qualified black engineering graduates. The goal is to increase significantly the number of black engineers. The program was established in 1973. The program offers a broader and richer preparation for postgraduate employment. The program includes significant experience in industry as well as superior academic preparation.

The Cooperative Engineering Program was established in 1926. The University of Tennessee was one of the early pioneers in this valuable type of education. On-campus assignments differ from full-time or summer employment in that they involve regularly scheduled cycles of full-time academic terms alternating with full-time work periods, resulting in planned, career-related work terms of progressive complexity and responsibility. In introducing the student to professional employment, the college and industry join together to offer a broader and richer preparation for postgraduate employment than can be provided by a conventional academic program. This experience in an industrial and professional environment contributes to the student's maturity, accelerates professionalism, offers an opportunity to apply engineering course work in a real-world setting, and enables the student to define more clearly educational and career interests and objectives. All positions are paid, and most students are able to offset a substantial amount of their college expenses with Co-op savings.

The College of Engineering

The college is honored to have the national headquarters of Tau Beta Pi, the National Engineering Honor Society, housed on our campus. The honor is earned in part through the untiring efforts of R.C. "Red" Matthews, who served as secretary-treasurer for the organization from 1905 to 1947. The suite of offices, located in Dougoville Hall, is administered through the UT Knoxville Physics Building.

The five-year Cooperative Engineering Program for new students, transfers, second-degree students, and re-entry students begins in the first semester at the university. Assignments are determined by employer and student. All engineering students are encouraged to visit the program office.

Candidates must be able to project a minimum of 50 weeks of Co-op experience prior to the senior year, within the regular alternating sequence, to qualify for an assignment.

Further details may be obtained from the Cooperative Engineering Program, 118 Perkins Hall, University of Tennessee, Knoxville, TN 37996-2012. You may also contact the Co-op office via e-mail at coop@engr.utk.edu or via the program homepage at https://www.engr.utk.edu/coop/
work on a minor. The intention to complete a
and major department offices when beginning
alsobe used to satisfy engineering degree
and innumerous departments in Agriculture
minor must be declared at the time of applicat-
Engineering, Materials Science and Engineer-
 unofficial minors will be recognized. Minors
Co-op programs in the above areas are also
mechanical, materials science, and nuclear.
civil, electrical, engineering science, industrial,
Board for Engineering and Technology (ABET).
ing societies and known as the Accreditation
by an organization formed by many engineer-
programs is given in the Graduate Catalog.
engineering, nuclear engineering, and polymer
is offered in nine major subjects: aerospace
students who already hold a
transfer credit should be conducted with the
head of the department or designee into
which the student is to transfer, but only after
and the approval must be recorded on a
College of Engineering
H/SS elective. Any course not on this list must be approved through the major department and in advance of enrollment in the course (if approved by the faculty as a suitable subject). For this purpose, all foreign language courses must be taken on the basis of personal interest and likely value in engineering practice. Up to 9 hours in this category can be taken on an S/NC grading basis.

These requirements are not intended to inhibit in any way the selection of courses to be taken by a student while attending UTK. Any course included on the list below has been approved by the faculty as a suitable engineering practice. Each student shall discuss with an advisor the preparation for engineering practice. Choices are important parts of the learning experience in engineering. For this purpose, all foreign language courses must be taken on the basis of personal interest and likely value in engineering practice. Up to 9 hours in this category can be taken on an S/NC grading basis.

Any course not on this list must be approved through the major department and in advance of enrollment in the course. These requirements are not intended to inhibit in any way the selection of courses to be taken by a student while attending UTK. Any course included on the list below has been approved by the faculty as a suitable engineering practice. Each student shall discuss with an advisor the preparation for engineering practice. Choices are important parts of the learning experience in engineering. For this purpose, all foreign language courses must be taken on the basis of personal interest and likely value in engineering practice. Up to 9 hours in this category can be taken on an S/NC grading basis.

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Any course included on the list below has been approved by the faculty as a suitable engineering practice. Each student shall discuss with an advisor the preparation for engineering practice. Choices are important parts of the learning experience in engineering. For this purpose, all foreign language courses must be taken on the basis of personal interest and likely value in engineering practice. Up to 9 hours in this category can be taken on an S/NC grading basis.

American History Requirement. Engineering students may participate in the ROTC Program. Advanced ROTC courses (300 and 400 series) may be counted as technical elective credit toward an engineering degree up to a total of six (6) semester hours. Normally, Military Science courses cannot be used as humanities/social science electives. Individual departments determine the appropriate substitutions.

Approval of Electives and Substitutions. Each student shall discuss with an advisor the preparation for engineering practice. Choices are important parts of the learning experience in engineering. For this purpose, all foreign language courses must be taken on the basis of personal interest and likely value in engineering practice. Up to 9 hours in this category can be taken on an S/NC grading basis.

The Voluntary ROTC Program. Engineering students may participate in the ROTC Program. Advanced ROTC courses (300 and 400 series) may be counted as technical elective credit toward an engineering degree up to a total of six (6) semester hours. Normally, Military Science courses cannot be used as humanities/social science electives. Individual departments determine the appropriate substitutions.

American History Requirement. Engineering students may participate in the ROTC Program. Advanced ROTC courses (300 and 400 series) may be counted as technical elective credit toward an engineering degree up to a total of six (6) semester hours. Normally, Military Science courses cannot be used as humanities/social science electives. Individual departments determine the appropriate substitutions.

Approval of Electives and Substitutions. Each student shall discuss with an advisor the preparation for engineering practice. Choices are important parts of the learning experience in engineering. For this purpose, all foreign language courses must be taken on the basis of personal interest and likely value in engineering practice. Up to 9 hours in this category can be taken on an S/NC grading basis.
Bachelor of Science Program

Chemical engineering is a discipline dedicated to the design, development, and management of processes and products for the conversion of raw materials to useful products. It is a broadly based discipline, with major emphases on chemistry and mathematics, as well as physics, computer science, and human interaction. Graduates of the program are quite versatile, with careers in such fields as food and pharmaceutical processing, bioengineering, fuels production and conversion, pulp and paper, polymers and plastics, process control and instrumentation.

The curriculum provides a central core of required courses with flexibility in the upper-division years to permit emphasis on preparation for graduate school or professional employment. A minimum grade point average of 2.0 for all departments courses is required for graduation.

A minimum of 18 semester hours of humanistic/social science courses are required, which are to be selected from the list under "Curricula in Engineering." 

Honors Program

The honors program encourages highly motivated students to obtain a superior chemical engineering education and a more rigorous preparation in the discipline. Admission is selective. Students who think they may want to be in the honors program are strongly urged to take CHE 207 in place of CHE 200. Application to the honors program is made when the student applies for upper-division status. Honors requirements are: one course in general education seminars (CHE 407 and 408), CHE 417, one of CHE 467, 477, 488 or 498 as a technical elective and Chem 483 as a chemistry option. Students interested in the honors program should consult the department's honors coordinator.

Program to Upper-Division

Progression of chemical engineering students to departmental upper-division courses is competitive and is based on capacity. Factors considered include overall grade point average, performance in selected lower-division courses, and evidence of satisfactory and orderly progress through the prescribed curriculum.

Upper-Division Status: A Lower-Division student may apply for progression to Upper-Division Status after completing 23 semester hours of Lower-Division engineering curriculum course work with an overall GPA of at least 2.4. This must include Chemical Engineering 200.

Provisional Status: Students who have completed 50 semester hours of Lower-Division engineering curriculum course work with an overall GPA between 2.0 and 2.4 may apply for provisional status. The granting of Provisional Upper-Division Status is based on the availability of space in the departmental programs after Upper-Division Status students have been accommodated. Provisional students are required to demonstrate their abilities to perform satisfactorily in upper-division courses by attaining a minimum GPA of 2.0 in at least 9 hours of 200 and 300 level required courses specified by the department. Further progression to upper-division courses is dependent upon this minimum level of performance. Any student with an overall GPA below 2.0 will not be admitted to the Chemical Engineering department. Students who have not been admitted to an Upper-Division Status will be dropped from departmental class rolls. Transfer students at the Upper-Division level are admitted on a Provisional Status basis only.

Graduate Study Program

Graduate programs leading to the degrees of Master of Science and Doctor of Philosophy in Chemical Engineering are offered. The University's Graduate School operates a Resident Advising Center.

See the Graduate Catalog for detailed information.
The curriculum in engineering physics is designed to fulfill the educational requirements for professional work in various fields of applied science, as well as to provide thorough knowledge of physics. The first two years are concerned with fundamental courses in engineering, science, and mathematics. In the upper division, the student may choose an accelerated schedule, or may participate in the Cooperative Engineering Program. Where a senior course is a prerequisite for another, the first course of the sequence will be offered in the Fall semester. In all courses where prerequisites are indicated, they must be strictly followed. Progression in the Cooperative Engineering Program is based on the timely completion of all required freshman and sophomore courses. In order to be properly enrolled in EE 201, students must have completed all courses listed in the freshman-year of the engineering curriculum. Students must also make application for enrollment in 201 and 202 during the Fall semester prior to anticipated enrollment. The application must be submitted to the EE Department Office, 414 Ferris.
The undergraduate curriculum in industrial engineering provides a strong background in both fundamental engineering principles and the analytic methods necessary for solving the multi-faceted problems associated with the production, maintenance, and delivery of goods and services. In particular, this curriculum emphasizes the knowledge and skills necessary to design integrated systems of people, materials, equipment, and energy wherever they are found; such that the overall system functions at an optimal level and such that the results of the human components of the system are adequately restrained.

This curriculum, which is built upon a strong background in mathematics and statistics, includes fundamental course work in the engineering sciences, introductory economics and accounting, training in fundamental human factors which influence engineering design, the economic analysis of alternative design choices, quality control techniques, manufacturing processes and materials, production and inventory system design and control, material handling systems and facilities design, the mathematical modeling and simulation of complex systems, and the design and installation of information acquisition and control systems. The technical and non-technical electives further allow the student to specialize in an area(s) which meets particular needs.

The solid, broad base in engineering, combined with training in applying engineering methodology to traditionally non-engineering problem areas as provided through the industrial engineering curriculum, leads to participation by industrial engineers in an unlimited range of fields, including, among others, retail distribution, banks, manufacturing, computer science, statistics, or economics. It is designed to provide education and training in the fundamental and engineering sciences with special attention given to the production, development and utilization of materials. Emphasis is placed on developing engineers needed to participate in design, development and production of materials for major engineering systems. The program strives to develop in its graduates the ability to specify materials requirements, select from existing materials, analyze and characterize new materials and applications, develop the data base required for use of materials (including an understanding of failure modes and phenomena), and develop procedures for improvement of materials and/or materials systems. It is anticipated that some of the program's graduates will continue their education in graduate school; hence it is important that the program prepare those students for advanced studies.

The field of materials science and engineering is quite broad, encompassing metallic, ceramic, and polymeric materials as well as composites made from combinations of materials. Consequently, the curriculum contains a central core of courses that are applicable to all material types with flexibility in the upper division years to permit concentration in depth of coverage of specific materials categories. By judicious choice of electives the student may get a broad perspective or may develop a specialty area.

A minimum of 18 semester-hours of humane-social sciences courses must be taken from the approved list of courses.

Graduation in materials science and engineering requires a minimum grade point average of 2.00 for all departmental courses.

PROGRESSION TO UPPER-DIVISION PROGRAMS

Progression of students to departmental upper-division courses is competitive. Factors considered include overall grade point average, performance in prerequisite courses and evidence of satisfactory and orderly progress in the undergraduate program. The decision to provide upper-division status to a student is based upon the availability of space in the departmental programs. Students are considered for upper-division status at the appropriate time; that is, after upper-division status students have been accommodated. Provisional students are required to demonstrate their ability to perform satisfactorily in upper-division courses by enrolling in a minimum GPA of 2.00 in at least 6 hours of 300-level required courses specified by the department. Further progression to upper-division courses is dependent upon this minimum level of performance.

Transfer Students: At the Upper-division level students are admitted on a Provisional Status basis only. Any student presenting more than 28 hours of Lower-division engineering curriculum work by transfer is considered to be a provisional student.

Minor In Materials Science & Engineering: A Minor in Materials Science and Engineering (M.S.E.) is available for students majoring in other engineering disciplines to those undergraduate students who
have met the prerequisites for the courses required by the Minor. The Minor requires a completion of a minimum of 18 semester hours in course work which develops a foundation in MSE and allows concentration in MSE areas to be selected by the student (e.g., metallurgy, polymers, ceramics, composites, or electronic materials). Some of the courses used for the MSE Minor may also satisfy requirements for the student's Major.

Students may enroll in the Minor program by completing a form at the office of the Department of Materials Science and Engineering, 434 Dougherty Engineering Building. A copy of this completed enrollment form and information on the Minor requirements will be forwarded to the student's home department advisor. A copy of the form also will be filed with the Record of Registration and the Record of Certification so that, upon completion, the Minor will be shown on the student's transcript.

Course Requirements:
- Required courses:
  - Materials Science and Engineering 301 and 303
- Choose at least one:
  - Materials Science and Engineering 310, 325, 340, and 372.
- Choose at least three, at least one of which must be at the 400 level:
  - Any of the Materials Science and Engineering 304-404 courses.
- Civil and Environmental Engineering 321 and 421;
- Chemical Engineering 330 and 417; Industrial Engineering 400;

Other courses in this category may be accepted, but must be approved in advance by the Department of Materials Science and Engineering.

GRADUATE STUDY PROGRAMS

Graduate study leading to the degrees of Master of Science and Doctor of Philosophy with a major in metallurgical engineering or polymer engineering are offered.

Detailed information about graduate programs in materials science and engineering and the requirements for either M.S. or Ph.D. degrees are given in the Graduate Catalog.

MECHANICAL AND AEROSPACE ENGINEERING AND ENGINEERING SCIENCE

Professors:
- D. W. Cleary, Department Head, Ph.D., University of Illinois, P.E., R.V. Armiti, Ph.D., Virginia Polytechnic Institute and State University; A. J. Baker, Ph.D., New York, P.E.; T. G. Canley, Ph.D., Boise State, P.E.; R. W. Dosey, Ph.D., D. Clemson, A. J. Eddings, Ph.D., Texas A&M, P.E.; G. S. Thrasher, Ph.D., Iowa State, P.E.; J. E. Frankel, Ph.D., Virginia Polytechnic Institute and State University; J. W. Hodgson,
ADVISIGN
The advising conference for each student should focus on the broader aspects of the student's career objectives and provide guidance in the selection of appropriate elective courses to help achieve those objectives. Each student, in conjunction with his/her faculty advisor, is required to develop a program of study no later than their junior year.

PROGRESSION TO UPPER- DIVISION PROGRAMS
Progression to Upper Division Programs is competitive and is based on departmental capacity. Factors considered include overall grade point average, performance in selected lower division courses, and evidence of satisfactory and orderly progress through the prescribed curriculum. Progression is granted to students with GPAs greater than 2.0, however, space availability is granted on a priority basis.

Full Status: A Lower Division student in the department may apply for progression to Upper Division Programs after completing semester hours of Lower Division engineering curriculum course work with an overall GPA of at least 2.4.

Provisional Status: Students who have completed 47 semester hours of Lower Division engineering curriculum course work with an overall GPA between 2.0 and 2.4 may apply for provisional status. The granting of Provisional Status is based on the availability of space in departmental programs after full status students have been accommodated. Provisional Status students are required to demonstrate satisfactory progress satisfactorily in Upper Division courses by attaining a minimum GPA of 2.0 in at least 12 semester hours of 300 level required engineering and science courses as specified by the department. Further admission to Upper Division courses is dependent upon this minimum level of performance.

Any student with an overall GPA below 2.0 will not be admitted to an Upper Division Program. Students who have not been progressed to an Upper Division Program will be dropped from departmental class rolls.

Transfer Students: At the Upper Division level, students are admitted on a Provisional Status basis only. Any student presenting more than 26 semester hours is considered a Transfer Student.

Loss of Full Status: Students who progress to Upper Division Programs are expected to maintain an overall GPA of at least 2.0 and a cumulative GPA at the level 2.0 in departmental courses. Failure to maintain these minimum levels of performance will result in a review of the overall progress of the student through the prescribed curriculum and probable loss of Full Status.

Department Graduation Requirements: A minimum cumulative grade point average of 2.0 for all departmental courses taken at UT Knoxville is required for graduation. This is in addition to the University's graduation requirements.

GRADUATE STUDY PROGRAMS
Graduate programs leading to the degrees Master of Science and Doctor of Philosophy with a major in mechanical engineering or aerospace engineering are available to graduates of other curricula who satisfy the necessary prerequisites. The general requirements for advanced degrees are summarized in the Graduate Catalog.

Graduate programs leading to the degrees Master of Science and Doctor of Philosophy with a major in engineering science are available to graduates of recognized curricula in engineering. Graduates of recognized curricula in mathematics, computer science or one of the physical or biological sciences may also qualify for admission depending upon their background. Each applicant is advised as to any prerequisites courses needed to enter a program. Program options include solid and fluid mechanics, solid and fluid mechanics, and applied mechanics.

NUCLEAR ENGINEERING

PROGRAMS:

ASSOCIATE PROGRAMS:
- P.G. Greer, Ph.D., Villanova (Australia); E.M. Katz, P.E., D. Tennessee; S.P. Ley, Ph.D., P.E.; T.H. Scott, Ph.D., D. Florida; P.E.; A.E. Ryan, Ph.D., R. Pennsylvania; L. Townsend, Ph.D., Idaho

RESEARCH ASSISTANT PROFESSOR:
- J.W. Hines, Ph.D., Ohio State

BACHELOR OF SCIENCE PROGRAM

The undergraduate program has two concentrations: Fusion Systems Engineering and Radiological Engineering. The Fusion Systems Engineering Concentration is for students interested in the theory, design, and applications issues related to fusion reactors. The Radiological Engineering Concentration is for students interested in radiation protection engineering (i.e., facility safety) or nuclear medical engineering. The first two years are identical for students in both concentrations. In the last two years, some courses are taken by students in both concentrations and some courses differ.

MASTER OF SCIENCE PROGRAM

The graduate program leading to a degree of Master of Science is available to graduates of recognized undergraduate programs in engineering and science. Each applicant will be advised as to the necessary prerequisite courses before entering the program. The general requirements for the master's degree are summarized in the Graduate Catalog.

DOCTORAL PROGRAM

A program leading to the Ph.D. degree is available in nuclear engineering. For details, see the Graduate Catalog.

ACADEMIC COMMON MARKET

An agreement among southern states for sharing academic programs allows legal residents of some states to enroll in certain programs at UT Knoxville on an in-state tuition basis. For specific details, please contact the Tennessee Cooperative Education Program, Room 307, College of Engineering.

COURRICA

Course requirements for the various engineering curricula are listed on the following pages. The numbers in the columns indicate the number of semester hours of credit for each course. Individual course prerequisites should be strictly adhered to, even if courses are not taken in the semester indicated. Although the requirements for each degree can be completed in four academic years (five for the cooperative programs), the quality of the learning experience is much more important than the speed with which the curricula are completed.

Questions about individual courses should be directed to the department responsible for the courses; questions about a particular curriculum should be directed to the major department.

Prerequisites: Before registering for any engineering course, a student should make certain that any necessary background work has been completed. In addition to specific prerequisites listed, it is assumed that a student taking sophomore engineering courses has completed all freshman courses, whether specified by the department or a prerequisite of a lower division course. When this is not the case, a student should seek advice from the advisor or department responsible for the course in question before registration so as to minimize the chances of academic difficulty. Students who do not have prerequisites waived should refer to the advisor or department responsible for the course at any time during a semester when the lack of prerequisites is discovered.

FRESHMAN YEAR

The freshman year is common to all engineering programs, except for engineering physics. (See curriculum display for fundamentals.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 111</td>
<td>4</td>
</tr>
<tr>
<td>Physics 111, 121</td>
<td>8</td>
</tr>
<tr>
<td>Calculus I, II</td>
<td>8</td>
</tr>
<tr>
<td>Total: 20 hours</td>
<td></td>
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</tbody>
</table>

AEROSPACE ENGINEERING

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace Engineering 201</td>
<td>4</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>4</td>
</tr>
<tr>
<td>Fluids I</td>
<td>4</td>
</tr>
<tr>
<td>Fluids II</td>
<td>4</td>
</tr>
<tr>
<td>Total: 16 hours</td>
<td></td>
</tr>
</tbody>
</table>

MATHEMATICS CURRICULUM

The Mathematics curriculum is designed to provide the student with a strong foundation in college algebra, trigonometry, and calculus. It is intended for students who plan to pursue careers in the physical sciences, engineering, or mathematics.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>Total: 14 hours</td>
<td></td>
</tr>
</tbody>
</table>

PHYSICS CURRICULUM

The Physics curriculum is designed to provide the student with a strong foundation in college algebra, trigonometry, and calculus. It is intended for students who plan to pursue careers in the physical sciences, engineering, or mathematics.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>Total: 14 hours</td>
<td></td>
</tr>
</tbody>
</table>
Students must meet the design, draft, and breadth requirements of their department in their selection of senior courses. The design requirement is met by taking EE 492: Senior Design. The breadth requirement is met by taking a two-course sequence in one of the domains of systems (EE 411, 410, power EE 421, 432: electronics, EE 431, 433: communications, EE 441, 443), and computer (EE 451, 452), or a breadth requirement is met by taking courses in other core fields. Electives should form coherent groups of courses.

Total: 136 hours

All electives must be approved by the student's faculty advisor and the department head. Technical electives may include courses in mathematics, physics, chemistry, and engineering science, as well as courses in engineering.

ENGINEERING SCIENCE: BIOMEDICAL ENGINEERING CONCENTRATION

Sophomore

Mathematics 241, 231, 200 8

Physics 231, 232 8

Basic Engineering 201 8

Technical Electives 8

Junior

Chemistry 322, 332, 361 10

Chemistry 311, 321 10

Physics 240, 231 6

Mathematics 231, 241 7

Senior

Chemistry 371, 381 6

Chemistry 361, 371 6

Physics 421, 431 6

Mathematics 431, 441 6

Electives 9

Total: 136 hours

All electives must be approved by the student's faculty advisor and the department head. Technical electives may include courses in mathematics, physics, chemistry, and engineering science, as well as courses in engineering.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 231, 232</td>
<td>Mechanical Engineering</td>
<td>7</td>
</tr>
<tr>
<td>ENGR 491, 492</td>
<td>Nuclear Engineering</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 134 hours</td>
</tr>
</tbody>
</table>

**Engineering Science Requirements**

<table>
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<tr>
<td>ENGR 491, 492</td>
<td>Nuclear Engineering</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 134 hours</td>
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</tbody>
</table>

**Nuclear Engineering: Fission Systems Engineering Concentration**

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<tr>
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<tr>
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<td>Mechanical Engineering</td>
<td>7</td>
</tr>
<tr>
<td>ENGR 491, 492</td>
<td>Nuclear Engineering</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 134 hours</td>
</tr>
</tbody>
</table>

**MATERIALS SCIENCE AND ENGINEERING**

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials Science and Engineering</td>
<td>ENGR 201, 202</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 136 hours</td>
<td></td>
</tr>
</tbody>
</table>

**MECHANICAL ENGINEERING**

<table>
<thead>
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<th>Concentration</th>
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<tbody>
<tr>
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<td>ENGR 231, 232</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

**Nuclear Engineering: Radiological Engineering Concentration**

<table>
<thead>
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