Bachelor of Science in Resource and Energy Engineering

About This Program

The Bachelor of Science in Resource and Energy Engineering is designed to prepare individuals to apply mathematical and scientific principles to the design, development and operational evaluation of energy generation, storage, conversion, and distribution systems. This includes instruction in conventional and alternative/ renewable energy systems, electrical power systems, and electrical system design. The program was developed to address the continued growth in the energy industry for both conventional and renewable sources and the need for a much larger, knowledgeable, and well-trained workforce to support and manage the emerging diversity and complexity in the energy industry.

ACCREDITATION

The program is new and will seek accreditation from the Engineering Accreditation Commission of ABET (http://www.abet.org/) under the commission's General Criteria as soon as it is able to do so.

PROGRAM EDUCATIONAL OBJECTIVES

The program is designed so that a few years following graduation students will be able to:

- Advance the mission of their organization by significantly contributing to any of the following engineering disciplines or technologies: energy resources, energy conversion, energy distribution, or energy transmission.
- Demonstrate leadership in one or more significant roles since graduation, as evidenced for example by successful entrepreneurship in a start-up, significant promotions and awards in a company or engineering firm.
- Successfully build on the BSREE degree from UTA by: completing a graduate degree; or taking professional course(s); or earning professional certificate(sStudent Outcomes of the Undergraduate Program.

STUDENT OUTCOMES

Upon completion of the degree, students will be able to:

1. Identify, formulate, and solve complex problems by applying principles of engineering, science, and mathematics.
2. Produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. Communicate effectively with a range of audiences.
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions.
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.

Admissions Criteria

Admission as a Resource and Energy Engineering (REE) major is subject to the relevant requirements and policies of the University of Texas at Arlington and of the UTA College of Engineering. For unconditional transfer into the department, a student must have a minimum grade point average of 2.50 in all science, mathematics and engineering courses, a minimum 3-GPA calculation of 2.50 in UTA coursework, and a total of no more than 4 unsuccessful attempts in engineering courses. REE majors are only allowed to enroll in pre-professional courses until they meet the requirements for the professional program.

TRANSFER CREDIT

When a student transfers, a loss of credit can occur that may require change in academic plans. A course, that appears to be similar, may be different in either content or level of difficulty and, as a result, cannot be used for degree credit. Another course may have no equivalent in a particular degree plan. The UTA Electrical Engineering Department encourages students interested in our programs to make early contact with our advisors so that we can help avoid these problems.

A student must earn a grade of C or better for a course to be transferred. Any course that is offered under the Texas Common Course Numbering system is accepted as equivalent to the corresponding UTA course. It is the responsibility of the student to establish the equivalence of any other course or courses to a course required in a program. The student should be prepared to provide a syllabus or similar documents to establish equivalence. To be acceptable as equivalent, at a minimum, a transferred course must have no less credit value than the corresponding course and contain substantially equivalent course content. To be accepted in transfer, junior and senior level courses must be taken at a college or university with

the same accreditation as UTA in the area offering the course. For example, an Electrical Engineering course must come from an ABET accredited Electrical Engineering program.

When a student's record or performance indicates weakness in certain areas of study, they may be required to retake courses or to take additional courses. Before enrolling in a course at another institution to transfer for credit toward a program degree, a student should consult with a program advisor to verify that the course can be used in the student's degree plan and to obtain the necessary written permission.

ADMISSION TO THE PROFESSIONAL PROGRAM

Requirements for admission to the professional program in Resource and Energy Engineering are in accordance with those of the College of Engineering with the following added stipulations:

- Application to the professional program is to be made to the Undergraduate Advisor during the semester that the advancement requirements are being completed.
- No professional engineering courses may be taken until the student is admitted into the professional program or obtains the written consent of the Undergraduate Advisor.
- Each student must have a total of no more than four unsuccessful attempts in engineering courses and complete all pre-professional courses stipulated under "Requirements for a Bachelor of Science Degree in Resource and Energy Engineering" with a minimum grade of C in each course and a minimum GPA of 2.50 in: a) all courses, b) in all required math, science, and engineering courses, and c) in all required engineering courses.
- Upon receipt of the application, a student's record is individually reviewed including grades, academic and personal integrity, record of drops and course withdrawals, the order in which courses have been taken, the number of times a student has attempted a course for credit, and any other aspect of the student's record that may be deemed pertinent to admission.

Curriculum

The program is divided into a pre-professional program and a professional engineering program, with the division typically occurring between the sophomore and junior years.

Foundations		
General Core Requirements (https://catalog.uta.edu/academicregulations/degreerequirements/generalcorerequirements/)		42
Students must complete specific courses in certain core areas.		
In addition to the specified courses, students must choose 6 hours of U.S. History, 6 hours of Political Science, 3 hours of Language, Philosophy, Culture, and 3 hours of Creative Arts from the general education core.		
For Communication select:		
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
ENGL 1301	RHETORIC AND COMPOSITION I	
For Mathematics select:		
MATH 1426	CALCULUS I [1]	
MATH 2425	CALCULUS II	
For Life & Physical Science select:		
PHYS 1443	GENERAL TECHNICAL PHYSICS I	
PHYS 1444	GENERAL TECHNICAL PHYSICS II	
For Social & Behavioral Science select:		
IE 2308	ECONOMICS FOR ENGINEERS	
For Foundation Component Area option select:		
MATH 2326	CALCULUS III	
Resource and Energy Foundations (Pre-Professional Program) [2]		
Additional hours from required core courses that are part of the pre-professional program.		4
UNIV-EN 1131	STUDENT SUCCESS	1
or ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	
CHEM 1465	CHEMISTRY FOR ENGINEERS [4]	4
EE 1311	COMPUTING SYSTEM AND ALGORITHMIC SOLUTIONS	3
GEOL 3340	GEOLOGY FOR ENGINEERS	3
MAE 1312	ENGINEERING STATICS	3
MAE 2323	DYNAMICS	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
EE 2440	CIRCUIT ANALYSIS WITH LAB	4
REE 1301	INTRODUCTION TO RESOURCE & ENERGY ENGINEERING	3

REE 1306	THE CHEMISTRY OF FUELS	3
REE 2301	THERMAL ENGINEERING	3
Resources and Energy Specialization (Professional Program)		
EE 3317	LINEAR SYSTEMS	3
IE 3301	ENGINEERING PROBABILITY	3
REE 3301	PRINCIPLES OF ENERGY ENGINEERING	3
REE 3302	SUSTAINABLE ENERGY SYSTEMS	3
REE 3303	PETROLEUM & GAS ENGINEERING	3
REE 3304	ENERGY STORAGE TECHNOLOGIES	3
REE 3310	DATA ANALYTICS AND VISUALIZATION FOR ENERGY SYSTEMS	3
REE 4301	ENERGY SYSTEMS MODELING	3
REE 4302	SMART GRID	3
REE 4303	MANAGEMENT OF ENERGY PROJECTS	3
REE 4305	ENERGY GOVERNANCE	3
REE 4310	CAPSTONE DESIGN	3
Technical Electives		
Select 3 approved engineering, science, or mathematics courses (3000 level or higher). Must be approved in advance by the student's academic advisor.		9
Total Hours		**124**

1 The Mathematics Department requires passing a placement test provided by the Mathematics Department before enrolling.
2 All pre-professional courses must be completed before enrolling in professional program courses.
3 For transfer students, UNIV-EN 1131 can be substituted with ENGR 1101.
4 CHEM 1465 can be substituted with CHEM 1441 & CHEM 1442 (8 hours).

SUGGESTED COURSE SEQUENCE

A suggested course sequence is available in the REE Advising Office.

PRIOR PREPARATION AND COURSE REQUIREMENTS

The undergraduate baccalaureate degree in resource and energy engineering is a four-year program and requirements for the degree are based upon prior high school preparation through either an honors or college track program. Students who have not had the appropriate prior preparation should contact the departmental advising office for a curriculum guide that will assist them in structuring a study plan that will include leveling courses. Students requiring leveling courses may require a period of time greater than four years to complete their undergraduate degree.

Refer to the College of Engineering section of this catalog for information concerning the following topics: Admission into Engineering, Admission into Pre-Engineering, Admission into the Professional Program, Counseling or Advising, Transfer and Change of Major Policies, Honors Program, Academic Regulations, Professional Engineering Registration, Cooperative Education, Academic Probation, Repeating Course Policy, and Academic Dishonesty.

Program Completion

- The student must be admitted to the professional program and have an approved degree plan on file in the Registrar’s office in order to graduate.
- Graduating seniors should apply to graduate during the next-to-last semester.
- Each student must complete all professional courses stipulated under "Requirements for a Bachelor of Science Degree in Resource and Energy Engineering" with a minimum grade of C in each course.
- The College of Engineering requires that students who do not have two units of high school foreign language take six hours, in the same language, of modern or classical language courses in addition to the "Requirements for a Bachelor of Science Degree in Resource and Energy Engineering.”
- Each student must have a minimum UTA cumulative GPA of 2.0, and a minimum major GPA of 2.0. The major GPA includes all engineering courses in the degree plan.

GROUNDS FOR DISMISSAL FROM THE REE PROGRAM

A student whom the UTA Office of Student Conduct has found to have violated the UTA Code of Student Conduct a second time is subject to dismissal from the REE program.

Advising Resources

First time in college students meet with engineering advisors in the UAEC (UAECengineering@uta.edu). Transfer students are advised prior to New Maverick Orientation by the department. Students, please read all student emails carefully and consult the department advising webpage for additional contact information and answers to common questions.

ELECTRICAL ENGINEERING

Location:

NH 501

Email:

ee_ug_advising@uta.edu

Phone:

817-272-2671

Web:

Schedule Advising (https://outlook.office365.com/owa/calendar/EEAdvising@bookings.uta.edu/bookings/)

RESOURCE AND ENERGY ENGINEERING

Location:

NH 513

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ree_ug_advising@uta.edu

Phone:

817-272-6514

Web:

Schedule Advising (https://outlook.office365.com/book/EEAdvising@bookings.uta.edu/)