

SCHOOL OF ENGINEERING

CHEMICAL AND BIOCHEMICAL ENGINEERING • CIVIL AND ENVIRONMENTAL ENGINEERING
 • ELECTRICAL AND COMPUTER ENGINEERING • MECHANICAL ENGINEERING
 • ENGINEERING MANAGEMENT

ADMINISTRATION

DR. ERIC B. WELCH, *Dean*

DR. NEAL F. JACKSON, *Director of Engineering Programs*

DR. L. YU LIN, *Chair, Civil and Environmental Engineering Department*

DR. ALI POURHASHEMI, *Chair, Chemical and Biochemical Engineering Department*

DR. YEU-SHENG SHIUE, *Chair, Mechanical Engineering Department*

DR. JOHN VENTURA, *Chair, Electrical and Computer Engineering Department*

FACULTY

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 Ph.D., Lehigh University

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B.S., Calcutta University; M.S., Ph.D., Lehigh University

CIVIL AND ENVIRONMENTAL ENGINEERING

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B.S., Feng-Chia University; M.S., University of Cincinnati;
 Ph.D., University of Central Florida; P.E.

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B.E., Annamalai University (India); M.Tech., Indian Institute of Technology;
 M.S., Memphis State University; Ph.D., University of Mississippi; P.E.

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ELECTRICAL AND COMPUTER ENGINEERING

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MECHANICAL ENGINEERING

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ENGINEERING MANAGEMENTNEAL F. JACKSON, *Professor*B.S., Memphis State University; M.S., University of Arkansas;
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Ph.D., Université de Rennes (France)YONGQUAN ZHOU, *Lecturer*BE., M.E., Wuxi Institute of Light Industry (China);
M.S., Rochester Institute of Technology; CPP**PROFESSORS EMERITI**

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FRED H. TERRY

B.S., M.S., Rose Polytechnic Institute; Ph. D., Case Institute of Technology; P.E.

MISSION

CHRISTIAN BROTHERS UNIVERSITY offers engineering programs in four departments: Chemical and Biochemical, Civil and Environmental, Electrical and Computer, and Mechanical Engineering, accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (111 Market Place, Suite 1050; Baltimore, MD 21202-4012; telephone number 410-347-7700). Each curriculum is sufficiently flexible to permit a student to tailor a course of study for entry into the engineering profession immediately or for continued study in graduate school. While most graduates do remain in the engineering profession, a significant number use their engineering background as a foundation for professional careers in law, medicine, business, education, science and other fields.

The objective of our chemical, civil, electrical, and mechanical engineering programs at Christian Brothers University is twofold: (1) to continue the Lasallian tradition through excellence in teaching and focusing on the individual student, and (2) to prepare our graduates for professional careers and advanced study in engineering and for a life of moral responsibility and constructive community involvement.

Because the engineer applies scientific principles and practical judgment to the economic solution of many problems concerned with human welfare, the education must include, in addition to courses in engineering analysis and design, numerous courses in natural sciences, in mathematics, and in liberal studies. Thus, the total engineering program at Christian Brothers University provides each student with a liberal education, designed to permit the graduate to make important contributions not only toward the solution of specific technical problems, such as those found in automobile engine or computer circuit design, but also toward such compelling problems of society that are found in transportation, communications, urban redevelopment, energy production and conservation, and air and water quality.

Engineering design is the heart of the creative process of devising solutions to many of society's problems. In the design process, all of an engineer's knowledge of scientific principles and practical judgment is integrated toward the solution of specific problems. The student at Christian Brothers University begins practice in design during the first year, at the same time gaining knowledge and skills in science, mathematics, and communications. This practice in design is integrated through the four years of the program culminating in an independent design project during the senior year.

DEGREE REQUIREMENTS

The Engineering programs at Christian Brothers University are designed to graduate students who will be able to excel as engineering professionals as described above. This requires an integrated program of mathematics, basic sciences, humanities and social sciences, engineering sciences and

engineering design. A balance is struck between breadth and depth, technical and non-technical content, and rigor and flexibility. Students must meet departmental requirements as listed in the paradigms that follow this section.

In the case of transfer students, at least one half of the upper division major courses (300-400 level courses in CHE, CE, ECE or ME and upper division Chemistry in the case of CHE) must be taken at Christian Brothers University. Normally, junior and senior level courses from non-ABET accredited programs will not be transferred.

In order to graduate, a student must attain a 2.0 overall grade point average and a 2.0 in the major (CHE, CE, ECE or ME courses and advanced chemistry in the case of Chemical Engineering) and program option.

DUAL DEGREE

The School of Engineering and the School of Sciences offer a dual degree program for students interested in electrical engineering and computer science. With careful coordination, this program allows students to earn both degrees in a normal undergraduate time frame. For specific degree requirements, see Page 74.

JOINT DEGREE

The School of Engineering and the School of Business jointly offer a Bachelor of Science in Engineering Management for students interested in pursuing management positions at engineering firms or other technologically based businesses. For specific degree requirements, see Pages 76 and 77.

SUMMARY OF COURSE REQUIREMENTS

Students must take the University defined General Education requirements (See Page 22-23).

Program Option (department approved 300/400 level courses in Mathematics, Science, Engineering or Business or advanced ROTC courses—3 hours maximum is allowed for ROTC courses) courses should be part of an integrated sequence of courses consistent with the overall aims and objectives of the School of Engineering. The integrated sequence must receive approval from the student's advisor.

The religion courses will include one course at the 200 level followed by one at the 300 level or above.

The three-course emphasis on religion and moral values provides depth consistent with the mission of Christian Brothers University and the needs of society and the engineering profession.

COURSE REQUIREMENTS FOR A B.S. IN CHEMICAL ENGINEERING

Biochemical Engineering Curricula

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|---|----------------|--|----------------|
| CH E 101 CH E Project..... | 1 | BIOL 112 & 112L Principles of Biology II | 4 |
| CH E 111 Intro Chemical Engineering I | 1 | CHEM 114 & 114L Principles of Chemistry II | 4 |
| CHEM 113 & 113L Principles of Chemistry I | 4 | CH E 112 Introduction to Chemical Engineering II | 1 |
| ENG 111 English Composition I..... | 3 | ENG 112 English Composition II | 3 |
| MATH 131 Calculus I | 3 | MATH 132 Calculus II..... | 3 |
| BIOL 111 & 111L Principles Biology I..... | 4 | Liberal Studies | 3 |
| Orientation | 0 | | |
| Total..... | 16 | Total..... | 18 |

| SOPHOMORE YEAR Semester I | | Semester II | |
|--|-----------|--|-----------|
| CH E 201 CH E Project..... | 1 | CH E 232 Material & Energy Bal | 4 |
| CH E 231 Elementary Thermodynamics | 3 | CHEM 212 & 212L Organic Chemistry II | 4 |
| CHEM 211 & Lab Organic Chemistry I..... | 4 | MATH 232 Calculus III..... | 3 |
| MATH 231 Differential Equations | 3 | PHYS 251 & 251L Physics II | 4 |
| PHYS 150 & 150L Physics I | 4 | Liberal Studies | 3 |
| Liberal Studies | 3 | | |
| Total..... | 18 | Total..... | 18 |

| JUNIOR YEAR Semester I | | Semester II | |
|--|-----------|--|-----------|
| CH E 314 Engineering Economics..... | 3 | BIOL 321 & 321L Microbiology & Lab | 4 |
| CH E 323 Fluid Mechanics | 3 | CH E 324 Heat Transfer..... | 3 |
| CH E 325 Junior Lab I..... | 1 | CH E 326 Junior Lab II..... | 1 |
| CH E 327 Chem. Engr. Thermodynamics..... | 3 | CHE 330 Mass Transfer & Separations..... | 3 |
| CHEM 351 & 351L Physical Chemistry I | 4 | ECE 221 Electrical Circuits I | 3 |
| | | Liberal Studies | 3 |
| Total..... | 14 | Total..... | 17 |

| SENIOR YEAR Semester I | | Semester II | |
|------------------------------------|-----------|---------------------------------------|-----------|
| CH E 401 CH E Project..... | 2 | CH E 402 CH E Project..... | 2 |
| CH E 425 Process Design I | 3 | CH E 426 Process Design II | 3 |
| CH E 437 Modeling & Control | 3 | CH E 442 Senior Lab II | 1 |
| CH E 441 Senior Lab I | 1 | CH E 446 Biochemical Engineering..... | 3 |
| CH E 443 Reactor Design | 3 | Liberal Studies | 6 |
| CHEM 312 & 312L Biochemistry | 4 | | |
| Total..... | 16 | Total..... | 15 |

Total credits required for the degree 132.

COURSE REQUIREMENTS FOR A B.S. IN CHEMICAL ENGINEERING

Chemical Engineering Curricula

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|--|----------------|---|----------------|
| CH E 101 CH E Project..... | 1 | CHEM 114 & 114L Principles of Chemistry II..... | 4 |
| CH E 111 Intro Chemical Engineering I..... | 1 | CH E 112 Introduction to Chemical Engineering II..... | 1 |
| CHEM 113 & 113L Principles of Chemistry I..... | 4 | ENG 112 English Composition II..... | 3 |
| ENG 111 English Composition I..... | 3 | MATH 132 Calculus II..... | 3 |
| MATH 131 Calculus I..... | 3 | Liberal Studies..... | 6 |
| Liberal Studies..... | 3 | | |
| Orientation..... | 0 | | |
| Total..... | 15 | Total..... | 17 |

| SOPHOMORE YEAR Semester I | | Semester II | |
|---|-----------|---|-----------|
| CH E 201 CH E Project..... | 1 | CH E 232 Material & Energy Bal..... | 4 |
| CH E 231 Elementary Thermodynamics..... | 3 | CHEM 212 & 212L Organic Chemistry II..... | 4 |
| CH E 245 Materials Science..... | 3 | MATH 232 Calculus III..... | 3 |
| CHEM 211 & Lab Organic Chemistry I..... | 4 | PHYS 251 & 251L Physics II..... | 4 |
| MATH 231 Differential Equations..... | 3 | CE/ME 200 Mechanics of Solids I..... | 3 |
| PHYS 150 & 150L Physics I..... | 4 | | |
| Total..... | 18 | Total..... | 18 |

| JUNIOR YEAR Semester I | | Semester II | |
|---|-----------|--|-----------|
| CH E 323 Fluid Mechanics..... | 3 | CH E 324 Heat Transfer..... | 3 |
| CH E 325 Junior Lab I..... | 1 | CH E 326 Junior Lab II..... | 1 |
| CH E 327 Chem. Engr. Thermodynamics..... | 3 | CHE 330 Mass Transfer & Separations..... | 3 |
| CHEM 351 & 351L Physical Chemistry I..... | 4 | CHEM 352 & 352L Physical Chemistry II..... | 4 |
| CH E 314 Engineering Economics..... | 3 | ECE 221 Electrical Circuits I..... | 3 |
| Liberal Studies..... | 3 | Liberal Studies..... | 3 |
| Total..... | 17 | Total..... | 17 |

| SENIOR YEAR Semester I | | Semester II | |
|----------------------------------|-----------|---------------------------------|-----------|
| CH E 401 CH E Project..... | 2 | CH E 402 CH E Project..... | 2 |
| CH E 425 Process Design I..... | 3 | CH E 426 Process Design II..... | 3 |
| CH E 437 Modeling & Control..... | 3 | CH E 442 Senior Lab II..... | 1 |
| CH E 441 Senior Lab I..... | 1 | CH E 444 Polymers..... | 3 |
| CH E 443 Reactor Design..... | 3 | Liberal Studies..... | 3 |
| Program Option..... | 3 | Program Option..... | 3 |
| Total..... | 15 | Total..... | 15 |

Total credits required for the degree 132.

COURSE REQUIREMENTS FOR A B.S. IN CIVIL ENGINEERING

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|---|----------------|--------------------------------------|----------------|
| CE 100 Intro to Civil & Environmental Engineering | 0 | CE 112 Computers Appl. in C&EE | 3 |
| CE 105 Intro to Civil & Environmental Design | 2 | ENG 112 English Composition II | 3 |
| CE 111 Engineering Design Graphics | 3 | MATH 132 Calculus II | 3 |
| ENG 111 English Composition I | 3 | PHYS 150 & 150L Physics I | 4 |
| MATH 131 Calculus I | 3 | Liberal Studies | 3 |
| Liberal Studies | 6 | | |
| Orientation | 0 | | |
| Total..... | 17 | Total..... | 16 |

| SOPHOMORE YEAR Semester I | | Semester II | |
|---|-----------|-------------------------------------|-----------|
| CE 115 Field Measurements | 3 | CE 213 Mechanics of Solids II | 3 |
| CE 200 Mechanics of Solids I | 3 | ME 202 Dynamics | 3 |
| CHEM 115 & 115L General Chemistry | 4 | CE 299 & 299L Hydraulics | 4 |
| MATH 231 Differential Equations | 3 | MATH 232 Calculus III | 3 |
| PHYS 251 & 251L Physics II | 4 | Liberal Studies | 3 |
| Total..... | 17 | Total..... | 16 |

| JUNIOR YEAR Semester I | | Semester II | |
|---|-----------|--|-----------|
| CE 310 Anal/Design Steel Structures | 3 | CE 311 Analysis/Design Concrete Structures | 3 |
| CE 313 Hydrology | 3 | CE 315 Junior Project | 0 |
| CE 322 & 322L Geotech Engineering | 4 | CE 317 Introduction to Environmental Engineering | 3 |
| PHYS 252 Physics III | 3 | CE 318 Highway Engineering | 3 |
| CE Major Elective | 3 | CE 340 Design of Foundations | 3 |
| Total..... | 16 | MATH 308 Statistics | 3 |
| | | Total..... | 15 |

| SENIOR YEAR Semester I | | Semester II | |
|--|-----------|-------------------------------------|-----------|
| CE 400 The Compleat Engineer | 3 | CE 314 Engineering Economy | 3 |
| CE 417 Environmental Engineering Lab | 1 | CE 432 Design Project II | 2 |
| CE 431 Design Project I | 2 | CE Major Elective | 3 |
| CE Major Elective | 3 | ME 305/ChE 231 Thermodynamics | 3 |
| ECE 221 Electric Circuits I | 3 | Liberal Studies | 3 |
| Liberal Studies | 3 | Program Option | 3 |
| MATH Elective ¹ | 3 | | |
| Total..... | 18 | Total..... | 17 |

Total credits required for the degree 132.

¹ Must be a 300/400 level Math course.

COURSE REQUIREMENTS FOR A B.S. IN ELECTRICAL ENGINEERING

Computer Engineering Curricula

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|---|----------------|--|----------------|
| ECE 101 Introduction to Engineering Problem Solving | 3 | ECE 172 Intermediate Programming & Lab | 4 |
| ENG 111 English Composition I | 3 | ENG 112 English Composition II | 3 |
| MATH 131 Calculus I | 3 | MATH 132 Calculus II | 3 |
| ME 121 Solids Modeling | 3 | PHYS 150 & 150L Physics I | 4 |
| Liberal Studies | 3 | ECE 250 Digital Design | 3 |
| Orientation | 0 | | |
| Total..... | 15 | Total..... | 17 |

| SOPHOMORE YEAR Semester I | | Semester II | |
|--|-----------|--------------------------------------|-----------|
| ECE 221 Electric Circuits I | 3 | CE 200 Mechanics of Solids I | 3 |
| ECE 234 & 234L Data Structures/Program | 4 | ECE 201 Instrumentation | 2 |
| CHEM 115 & 115L General Chemistry | 4 | ECE 222 Electric Circuits II | 3 |
| MATH 231 Differential Equations | 3 | ECE 251 Microprocessors | 3 |
| PHYS 251 & 251L Physics II | 4 | ECE 360 Object Oriented Design | 3 |
| | | MATH 232 Calculus III | 3 |
| Total..... | 18 | Total..... | 17 |

| JUNIOR YEAR Semester I | | Semester II | |
|--------------------------------------|-----------|---------------------------------------|-----------|
| ECE 331 Electronics I | 3 | ECE 370 Operating Sysytems..... | 3 |
| ECE 341 Junior Lab I | 1 | ECE 314 Engineering Economy | 3 |
| ECE 350 Computer Systems | 3 | ECE 332 Electronics II | 3 |
| ECE 406 Electromagnetic Fields | 3 | ECE 335 Systems, Signals, Noise | 3 |
| MATH 309 Probability | 3 | ECE 342 Junior Lab II | 1 |
| PHYS 252 Physics III | 3 | ECE 450 Computer Networks | 3 |
| Total..... | 16 | Total..... | 16 |

| SENIOR YEAR Semester I | | Semester II | |
|------------------------------------|-----------|------------------------------|-----------|
| CE 400 The Compleat Engineer | 3 | ECE 410 ECE Project II | 2 |
| ECE 409 ECE Project I | 1 | ECE Major Elective | 3 |
| ECE Major Elective | 3 | MATH 405 Discrete Math | 3 |
| ME 202 Dynamics | 3 | Liberal Studies | 9 |
| Liberal Studies | 6 | | |
| Total..... | 16 | Total..... | 17 |

Total credits required for the degree 132.

All major electives must include design experience and therefore be a course offered by the School of Engineering.

Intern Program in France: Students with Junior Standing in the Electrical and Computer Engineering Department can complete 12 hours abroad. For information contact the ECE Department.

COURSE REQUIREMENTS FOR A B.S. IN ELECTRICAL ENGINEERING

Electrical Engineering Curricula

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|---|----------------|--------------------------------------|----------------|
| ECE 101 Introduction to Engineering Problem Solving | 3 | ECE 250 Digital Design..... | 3 |
| ECE 172 Intermediate Programming & Algorithms | 3 | ENG 112 English Composition II | 3 |
| ENG 111 English Composition I..... | 3 | MATH 132 Calculus II..... | 3 |
| MATH 131 Calculus I..... | 3 | ME 121 Solids Modeling..... | 3 |
| Liberal Studies | 3 | PHYS 150 & 150L Physics I | 4 |
| Orientation | 0 | | |
| Total..... | 15 | Total..... | 16 |

| SOPHOMORE YEAR Semester I | | Semester II | |
|--|-----------|------------------------------------|-----------|
| CE 200 Mechanics of Solids I | 3 | ECE 201 Instrumentation..... | 2 |
| ECE 221 Electric Circuits I | 3 | ECE 222 Electric Circuits II | 3 |
| CHEM 115 & 115L General Chemistry..... | 4 | ECE 251 Microprocessors..... | 3 |
| MATH 231 Differential Equations | 3 | MATH 232 Calculus III..... | 3 |
| PHYS 251 & 251L Physics II | 4 | PHYS 252 Physics III | 3 |
| | | ME 202 Dynamics | 3 |
| Total..... | 17 | Total..... | 17 |

| JUNIOR YEAR Semester I | | Semester II | |
|--------------------------------------|-----------|--------------------------------------|-----------|
| ECE 331 Electronics I..... | 3 | ECE 314 Engineering Economy | 3 |
| ECE 341 Junior Lab I..... | 1 | ECE 322 Linear Controls..... | 3 |
| ECE 406 Electromagnetic Fields | 3 | ECE 332 Electronics II..... | 3 |
| MATH 309 Probability..... | 3 | ECE 335 Systems, Signals, Noise..... | 3 |
| PHYS 353 Solid State Physics..... | 3 | ECE 342 Junior Lab II..... | 1 |
| Liberal Studies | 3 | Liberal Studies | 3 |
| Total..... | 16 | Total..... | 16 |

| SENIOR YEAR Semester I | | Semester II | |
|---------------------------------------|-----------|------------------------------|-----------|
| ECE 400 The Compleat Engineer..... | 3 | ECE 410 ECE Project II | 2 |
| ECE 401 Energy Conversion..... | 3 | ECE Major Elective..... | 3 |
| ECE 403 Energy Conversion Lab | 1 | Liberal Studies | 6 |
| ECE 409 ECE Project I..... | 1 | MATH Elective..... | 3 |
| ECE Major Elective..... | 3 | | |
| ME 305 or CHE 231 Thermodynamics..... | 3 | | |
| Liberal Studies | 3 | | |
| Total..... | 17 | Total..... | 14 |

Total credits required for the degree 129.

All major electives must include design experience and therefore be a course offered by the School of Engineering.

Intern Program in France: Students with Junior Standing in the Electrical and Computer Engineering Department can complete 12 hours abroad. For information contact the ECE Department.

COURSE REQUIREMENTS FOR B.S. IN ELECTRICAL ENGINEERING AND A B.S. IN COMPUTER SCIENCE

Computer Engineering Curricula

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|--|----------------|-------------------------------------|----------------|
| ENG 111 English Composition I..... | 3 | ENG 112 English Composition II..... | 3 |
| CHEM 115 & 115L General Chemistry..... | 4 | ECE 172 Int. Prog. & Lab..... | 4 |
| MATH 131 Calculus I..... | 3 | ECE 250 Digital Design..... | 3 |
| ME 121 Solids Modeling..... | 3 | MATH 132 Calculus II..... | 3 |
| Liberal Studies..... | 3 | PHYS 150 & 150L Physics I..... | 4 |
| Orientation..... | 0 | | |
| Total..... | 16 | Total..... | 17 |

| SOPHOMORE YEAR Semester I | | Semester II | |
|--|-----------|---|-----------|
| ECE 221 Electric Circuits I..... | 3 | ECE 251 Microprocessors..... | 3 |
| ECE 234/244 Structured Prog and Lab..... | 4 | ECE 360 Object Oriented Systems Design..... | 3 |
| MATH 231 Differential Equations..... | 3 | CE 200 Mechanics of Solids I..... | 3 |
| PHYS 251 & 251L Physics II..... | 4 | ECE 201 Instrumentation..... | 2 |
| Liberal Studies..... | 3 | ECE 222 Electric Circuits II..... | 3 |
| | | MATH 232 Calculus III..... | 3 |
| Total..... | 17 | Total..... | 17 |

| JUNIOR YEAR Semester I | | Semester II | |
|-------------------------------------|-----------|--------------------------------------|-----------|
| ECE 331 Electronics I..... | 3 | ECE 314 Engineering Economy..... | 3 |
| ECE 341 Junior Lab I..... | 1 | ECE 342 Junior Lab II..... | 1 |
| ECE 350 Computer Systems..... | 3 | ECE 332 Electronics II..... | 3 |
| ECE 406 Electromagnetic Fields..... | 3 | ECE 335 Systems, Signals, Noise..... | 3 |
| MATH 309 Probability..... | 3 | ECE 450 Computer Networks..... | 3 |
| PHYS 252 Physics III..... | 3 | ECE 370 Operating Systems..... | 3 |
| | | Liberal Studies..... | 3 |
| Total..... | 16 | Total..... | 19 |

| SENIOR YEAR Semester I | | Semester II | |
|------------------------------------|-----------|--|-----------|
| ECE 400 The Compleat Engineer..... | 3 | ECE 410 ECE Project II..... | 2 |
| ECE 409 ECE Project I..... | 1 | CS 440 Algorithms..... | 3 |
| ECE Major Elective..... | 3 | CS 460 Topics in Computer Science..... | 3 |
| ECE 471 Database Design..... | 3 | Liberal Studies..... | 6 |
| MATH Elective..... | 3 | MATH 405 Discrete Math..... | 3 |
| Liberal Studies..... | 3 | | |
| ME 202 Dynamics..... | 3 | | |
| Total..... | 19 | Total..... | 17 |

Total credits required for the degree 138.

All major electives must include design experience and therefore be a course offered by the School of Engineering.

Intern Program in France: Students with Junior Standing in the Electrical and Computer Engineering Department can complete 12 hours abroad. For information contact the ECE Department.

COURSE REQUIREMENTS FOR B.S. IN MECHANICAL ENGINEERING

| FRESHMAN YEAR Semester I | | Credits | Semester II | | Credits |
|---|--|----------------|-------------------------------------|--|----------------|
| ENG 111 English Composition I..... | | 3 | ME 112 Scientific Programming..... | | 3 |
| CHEM 115 & 115L General Chemistry..... | | 4 | ENG 112 English Composition II..... | | 3 |
| IDS 101 Dimensions of Faith..... | | 3 | MATH 132 Calculus II..... | | 3 |
| MATH 131 Calculus I..... | | 3 | PHYS 150 & 150L Physics I..... | | 4 |
| ME 121 Solids Modeling..... | | 3 | Liberal Studies..... | | 3 |
| Orientation..... | | 0 | | | |
| Total..... | | 16 | Total..... | | 16 |
| <hr/> | | | | | |
| SOPHOMORE YEAR Semester I | | | Semester II | | |
| ME 200 Mechanics of Solids..... | | 3 | ECE 221 Electric Circuits I..... | | 3 |
| MATH 231 Differential Equations..... | | 3 | MATH 232 Calculus III..... | | 3 |
| ME 201 Manufacturing Processes..... | | 3 | ME 202 Dynamics..... | | 3 |
| PHYS 251 & 251L Physics II..... | | 4 | ME 305 Thermodynamics I..... | | 3 |
| Liberal Studies..... | | 3 | PHYS 252 Physics III..... | | 3 |
| Total..... | | 16 | Total..... | | 15 |
| <hr/> | | | | | |
| JUNIOR YEAR Semester I | | | Semester II | | |
| ME 301 Engineering Instrumentation Lab..... | | 2 | ME 302 Energy Systems Lab..... | | 2 |
| ME 313 Fluid Mechanics..... | | 3 | ME 306 Heat Transfer..... | | 3 |
| ME 316 Engineering Thermodynamics II..... | | 3 | ME 318 Dynamics of Machines..... | | 3 |
| ME 317 Kinematics..... | | 3 | ME 422 Control Systems..... | | 3 |
| Liberal Studies..... | | 3 | MATH Elective..... | | 3 |
| Math Elective..... | | 3 | Liberal Studies..... | | 3 |
| Total..... | | 17 | Total..... | | 17 |
| <hr/> | | | | | |
| SENIOR YEAR Semester I | | | Semester II | | |
| ME 400 The Compleat Engineer..... | | 3 | ME 314 Engineering Economy..... | | 3 |
| ME 401 Mechanical Systems Lab..... | | 2 | ME 408 ME Project II..... | | 3 |
| ME 407 ME Project I..... | | 3 | ME Major Elective..... | | 3 |
| ME 420 Machine Design..... | | 3 | Liberal Studies..... | | 3 |
| ME 421 Thermal Systems Analysis & Design..... | | 3 | Program Option..... | | 6 |
| ME Major Elective..... | | 3 | | | |
| Total..... | | 17 | Total..... | | 18 |

Total credits required for the degree 132.

BACHELOR OF SCIENCE IN ENGINEERING MANAGEMENT (INFORMATION MANAGEMENT CONCENTRATION)

Offered Jointly by the School of Business and the School of Engineering

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|------------------------------------|----------------|---|----------------|
| ENG 111 English Composition I..... | 3 | ENG 112 English Comp II..... | 3 |
| SPCH 125 Speech Communication..... | 3 | PHYS 150 & 150L Physics I..... | 4 |
| GER Elective..... | 3 | ECE 172 Introduction to Programming and Algorithms..... | 3 |
| ME 121 Solids Modeling..... | 3 | ACCT 260 Financial Accounting..... | 3 |
| MATH 131 Calculus I..... | 3 | ITM 153 Introduction to Computers..... | 3 |
| Total..... | 15 | Total..... | 16 |

| SOPHOMORE YEAR Semester I | Credits | Semester II | Credits |
|--------------------------------------|----------------|---|----------------|
| ACCT 270 Managerial Accounting..... | 3 | ENG 371 Business Writing..... | 3 |
| ME/CE 200 Mechanics of Solids I..... | 3 | ECE 250 Digital Design..... | 3 |
| ITM 231 Introduction to MIS..... | 3 | ECON 214 Principles of Microeconomics..... | 3 |
| ENG 211 Literature..... | 3 | MGMT 300 International Business..... | 3 |
| PHYS 251 & 251L Physics II..... | 4 | Religious Studies elective (200 level)..... | 3 |
| Total..... | 16 | Total..... | 15 |

| JUNIOR YEAR Semester I | Credits | Semester II | Credits |
|--|----------------|---|----------------|
| STAT 221 Elementary Statistics..... | 3 | STAT 222 Interm Statistics..... | 3 |
| MGMT 352 Organizational Management..... | 3 | ECE/CE 314 Engineering Economy ¹ | 3 |
| BLAW 301 Business Law I..... | 3 | BLAW 302 Business Law II..... | 3 |
| PHIL 323 Business Ethics..... | 3 | ME 202 Dynamics..... | 3 |
| ECON 215 Principles of Macroeconomics..... | 3 | MKTG 311 Principles of Marketing..... | 3 |
| Total..... | 15 | Total..... | 15 |

| SENIOR YEAR Semester I | Credits | Semester II | Credits |
|--|----------------|---|----------------|
| FIN 327 Financial Management I..... | 3 | MGMT 339 Prod. & Ops. Planning..... | 3 |
| ECE/ME/CE 400 The Compleat Engineer..... | 3 | MGMT 498 Business Policy..... | 3 |
| ECE 471 Database Design..... | 3 | ITM 351 System Analysis..... | 3 |
| ITM 295 Data Communication..... | 3 | Engineering or Business Elective ² | 3 |
| MGMT 337 Principles of Organization..... | 3 | Religious Studies elective (300 level)..... | 3 |
| Total..... | 15 | Total..... | 15 |

Total credits required for the degree 122.¹ Engineering Economy substitutes for Micro Econ (ECON 214) in Business Core.² An elective (200, 300, 400)

BACHELOR OF SCIENCE IN ENGINEERING MANAGEMENT (PACKAGING CONCENTRATION)

Offered Jointly by the School of Business and the School of Engineering

| FRESHMAN YEAR Semester I | Credits | Semester II | Credits |
|------------------------------------|----------------|--|----------------|
| ENG 111 English Composition I..... | 3 | ENG 112 English Comp II..... | 3 |
| SPCH 125 Speech Communication..... | 3 | PHYS 150 & 150L Physics I..... | 4 |
| GER Elective..... | 3 | ME 121 Solids Modeling..... | 3 |
| MATH 131 Calculus I..... | 3 | Religious Studies elective (200 level)..... | 3 |
| ORIN Orientation..... | 0 | ITM 153 Business Computation Applications..... | 3 |
| Total..... | 12 | Total..... | 16 |

| SOPHOMORE YEAR Semester I | Credits | Semester II | Credits |
|--|----------------|--|----------------|
| CHEM 115 & 115L Chemistry I and Lab..... | 4 | ENG Literature Elective..... | 3 |
| CE 200 Mechanics of Solids I..... | 3 | Social Science/History Elective..... | 3 |
| CHE 245 Material Science..... | 3 | CE 213 Mechanics of Solids II..... | 3 |
| ME 201 Manufacturing..... | 3 | ECON 215 Principles of Macroeconomics..... | 3 |
| ECON 214 Principles of Microeconomics..... | 3 | PHYS 251 & 251L Physics II..... | 4 |
| Total..... | 16 | Total..... | 16 |

| JUNIOR YEAR Semester I | Credits | Semester II | Credits |
|---------------------------------------|----------------|---|----------------|
| ENG 371 Business Writing..... | 3 | CE 314 Engineering Economy..... | 3 |
| CH E 319 Principles of Packaging..... | 3 | CHE 320 Dist./Med. Dev. Pack..... | 3 |
| ACCT 260 Financial Accounting..... | 3 | ACCT Managerial Accounting..... | 3 |
| STAT 221 Elementary Statistics..... | 3 | STAT 222 Interm Statistics..... | 3 |
| MGMT 339 Prod. & Ops. Planning..... | 3 | MGMT 352 Organizational Management..... | 3 |
| Total..... | 15 | Total..... | 15 |

| SENIOR YEAR Semester I | Credits | Semester II | Credits |
|---|----------------|--------------------------------------|----------------|
| PHIL Elective..... | 3 | Social Science/History Elective..... | 3 |
| Religious Studies elective (300 level)..... | 3 | CH E 495 Internship..... | 3 |
| CH E 490 Packaging Projects..... | 2 | BLAW 302 Business Law..... | 3 |
| Engrg. Elective..... | 3 | MKTG 418 Supply Chain..... | 3 |
| BLAW 301 Business Law..... | 3 | MGMT 498 Business Policy..... | 3 |
| MKTG 311 Principles of Marketing..... | 3 | | |
| Total..... | 17 | Total..... | 15 |

Total credits required for the degree 122.¹ Engineering Economy substitutes for Micro Econ (ECON 214) in Business Core.² An elective (200, 300, 400)

MINOR IN THE SCHOOL OF ENGINEERING

Minor in Computer Engineering: A minor in Computer Engineering is open to students not part of the Electrical Engineering majors, and they must complete seven courses in the computer engineering curriculum according to the following criteria:

1. at most 5 courses from the following: ECE 112, 201, 221, 233, 234, 250, and 251.
2. at least 2 courses from the following: ECE 350, 450-459, 470-479.