineering BS

**IUPUI Indianapolis** School of Engr & Tech (ENGR)

Career Options | Financial Aid Options

**Student's Catalog Year:** Fall 2018–Summer 2019
**Total Degree Map Credits:** 128

**Description:** This broad field of engineering deals with energy efficiency, energy services, facility management, environmental compliance and alternative energy technologies. Energy engineers creatively apply their knowledge of science (physics and chemistry), engineering (electrical and mechanical) and economics to confront the global challenges of energy supply and demand.

C **Critical Courses:** Courses that students should complete by specific points during their degree or certificate program.

M **Milestones:** Conditions or activities that students should complete by specific points during their degree or certificate program.

**Completing a critical course or milestone by the associated term is considered crucial to on-time graduation.**

## Year One
**(33 credits)**

| Fall Term | Minimum Grade | Credits |
|---|---|---|
| First Year Seminar - ENGR 19500 | C- | 1 |
| **Required Semester of Completion:** Year 1, Fall | | |
| MATH 16500 - Analytic Geometry and Calculus I C | C- | 4 |
| **Critical Course**<br>**Course Details:** Also meets General Education Analytical Reasoning (Math)<br>**Required Semester of Completion:** Year 1, Fall<br>**Course Notes:** MATH-I 165: P: MATH 15400 or MATH 15900 with a C or better OR ALEKS placement score of 76 or better. | | |
| ENGR 19600 - Introduction to Engineering C | C- | 3 |
| **Critical Course**<br>**Required Semester of Completion:** Year 1, Fall<br>**Course Notes:** ENGR- 19600: C: MATH 15400 or MATH 15900 | | |
| CHEM-C 105 - Chemical Science I | C- | 3 |

| Spring Term | Minimum Grade | Credits |
|---|---|---|
| MATH 16600 - Analytic Geometry and Calculus II C | C | 4 |
| **Critical Course**<br>**Course Details:** Also meet General Education Analytical Reasoning (Math)<br>**Required Semester of Completion:** Year 1, Spring<br>**Course Notes:** MATH-I 166: P: MATH 16500 with a grade of C- or better. | | |
| MATH 17100 - Multidimensional Mathematics C | C- | 3 |
| **Critical Course**<br>**Required Semester of Completion:** Year 1, Spring<br>**Course Notes:** MATH-I 171: P: MATH 15400 or MATH 15900 with a C or better OR ALEKS placement score of 68 or better. | | |
| PHYS 15200 - Mechanics C | C- | 4 |
| **Critical Course**<br>**Course Details:** Also meets General Education Life & Physical Science Competency<br>**Required Semester of Completion:** Year 1, Spring<br>**Course Notes:** PHYS-I 152: C: MATH 16600 | | |

**Course Details:** Also meets General Education Life & Physical Science Competency
**Required Semester of Completion:** Year 1, Fall
**Course Notes:** CHEM-C 105: C: MATH 15300 AND Placement into CHEM-C 105

COMM-R 110 - Fundamentals of Speech Communication — C- — 3

**Course Details:** Also meets General Education Core Communication - Speaking & Listening Competency
**Required Semester of Completion:** Year 2, Spring

ENG-W 131 - Reading, Rhetoric, and Inquiry 1 — C- — 3

**Course Details:** Also meets General Education Core Communication - Writing Competency
**Required Semester of Completion:** Year 2, Spring

**Total 17**

ENGR 19700 - Introduction to Programming Concepts C — C- — 2

**Critical Course**
**Required Semester of Completion:** Year 1, Spring
**Course Notes:** ENGR- 19700: C: MATH 16500

General Education Cultural Understanding Competency — 3

**Required Semester of Completion:** Year 4, Spring

**Total 16**

## Year Two
**(34 credits)**

### Fall Term

| | Minimum Grade | Credits |
|---|---|---|
| EEN 22000 - Fundamentals of Electrochemical Materials and Energy Engineering C | | 3 |
| EEN 22501 - Energy Engineering Lab I C | | 1 |
| ENGR 29700 - Computer Tools for Engineering C | | 1 |
| MATH 26100 - Multivariate Calculus C | C | 4 |

**Critical Course**
**Course Details:** C: ME 20000 and EEN 22501 AND P: CHEM-C 105
**Required Semester of Completion:** Year 2, Fall

**Critical Course**
**Required Semester of Completion:** Year 2, Fall
**Course Notes:** EEN- 22501: C: EEN 22000 AND ENGR 29700

**Critical Course**
**Required Semester of Completion:** Year 2, Fall
**Course Notes:** ENGR- 29700: P: ENGR 19700

**Critical Course**
**Required Semester of Completion:** Year 2, Fall
**Course Notes:** MATH-I 261: P: MATH 16600 and MATH 17100 with grades of C- or better.

### Spring Term

| | Minimum Grade | Credits |
|---|---|---|
| EEN 24000 - Basic Mechanics C | | 4 |
| EEN 25001 - Energy Engineering Lab II C | | 1 |
| EEN 26000 - Sustainable Energy C | | 3 |

**Critical Course**
**Required Semester of Completion:** Year 2, Spring
**Course Notes:** EEN- 24000: C: MATH 26600 AND P: PHYS 15200 AND MATH 26100.

**Critical Course**
**Required Semester of Completion:** Year 2, Spring
**Course Notes:** EEN- 25001: C: EEN 26200

**Critical Course**
**Required Semester of Completion:** Year 2, Spring
**Course Notes:** EEN- 26000: P: (PHYS 15200, CHEM-C 105 AND MATH 16600) AND C: (PHYS 25100 and ME 20000)

| | | |
|---|---|---|
| ME 20000 - Thermodynamics C | C- | 3 |

**Critical Course**
**Required Semester of Completion:** Year 2, Fall
**Course Notes:** ME- 20000: P: PHYS 15200 AND C: MATH 26100, EEN 22501, CHEM-C 105

| | | |
|---|---|---|
| PHYS 25100 - Heat, Electricity, and Optics C | | 5 |

**Critical Course**
**Course Details:** Also meets General Education Life & Physical Science Competency
**Required Semester of Completion:** Year 2, Fall
**Course Notes:** PHYS-I 251: P: PHYS 15200 AND C: MATH 26100

**Total 17**

| | | |
|---|---|---|
| EEN 26200 - Engineering Design, Ethics, and Entrepreneurship C | | 2 |

**Critical Course**
**Course Details:** P: ENGR 19600 C: COMM-R 110, ENGR 29700, EEN 24000, ENG-W 131, and EEN 25001
**Required Semester of Completion:** Year 2, Spring

| | | |
|---|---|---|
| ECE 20400 - Introduction to Electrical and Electronic Circuits C | C- | 4 |

**Critical Course**
**Required Semester of Completion:** Year 2, Spring
**Course Notes:** ECE- 20400: C: PHYS 25100

| | | |
|---|---|---|
| MATH 26600 - Differential Equations C | C- | 3 |

**Critical Course**
**Required Semester of Completion:** Year 2, Spring
**Course Notes:** MATH-I 266: P: MATH 16600 and MATH 17100 with grades of C- or better.

**Total 17**

## Year Three
**(31 credits)**

### Fall Term

| | Minimum Grade | Credits |
|---|---|---|
| EEN 31000 - Fluid Mechanics | | 3 |

**Required Semester of Completion:** Year 3, Fall
**Course Notes:** EEN- 31000: P: EEN 24000 AND ME 20000 AND C: EEN 32501

| | | |
|---|---|---|
| EEN 32501 - Energy Engineering Lab III | | 1 |

**Required Semester of Completion:** Year 3, Fall
**Course Notes:** EEN- 32501: C: EEN 31000, ME 27200

| | | |
|---|---|---|
| EEN 33000 - Dynamic Systems Modeling and Measurements | | 3 |

**Course Details:** P: ENGR 29700, ECE 20400, MATH 26600, AND EEN 24000
**Required Semester of Completion:** Year 3, Fall

| | | |
|---|---|---|
| ECE 49500 - Fundamentals of Electrical Energy Engineering | | 3 |

### Spring Term

| | Minimum Grade | Credits |
|---|---|---|
| EEN 34500 - Renewable Energy Systems & Design | | 3 |

**Required Semester of Completion:** Year 3, Spring
**Course Notes:** EEN- 34500: P: EEN 26000 AND ME 20000 AND C: ME 31400

| | | |
|---|---|---|
| EEN 35001 - Energy Engineering Lab IV | | 1 |

**Required Semester of Completion:** Year 3, Spring
**Course Notes:** EEN- 35001: C: ME 31400

| | | |
|---|---|---|
| ME 31400 - Heat and Mass Transfer | | 3 |

**Course Details:** P: EEN 31000
**Required Semester of Completion:** Year 3, Spring

| | | |
|---|---|---|
| STAT Elective | | 3 |

**Course Details:** Students can choose from department approved Statistics Elective
**Required Semester of Completion:** Year 4, Spring

| | | |
|---|---|---|
| Technical Elective | | 2 |

**Course Details:** Not all sections of ECE 49500, which is a variable topic course, will satisfy this require. Only the Fundamentals of Electrical Energy Engineering course will satisfy this requirement.
**Required Semester of Completion:** Year 3, Fall
**Course Notes:** ECE- 49500: P: ECE 20400

ME 27200 - Mechanics of Materials 3

**Required Semester of Completion:** Year 3, Fall
**Course Notes:** ME- 27200: P: EEN 24000

ME 32700 - Engineering Economics 3

**Required Semester of Completion:** Year 3, Fall
**Course Notes:** ME- 32700: Can take ECON-E 201 instead

**Total 16**

**Course Details:** Students can choose from the departmetn approved Technical Electives
**Required Semester of Completion:** Year 4, Spring

General Education Arts & Humanities Competency 3

**Required Semester of Completion:** Year 4, Spring

**Total 15**

## Year Four
**(30 credits)**

| Fall Term | Minimum Grade | Credits |
|---|---|---|
| ECE 32100 - Electromechanical Motion Devices | | 3 |
| **Required Semester of Completion:** Year 4, Fall<br>**Course Notes:** ECE- 32100: P: ECE 49500 (Fund. Of Electrical Energy Engineering) | | |
| EEN 42501 - Energy Engineering Lab V | | 1 |
| **Required Semester of Completion:** Year 4, Fall<br>**Course Notes:** EEN- 42501: C: ME 48200 | | |
| EEN 44500 - Compressible Flow and Renewable Kinetic Energy | | 3 |
| **Course Details:** P: EEN 31000<br>**Required Semester of Completion:** Year 4, Fall | | |
| ME 48200 - Control Systems Analysis & Design | | 3 |
| **Required Semester of Completion:** Year 4, Fall<br>**Course Notes:** ME- 48200: P: EEN 33000 AND C: EEN 42501 | | |
| TCM 36000 - Communication in Engineering Practice | | 2 |

| Spring Term | Minimum Grade | Credits |
|---|---|---|
| EEN 46200 - Capstone Design | | 3 |
| **Required Semester of Completion:** Year 4, Spring<br>**Course Notes:** EEN- 46200: C: ME 48200 AND EEN 44500 | | |
| EEN Elective | | 3 |
| **Course Details:** Students can choose from the department approved Energy Electives<br>**Required Semester of Completion:** Year 4, Spring | | |
| EEN Elective | | 3 |
| **Course Details:** Students can choose from department approved Engery Elective<br>**Required Semester of Completion:** Year 4, Spring | | |
| EEN Elective | | 3 |
| **Course Details:** Students can choose from department approved Engery Elective<br>**Required Semester of Completion:** Year 4, Spring | | |
| General Education Arts & Humanities or Social Science Competency | | 3 |
| **Required Semester of Completion:** Year 4, Spring | | |

**Required Semester of Completion:** Year 4, Spring
**Course Notes:** TCM- 36000: P: ENG-W 131, COMM-R 110, and Junior Standing in Engineering

EEN Elective 3

**Course Details:** Students can choose from department approved Engery Elective
**Required Semester of Completion:** Year 4, Spring

Notify School of Intent to Graduate M

**Milestone Details:** Please contact your school to determine appropriate steps necessary to apply for graduation.
**Required Semester of Completion:** Year 4, Fall

**Total 15**

**Total 15**

**Degree Map Link:** https://sisjee.iu.edu/sisigps-prd/web/igps/dm/public/maps/view?mapId=a9557877-9bac-4388-9a23-da50e0841f5e Copy

Achieving minimum grades for individual courses may not result in meeting cumulative GPA requirements for admission to programs or for graduation. Verify requirements with your academic advisor or your Academic Advisement Report (AAR).

Completing 30 credit hours each calendar year is required for full state financial aid eligibility. Be sure to complete your FAFSA before March 10 each year. If you follow your map and find a course unavailable, you may be eligible to take that course for free in a future semester.

More information about the free course guarantee.