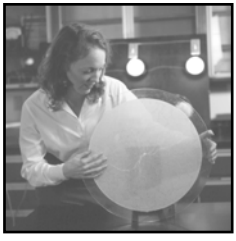

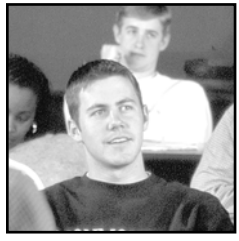

School of Engineering and Computer Science

SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

MISSION

The mission of the School of Engineering and Computer Science is to provide a superior education through instruction, scholarship, and service that prepares graduates for professional practice and responsible leadership with a Christian worldview.

This mission of the School of Engineering and Computer Science results in the following goals:

- To graduate students with a broad-based technical education in engineering and in computer science, an education that fosters an appreciation for the role of the sciences and humanities in society and a commitment to Christian values;
- To stimulate students to think clearly, be creative, and communicate effectively;
- To promote professional ethics and a sense of civic responsibility, empowering graduates to be leaders in their churches, their communities, and society as a whole; and
- To foster and maintain programs of professional activity on the part of the faculty that contribute to the disciplines and build strong alliances with industry, the corporate community, and government.

OFFICE OF THE DEAN

Benjamin S. Kelley, Ph.D., Dean
Steven R. Eisenbarth, Ph.D., Associate Dean
Cheryl A. Tucker, M.S.Ed., Assistant to the Dean
Leigh Ann Marshall, B.B.A., Advancement Coordinator
Rishi Sriram, M.S.Ed., Student Success Specialist

DEPARTMENT OF COMPUTER SCIENCE

Donald L. Gaitros, Ph.D., Chair
Matt Aars, Comp. M.S.
Michael A. Aars, M.S.
Erich J. Baker, Ph.D.
William A. Booth, M.S.
Michael J. Donahoo, Ph.D.
Cynthia C. Fry, M.S.
Paul C. Grabow, Ph.D.
Gregory J. Hamerly, Ph.D.
Peter M. Maurer, Ph.D.
William B. Poucher, Ph.D.
Gregory D. Speegle, Ph.D.
David B. Sturgill, Ph.D.
Sharon L. Humphrey, Adm. Associate
Deanna C. Johnston, Adm. Assistant
Patrick Hynan, Comp. Sys. Manager

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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Russell W. Duren, Ph.D.
Steven R. Eisenbarth, Ph.D.
Donald R. Farris, Ph.D.
Ian A. Gravagne, Ph.D.
B. Randall Jean, Ph.D.
Robert J. Marks II, Ph.D.
J. Brian Thomas, M.E.E.
Michael W. Thompson, Ph.D.
Linda Kerr, Adm. Assistant
Daniel H. Hromadka, Elec. Sys. Manager

DEPARTMENT OF MECHANICAL ENGINEERING

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Walter L. Bradley, Ph.D.
Robert T. Doty, Ph.D.
Brian A. Garner, Ph.D.
Byron P. Newberry, Ph.D.
Carol T. Skurla, Ph.D.
Meihong Sun, Ph.D.
Tommie R. Thompson, Ph.D.
Kenneth W. VanTreuren, Ph.D.
Chava Baker, Adm. Assistant
Ashley Orr, Machinist

HISTORY

In 1973, the first computer science faculty member joined the Department of Mathematics to teach and develop programs in computer science; and by 1974, both the bachelor of science and the bachelor of arts degrees in computer science were offered by the Department of Mathematics.

During the 1978-79 academic year, the University approved the formation of the Institute of Engineering Science to offer an engineering degree within the College of Arts and Sciences. The Institute became operational with its first director in the fall of 1979.

In June 1980, the Computer Science Program in the Department of Mathematics was combined with the Engineering Science Program in the Institute of Engineering Science to form the Department of Engineering and Computer Science. The Department grew rapidly and in February 1982, the Baylor Computer Science Program gained national recognition by winning the International Scholastic Programming Contest.

In 1985, the master of science degree in computer science was offered for the first time at Baylor and, in that same year, the Baylor bachelor of science degree in Computer Science was one of only fifty programs to be accredited by the Computer Science Accreditation Commission, Inc. (CSAC) of the Computer Science Accreditation Board (CSAB), the national accrediting agency for computer science programs.

In the summer of 1988, the Department of Engineering and Computer Science moved into the newly constructed Rogers Engineering and Computer Science Building, which was built specifically to support the engineering and computer science programs. In 1989, the Engineering program was accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET), the national accrediting agency for engineering programs.

The present organization was established in 1995, with the formation of the School of Engineering and Computer Science and its two departments, the Department of Computer Science and the Department of Engineering.

In 2001, EAC/ABET granted separate accreditation of the Department of Engineering's three baccalaureate programs: Electrical and Computer Engineering, Mechanical Engineering, and Engineering.

In 2004, Baylor's Board of Regents approved the introduction of four new masters programs in the Department of Engineering.

The Department of Engineering was reorganized into two departments in 2005.

DEGREE PROGRAMS

1. Bachelor of Science in Computer Science (B.S.C.S.)
2. Bachelor of Arts major in Computer Science (B.A.)
3. Bachelor of Science in Informatics (B.S.I.)
4. Master of Science in Computer Science (M.S.)
5. Bachelor of Science in Engineering (B.S.E.)
6. Bachelor of Science in Electrical and Computer Engineering (B.S.E.C.E.)
7. Bachelor of Science in Mechanical Engineering (B.S.M.E.)
8. Master of Science in Biomedical Engineering (M.S.B.M.E.)
9. Master of Science in Electrical and Computer Engineering (M.S.E.C.E.)
10. Master of Science in Mechanical Engineering (M.S.M.E.)
11. Master of Engineering (M.E.)

FACILITIES

The School of Engineering and Computer Science is housed in the Rogers Engineering and Computer Science Building provided principally through the generous gift of Robert M. and Louise Rogers. It provides modern facilities designed specifically for engineering and computer science. A total of 70,000 square feet of classrooms, offices, and laboratories house the School of Engineering and Computer Science. This building facilitates the education of engineering and computer science students within the overall Christian environment of Baylor University.

Students who participate in the Engineering and Computer Science Living-Learning Center (ECS-LLC) live together in a part of Baylor's North Village. These Students are involved in specific programs designed to increase interaction both with other ECS students and with faculty members. They take several classes together, form study groups, and attend weekly events with various faculty members. One faculty member lives within the LLC, and one full-time staff person has an office in the Community Center and directs all programming for students.

Engineering and computer science students have access to a variety of computer systems. All are connected to the campus network and the Internet (except for some intentionally stand-alone systems). All students can store their files on a fileserver (or create Web pages on the Web server) that is accessible from most computers on campus. Each classroom contains a computer and a projection system to display computer output. Students and faculty regularly use this equipment for classroom presentations.

JESSE H. JONES LIBRARY

In May 1992, Baylor University opened the Jesse H. Jones Library with the second floor devoted to science and engineering. Eleven bays of motorized compact shelving house the science/engineering books and journal collection of approximately 150,000 monographs and more than 3,000 journal titles. Electronic search capabilities are available via Internet technology. The Applied Science and Technology Index is available in both CD-ROM and print form. Computer Select, a CD-ROM acquisition, offers sixty-six full-text computer science/engineering journals and abstracts for another ninety-three computer science/engineering journals. The library holdings and services greatly enhance and support the programs of the School of Engineering and Computer Science.

COURSE REPETITION

A student whose major is in the School of Engineering and Computer Science will not be permitted to repeat any course more than once for credit unless permission is granted by the Dean of the School of Engineering and Computer Science. A student whose major is not in the School of Engineering and Computer Science will not be permitted to repeat any course in the School of Engineering and Computer Science more than once for credit unless permission is granted by the Dean of the School of Engineering and Computer Science.

DEPARTMENT OF COMPUTER SCIENCE

MISSION

The mission of the Department of Computer Science is to educate students, within a Christian environment, in areas of computer science and to advance the field for the benefit of the discipline and for the good of society.

Computer Science Program Objectives

1. To prepare students with a broad-based technical education in computer science.
2. To stimulate students to think clearly, be creative, and communicate effectively.
3. To instill a sense of professional ethics and civic responsibility.
4. To prepare students for employment in organizations that will utilize their computing skills or to continue their education.

Expected Graduate Outcomes

1. Graduates will be able to apply fundamental concepts of computer science including algorithms, data structures, programming language concepts, database concepts, specification methods and notation, design methods, systems programming, operating systems, and theory.
2. Graduates will be able to write efficient, readable software components in a modern programming language, to document them appropriately, to evaluate their correctness, and to reuse code written by others.
3. Graduates will be able to design, implement and test a software system as part of a group of developers for a given customer within a specified amount of time.
4. Graduates will be able to analyze and synthesize computer systems.

5. Graduates will be able to describe the theoretical underpinnings of computation.
6. Graduates will be able to perform the scientific method and experimental techniques.
7. Graduates will be able to apply discrete and continuous mathematical concepts to the solution of real problems in computing.
8. Graduates will be able to document software components appropriately.
9. Graduates will be able to write and orally present technical reports and/or proposals with clarity, accuracy and completeness.
10. Graduates will be able to discuss contemporary issues in the social sciences and humanities.
11. Graduates will be able to identify and evaluate ethical and social issues in computing.
12. Graduates will be able to interpret and apply the ACM Code of Ethics.
13. Most graduates will take positions in industry that utilize their computing skills.
14. Several strong graduates will be accepted by graduate programs in computer science.

PROGRAMS

The Department of Computer Science offers a Bachelor of Science in Computer Science (B.S.C.S.) degree, a Bachelor of Arts (B.A.) degree with a major in computer science, a Bachelor of Science in Informatics (B.S.I.) degree with a major in bioinformatics, and a Master of Science in Computer Science.

The Bachelor of Science in Computer Science (B.S.C.S.) degree is designed for students who wish to pursue an education with a greater concentration in upper-level computer science topics and a solid foundation in mathematics and the sciences. The B.S.C.S. program is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD, 21202-4012, phone (410) 347-7700. Graduates are prepared to pursue careers in research, development, and other computing and computing-related fields. Advanced degrees in computer science are recommended for those pursuing a research career.

The Bachelor of Arts (B.A.) degree with a major in computer science provides a traditional liberal arts education with a solid set of core courses in computer science. These courses provide the foundation necessary for a career in computer science. During the sophomore year, a student selects one of two areas of concentration in order to meet specific goals. Students may choose a concentration program from computer science, or any approved minor in another discipline. The requirements for the B.A. with a major in computer science are presented in the College of Arts and Sciences section of this catalog.

The Bachelor of Science in Informatics (B.S.I.) degree with a major in bioinformatics is a multidisciplinary program offered by the Department of Computer Science in conjunction with the Biology Department. The uniqueness of the program is the strong foundation it provides in both disciplines. Graduates may pursue careers in either computer science or biology, or in bioinformatics, a field that combines the two. The curriculum includes courses in biology, computer science, chemistry, and mathematics, as well as the humanities and social sciences. It is an excellent choice for students planning to enter one of the medical professions.

The Master of Science in Computer Science (M.S.C.S.) degree is designed to increase the student's knowledge in the areas of database, software engineering, real-time systems, parallel processing, networks, and user interfaces. The M.S. program has two options: a thesis option and a project option.

An important characteristic of the Baylor computer science programs is the integration of software, hardware, theory, and design methodology throughout the curriculum. A highly personalized education is provided by faculty dedicated to undergraduate education with small class size and modern laboratories. The programs are broadly based to prepare computer science graduates to handle the increasingly complex and ever-changing areas of computer science.

LABORATORY SUPPORT

The department operates five computer labs, a collection of UNIX computers, and a file server. All computers are connected to the university network. Two labs contain thirty computers each and a third contains twenty, all running Windows XP. Two of the labs are restricted to upper-division classes, one of which was sponsored by a grant from the Keck Foundation. In addition there are

twenty-seven workstations in the room used by the master's students. There are four general-purpose UNIX computers and a UNIX cluster containing eight nodes, all nodes connected via a high-speed network. Each of these computers has a dual processor and runs LINUX. The fileserver runs at RAID level 5 and contains 400 Gbytes of file storage.

HONOR SOCIETY

Upsilon Pi Epsilon is an honorary computer science association that promotes high scholarship and original investigations in the branches of computer science. Membership in the Baylor chapter is composed of individuals whose academic achievements, reputations, and creative abilities deserve recognition. The chapter inducts members twice each year and assists fellow students in their academic pursuits.

PROFESSIONAL ORGANIZATIONS

The Baylor Student Chapter of the Association for Computing Machinery (ACM) was organized and chartered in 1974. The student chapter assists members in maintaining a close, regular association with fellow students and faculty who are also interested in computing. In addition, the chapter sponsors the Baylor Programming Team which competes in the ACM Regional and ACM International Collegiate Programming Contests. Periodic meetings provide a combination of social interaction, professional dialogue, public service, and professional development. Membership is open to anyone with an interest in computing.

Chi Sigma is a professional computer science fraternity that promotes effective leadership skills in the field of computer science. Chi Sigma sponsors service and professional projects for the students. Through stimulating programs and social gatherings, members gain practical experience to enhance their education at Baylor. Membership is open to men and women committed to service in the field of computer science.

Society of Women Engineers, Baylor University's Student Section of the Society of Women Engineers, is open to all engineering and computer science students, both male and female. The goals of the section are 1) to provide education about the challenges facing female engineers, 2) to create a sense of identity and community, 3) to provide resources for women engineers, and 4) to enhance leadership and professional skills. These goals are achieved through mentoring relationships, presentations, field trips, and other activities.

AWARDS

The Patrick J. Keane Outstanding Computer Science Senior Award recognizes high scholastic achievement and service. This award is presented annually by the faculty of the Department of Computer Science to a graduating computer science student with a high GPA and a distinguished record of service to the Department of Computer Science.

The Outstanding Scholar award is presented annually to the graduating senior in computer science who ranks highest in the class.

The Outstanding Service Award is presented annually to the graduating computer science major with a distinguished record for service to the Department of Computer Science and Baylor University.

The Outstanding Graduate Assistant Award is presented annually to a graduate assistant in computer science with a distinguished record for service to the Department of Computer Science.

SCHOLARSHIPS AND FINANCIAL INFORMATION

A number of scholarships are available to students in the School of Engineering and Computer Science. Applications for the following academic year may be obtained from the Department of Computer Science office and must be submitted prior to March 1.

- Mark and Carol Measures ACM Scholarship
- Dr. and Mrs. James Nolen Scholarship in Computer Science
- The ACM Scholarship in Computer Science
- Vic and Helen Estes Computer Science Endowed Scholarship
- John and Ann Iller Computer Science Endowed Scholarship
- William Eldon Mearse Family Endowed Scholarship

- School of Engineering and Computer Science Board of Advocates Endowed Scholarship
- Engineering/Computer Science Scholarship

In addition to the scholarships listed above, computer science students are eligible to apply for unrestricted scholarships available at Baylor University. Applications for these scholarships should be submitted directly to the Office of Academic Scholarships and Financial Aid.

SUMMER INTERN PROGRAM

The Summer Intern Program is an elective program combining undergraduate student computer science education with appropriate industrial experience. Applications of students who meet the program requirements are forwarded to appropriate participating companies. The Summer Intern program includes a one-week seminar on campus with intensive training (normally scheduled immediately following the Spring semester) followed by a minimum of eight weeks of employment. Participating students receive three semester hours credit (as CSI 3395 or BINF 3396) toward graduation.

BACHELOR OF SCIENCE IN COMPUTER SCIENCE (B.S.C.S.)

The Bachelor of Science in Computer Science (B.S.C.S) degree program is accredited by the Computer Science Accreditation Commission, Inc. (CSAC) of the Computing Sciences Accreditation Board, Inc. (CSAB).

B.S.C.S. DEGREE REQUIREMENTS

Minimum 124 semester hours including the following:

I. Humanities and Social Science . . . . . 33-46 sem. hrs.
   A. ENG 1302 and 3300 . . . . . .6 sem. hrs.
   B. One from each group. . . . . .9 sem. hrs.
      1. GTX 3343, 4341
      2. ENG 2301,2304, 2306
      3. PSC 2302 or an additional GTX course
   C. REL 1310 and 1350. . . . . .6 sem. hrs.
   D. Foreign Language . . . . . 3-8 sem.hrs.
      Second level proficiency (at least 1302, 1402, or 1412) must be achieved.
      1. Complete one course to reach second level proficiency (1302, 1402, 1412, 2310, or 2320).
      2. Complete two courses to reach second level profiency (beginning with 1301 or 1401).
   E. History and/or social science . . . . . .6 sem. hrs.
   F. CSS 3308. . . . . .3 sem. hrs.

II. Computer Science . . . . . 56-58 sem. hrs.
   A. CSI 1430, 1440, 2334, 2350, 3334, 3335, 3336, 3344, 3372, 3439, 3471, 4321, 4330, 4337, 43C9 . . . . . .49 sem. hrs.
   B. One of CSI 3101 or 4301 . . . . . 1-3 sem. hrs.
   C. CSI 3000 or 4000 level electives (see note) . . . . . .6 sem. hrs.
   D. A grade of "C" or better in all but four hours of the computer science hours counted toward the major.

III. Mathematics. . . . . .12 sem. hrs.
   A. MTH 1321, 1322. . . . . .6 sem. hrs.
   B. STA 3381. . . . . .3 sem. hrs.
   C. One mathematics course from 2311, or 2321 . . . . . .3 sem. hrs.

IV. Sciences . . . . . 12-16 sem. hrs.
   A. One group from the following natural or physical sciences:
      1. BIO 1305-1105 and 1306-1106.
      2. CHE 1301 and 1302.
      3. GEO 1405 and 1406.
      4. PHY 1408 and 1409 or 1425 and 2435.
   B. Six to eight additional hours of science from the courses above or from courses which have one or more of the above courses as prerequisites.

V. Other Requirements . . . . . .2 sem. hrs.
A. Human Performance, two activity courses . . . . . .2 sem. hrs.
(Waived for students who have reached age 25 before graduation. A maximum of four activity courses may be counted on a degree program.)
B. Chapel–two semesters . . . . . no credit
(Not required of students who have reached age 25 before matriculation)
VI. Minor
A. Optional, may elect one or more minors. See specific requirements in departmental sections of this catalog.
B. No more than three hours from the major may be applied to the minor.
VII. Advanced work ("3000" or "4000" numbered courses) minimum . . . . . .36 sem. hrs.
VIII. Maximum credit – No more than ten hours of applied music and/or ensemble.

NOTE: The following courses are not applicable to the major in computer science or as degree electives without written permission from the Computer Science Department Chair: CSI 3303, 4103, 4104, 4105, 4320; ISY 1305, 3150, 3301 and 3325. ENG 1304 will not substitute for ENG 3300.

SAMPLE SCHEDULE
BACHELOR OF SCIENCE IN COMPUTER SCIENCE (B.S.C.S.)

FRESHMAN YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 1430-Intro. to Computer Science I	4	CSI 1440-Intro. to Computer Sciience II	4
History/Social Science Elective	3	CSI 2350-Discrete Structures	3
ENG 1302-Thinking and Writing	3	History/Social Science Elective	3
REL 1310-Christian Scriptures	3	REL 1350-Christian Heritage	3
Human Performance	1	ENG 2301, ENG 2304, or ENG 2306	3
Chapel	0	Chapel	0
	14		16(17)

SOPHOMORE YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 2334-Intro. to Computer Systems	3	CSI 3471-Software Engineering I	4
CSI 3334-Data Structures	3	CSI 3344-Intro. to Alogrithms	3
MTH 1321-Calculus I	3	MTH 1322-Calculus II	3
GTX 3343 or GTX 4341	3	Psc 2302-American Const. Dev. or another GTX course	3
Science Elective	3(4)	Science Elective	3(4)
	15(16)		16(17)

JUNIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 3335-Database Design and Applications	3	CSI 3372-Software Engineering II	3
CSI 3336-Systems Programming	3	CSI 4321-Data Communications	3
MTH 2311-Linear Albebra or MTH 2321-Calculus III	3	CSI 3439-Computer Architecture	4
CSS 3308-Technical Speaking	3	STA 3381-Statistics Methods	3
Human Performance	1	Foreign Language	3(4)
Foreign Language	3(4)		16(17)
	16(17)		

SENIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 4337-Operating Systems	3	CSI 43C9-Capstone Design Project	3
Computer Science Elective	3	Computer Science Elective	3
CSI 3101 Computers in Society	1	CSI 4330-Foundations of Computing	3
ENG 3300-Technical and		Science Elective	3(4)
Professional Writing	3	General Elective	3
Science Elective	3(4)		15(16)
General Elective	3		
	16(17)		

Computer Science Electives: Upper level (excluding 4103, 4104, 4105, 4320)

Science Electives: One of the following groups: (1) Biology 1305, 1306, 1105, 1106; Chemistry 1301, 1302; (3) Geology 1405, 1406; (4) Physics 1425, 2435, or 1408, 1409. An additional 6-8 hrs. taken from the courses above or from courses which have one or more of the above as prerequisites.

History, Social Science Elective: Prefer ECO 1305 or 2306 as one of the electives.

NOTE: Must have thirty-six hours of advanced work ("3000" - "4000" courses) and a minimum of 124 hours.

BACHELOR OF SCIENCE IN INFORMATICS (B.S.I.)

B.S.I. DEGREE REQUIREMENTS (Bioinformatics Major)

Minimum 124 semester hours to include the following:

I. Humanities and Social Science . . . . . 30-38 sem. hrs.
   - A. ENG 1302 and 3300. . . . . 6 hrs.
   - B. GTX 2301 and 2302. . . . . 6 hrs.
   - C. REL 1310 and 1350 . . . . . 6 hrs.
   - D. Foreign Language (one language through 2310 or equivalent) . . . . . 3-11 hrs.
   - E. History and/or social science . . . . . 6 hrs.
   - F. ENG 2301 or PSC 2302. . . . . 3 hrs.

II. Computer Science and Biology . . . . . 61 hrs.
   - A. CSI 1430, 1440, 2334, 2350, 3334, 3335, 3336, 3344, 3471, (3372 or 4337) . . . . 33 hrs.
   - B. BIO 1305-1105, 1306-1106, 2306-2106, 4306-4106. . . . . 16 hrs.
   - C. Four hours of Biology from the following courses: BIO 3330, 3422, 4100, 4107, 4108, 4307, 4308, 4341, 4401. . . . . 4 hrs.
   - D. A grade of "C" or better in all but four hours maximum of the computer science hours counted toward the major.

III. Bioinformatics . . . . . 12 hrs.
   - A. BINF 3350, 3360, 4360 . . . . . 9 hrs.
   - BINF 3396 (Summer Intern Experience) or CSI elective (see note). . . . . 3 hrs.

IV. Mathematics and Chemistry . . . . . 23 hrs.
   - A. MTH 1321 . . . . . 3 hrs.
   - B. One course from STA 2381 or 3381 . . . . . 3 hrs.
   - C. CHE 1301, 1302, 1316, 3238, 3331, and 3332 . . . . . 17 hrs.

IV. Other Requirements. . . . . 2 hrs.
   - A. Human Performance, two activity courses minimum . . . . . 2 hrs.
   - B. Chapel-two semesters . . . . . no credit

V. The requirements for a minor, advanced work, and maximum credit are the same as for the Bachelor of Science in Computer Science degree.

Note: The following courses are not applicable to the major in bioinformatics or as degree electives without written permission from the Computer Science Department Chair: CSI 3303, 4103, 4104, 4105, 4320; ISY 1305, 3150, 3301 and 3325. ENG 1304 will not substitute for ENG 3300.

SAMPLE SCHEDULE
BACHELOR OF SCIENCE IN INFORMATICS (B.S.I.)
BIOINFORMATICS MAJOR

FRESHMAN YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 1430-Intro. to Comp. Sci. I	4	CSI 1440-Intro. to Comp. Sci. II	4
BIO 1305-1105-Bioscience I	4	BIO 1306-1106-Bioscience II	4
ENG 1302-Thinking and Writing	3	CSI 2350-Discrete Structures	3
REL 1310-Christian Scriptures	3	REL 1350-The Christian Heritage	3
Human Performance	1	GTX 2301-Intellectual Trad. Ancient Wrld	3
Chapel	0	Chapel	0
	15		17

SOPHOMORE YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 3334-Data Structures	3	CSI 3344-Intro. to Alogrithms	3
BIO 2306-2106-Genetics	4	CSI 3471-Software Engineering I	3
CHE 1301-Modern Chemistry I	3	CHE 1302-Basic Principles of Modern Chemistry II	3
MTH 1321-Calculus I	3	CHE 1316-Lab Meas. and Techniques	3
Foreign Language	3(4)	Foreign Language	3(4)
	16(17)		15(16)

JUNIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 3335-Database Design & Applications	3	STA 2381 or STA 3381	3
BIO 4306-4106-Molecular Genetics	4	BINF 3350-Genomics & Bioinformatics	3
CHE 3331-Organic Chemistry I	3	CSI 3336-Systems Programming	3
CSI 2334-Intro. to Computer Systems	3	CHE 3332-Organic Chemistry II	3
Foreign Language	3	Human Performance	1
	16		14

Summer	sem. hrs.
BINF 3396-Summer Intern Experience	3

SENIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
CSI 3372-Software Engineering II or CSI 4337-Intro. to Operating Systems	3	BINF 4360-Bioinformatics Database Design	3
CHE 3238-Organic Chemistry Lab	2	GTX 2302-Medieval Intellectual Trad.	3
BINF 3360-Intro. to Computational Biology	3	Biology Elective	4
ENG 2301-British Literature or PSC 2302-American Constitutional Dev.	3	History/Social Science Elective	3
History/Social Science Elective	3	ENG 3300-Tech. and Prof. Writing	3
	14		16

NOTE: Pre-med majors also need one year of physics prior to taking the MCAT in the spring semester of the junior year.

Biology Electives: BIO 3330-Human Genetics, 3422-Human Physiology, 4100-Genetic Seminar, 4107-Cell Physiology Lab, 4108-Cell & Dev. Biology Lab, 4307-Cell Physiology, 4308-Cell & Dev. Biology, 4341-General Biochemistry, 4401-General Bacteriology

BSCS HONORS PROGRAM

Students wishing to earn an honors degree in computer science can do so by fulfilling the minimun course work requirement stipulated by the Honors College. In addition to completing the requested number of honors classes, each candidate must complete a senior thesis. The successful honors student will be partnered with a member of the computer science faculty, who will mentor the honors student. The typical thesis is designed to provide exposure to research methods in the field and prepare the honors student for graduate study.

BAYLOR INTERDISCIPLINARY CORE (BIC)

The Baylor Interdisciplinary Core (BIC) offers a set of comprehensive interdisciplinary courses that provides an integrated approach to knowledge and learning. Computer science students seeking a B.S.C.S or B.S.I. degree may select the BIC program. Students must be admitted to the BIC program before registering for BIC courses.

For further details, see the BIC B.S.C.S. and B.S.I. curriculum in the Honors College section of this catalog.

REQUIREMENTS FOR A MINOR IN COMPUTER SCIENCE

Twenty semester hours in computer science including the following:

A. CSI 1430, 1440, 2334, 2350 and 3334.
B. Six semester hours of "3000" - "4000" level computer science electives.
C. A grade of "C" or better in computer science courses used for the minor.

BACHELOR OF ARTS, MAJOR IN COMPUTER SCIENCE

The B.A. student may choose a major or a minor in computer science. See the College of Arts and Sciences section of this catalog for the required courses of study.

MASTER OF SCIENCE IN COMPUTER SCIENCE

See the Graduate School Catalog for a description of this program.

DEPARTMENTS OF ENGINEERING

ORGANIZATION

The engineering programs are offered through the two engineering departments: Department of Electrical and Computer Engineering and Department of Mechanical Engineering

MISSION

The mission of the engineering departments is to educate students, within a caring Christian environment, in the discipline of engineering, by combining a strong technical foundation with an emphasis on professional, moral, ethical, and leadership development.

PROGRAMS

Accompanying the growth and development of the organizational structure of Engineering at Baylor University, as reviewed earlier in the History section for the School, the engineering programs have also continued to grow and develop. Currently, the two Departments of Engineering offer three baccalaureate engineering degrees:

Bachelor of Science in Electrical and Computer Engineering
Bachelor of Science in Mechanical Engineering
Bachelor of Science in Engineering

and four graduate engineering degrees:

Master of Science in Biomedical Engineering
Master of Science in Electrical and Computer Engineering
Master of Science in Mechanical Engineering
Master of Engineering

plus joint bachelor's/master's programs for eight specific combinations of the bachelor's and master's programs. Up to six credits can be applied in common toward these joint degree programs. Further information is given in the Graduate Catalog.

ACCREDITATION

Engineering programs may seek accreditation by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, phone 410-347-7700. All engineering program accreditation is subject to the ABET EAC general criteria. Engineering programs such as Electrical and Computer Engineering or Mechanical Engineering are also subject to additional program specific criteria.

Engineering programs may seek accreditation at either the basic (B.S.) or advanced (M.S.) level, but not both. Each of the three B.S. programs, Electrical and Computer Engineering, Mechanical Engineering, and Engineering, are accredited by ABET/EAC under the general and respective program criteria.

SEMESTER HOUR REQUIREMENTS

The engineering curricula require a minimum of 136 semester hours. The corresponding Honors tracks require a minimum of 141 semester hours. A semester hour is generally one fifty-minute classroom or one three-hour laboratory session per week. Some engineering courses have additional sessions scheduled to facilitate non-lecture group project activities, recitation, or testing sessions.

PROGRAM OVERVIEW

Engineering graduates design and implement products and systems which touch virtually every aspect of our lives. They are involved with telecommunications, computer systems, automobiles, aircraft and spacecraft, power plants, robotics, machinery of all types, medical equipment and prosthetics, home appliances, and manufacturing systems, to name a few. Many graduates continue their professional education by attending graduate school programs in engineering, law, medicine, or business.

Each of the three engineering programs builds on a common core of basic sciences and mathematics, humanities and social sciences, and engineering sciences developed primarily in the first two years of study. Mathematics and basic sciences provide the technical foundation for the engineering curriculum. The engineering sciences introduce basic areas of engineering and represent the bridge between the basic sciences and mathematics on which they build and the more advanced engineering applications and engineering design to which they lead. The humanities and social sciences component of the curriculum helps to prepare the student for the human and social influences on engineering applications and design, and for increased appreciation and fulfillment in the broader aspects of life and culture. Other requirements include courses that contribute to communication and computer skills, ethics, engineering economics, and additional electives.

Computer-aided design and laboratory experiences are vital program features. The Baylor engineering programs integrate design throughout the curriculum, with special emphasis in specific courses taken in the first freshmen semester, the first junior semester, and final senior semester, as well as in other courses in the program. Juniors take an engineering design course that teaches design methodology and the creative aspects of engineering. In addition, all students complete other courses with design content in their chosen major as well as a senior design course which emphasizes design of open-ended projects by multidisciplinary teams. These broadly based engineering programs prepare students for the complex and multidisciplinary problems that face our contemporary society.

For well-prepared students, these programs can be completed in four years or four years plus one summer.

The Electrical and Computer Engineering and Mechanical Engineering programs contain a twenty-one hour mathematics core which meets the course requirements for a mathematics minor. Engineering majors by choice of electives may also complete a mathematics minor. The minor must be approved by the Department of Mathematics.

These programs are offered by a faculty that is dedicated to the education of undergraduate engineering students. To encourage and facilitate close student-faculty interaction, each student has a faculty advisor for academic and professional career guidance.

HONORS PROGRAM

The School of Engineering and Computer Science participates in the University's prestigious Honors Program. Superior engineering students who are also admitted to the Honors College may pursue the Honors tracks of their respective engineering major. The Honors track for each engineering major is shown later in this section, immediately following the regular track. Additional information is given in the Honors College section of this catalog.

BAYLOR INTERDISCIPLINARY CORE

The Baylor Interdisciplinary Core (BIC) offers a set of comprehensive interdisciplinary courses that provides an integrated approach to knowledge and learning. Engineering students may select the BIC program in place of certain requirements below. Students must be admitted to the BIC program before registering for BIC courses.

For further details, see the BIC B.S. for curricula for engineering majors in the Honors College section in this catalog.

THE ENGINEERING UPPER DIVISION

Engineering students may not enroll in engineering courses beyond the sophomore year (i.e., EGR 3000 or above), unless admitted to the engineering upper division. Upper division admission is based on a minimum accumulated quality point average (QPA) for the forty-six semester hours of coursework in engineering, mathematics, basic sciences, and computer science required in the technical core. The QPA is calculated using all attempted hours at Baylor in these areas, including course repeats. Failure to meet the minimum quality point average is a basis for denying upper division admission. Typically, application should be made immediately after mid-term during the semester prior to the junior year.

Students whose upper division engineering course QPA falls below a minimum standard after admission to the upper division will be advised by the Engineering Faculty Advising Board until the minimum is reached. The Faculty Advising Board will determine whether regular progress, restricted progress or no further registration in the engineering program is permitted, depending on the records and the resulting QPA of those students. Further, no engineering student is eligible to register for EGR 4390, Engineering Design II, if the student's engineering GPA is less than 2.25. Details regarding advising and upper division admission are available in the engineering department offices.

Departmental approval is required for a student to change engineering major after admission to the engineering upper division.

Students seeking an engineering minor or a non-engineering degree may enroll in upper division engineering courses (EGR 3000 or above) with the consent of the chair of an engineering department.

REQUIREMENTS FOR MINOR IN ENGINEERING

A minor in engineering requires twenty-one semester hours in engineering with:

A. Nine semester hours of "3000" or "4000" level engineering electives.

B. A grade of "C" or better in all engineering courses used for the minor.

Approval of the chair of an engineering department is required each semester a student takes engineering courses for the minor.

LABORATORY SUPPORT

The engineering programs have well-equipped laboratories that support both the hands-on portion of the curriculum and integrated computer usage. The computer-aided engineering laboratories contain Intel Pentium workstations, each with a 17-inch SVGA color monitor and a high-speed network connection to a central file-server and the Internet. Several engineering labs also contain computer-driven data acquisition equipment that is used in the design and analysis of experiments. Laboratories dedicated to supporting the engineering programs include the Electronics Design Lab, Computer Engineering Lab, Fluids and Thermo-Energy Lab, Mechanics Materials Lab, Junior and Senior Engineering Design Labs, Robotics Lab, Biomechanics Lab, Biomedical Engineering Lab, and Electronics and Machine Shops.

INTERNSHIP PROGRAM

The summer or semester Internship program is an elective program for combining undergraduate students' engineering education with appropriate industrial experience. Applications of students who meet the program requirements are forwarded to appropriate participating companies. The Internship program includes intensive on-campus training seminars (normally scheduled immediately preceeding the internship). Students may receive three semester hours of credit (as EGR 3395) toward graduation.

ENGINEERING REGISTRATION (P.E.)

The engineering faculty encourage students to seek registration or licensure as professional engineers (P.E.) during their careers. Consequently, students are encouraged to take the National Council of Examiners for Engineering and Surveying's (NCEES) Fundamentals of Engineering (FE) exam prior to graduation. This test, a comprehensive knowledge exam given nationally, is the first step toward professional registration. Baylor engineering seniors have had an excellent pass rate for this exam. The exam is offered on campus during the spring semester.

PROFESSIONAL ORGANIZATIONS

ETA KAPPA NU NATIONAL ECE HONOR SOCIETY, KAPPA TAU CHAPTER

Eta Kappa Nu, abbreviated HKN, is the national honor society for Electrical and Computer Engineering students. Baylor's group is the Kappa Tau Chapter. Membership is by invitation and is based on a review of the student's high academic record and character. Junior ECE majors in the upper one-fourth, and senior ECE students in the upper one-third, of their respective classes are eligible for consideration and election to HKN.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Membership in the Baylor University Student Section of the American Society of Mechanical Engineers is open to all Baylor students who are student members of the American Society of Mechanical Engineers. The purposes of this section are: 1) to acquaint members with the goals and programs of ASME and to encourage participation in the activities of the Society, and 2) to sponsor and promote activities which will enhance the total educational experience of members.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

The Baylor University Student Branch of the IEEE is affiliated with the Institute of Electrical and Electronics Engineers, Inc., an international organization which is the world's largest technical professional society. Through projects, field trips, and meetings, the student branch fosters the professional growth of its members and promotes a closer relationship among students, faculty, and the engineering community. Student membership in the international IEEE organization is open to any student pursuing at least a half-time course of study in engineering, computer science, or a related field. Baylor Student Branch membership is open to any student member of the IEEE.

SOCIETY OF WOMEN ENGINEERS

Baylor University's Student Section of the Society of Women Engineers is open to all engineering and computer science students, both male and female. The goals of the section are: 1) to provide education about the challenges facing female engineers, 2) to create a sense of identity and community, 3) to provide resources for women engineers, and 4) to enhance leadership and professional skills. These goals are achieved through mentoring relationships, presentations, field trips, and other activities.

AWARDS

In addition to numerous campus awards for which engineering students are eligible, the engineering faculty present the following two major awards.

Outstanding Senior – The engineering faculty recognize high scholastic achievement and service by awarding the Outstanding Engineering Senior award. This award is presented twice annually to a graduating engineering student with a high GPA, significant contribution to the senior design project, and a distinguished record of service to the engineering department.

Outstanding Junior – The engineering faculty recognize high scholastic achievement and service by awarding the Outstanding Engineering Junior award. This award is presented once or twice

annually to a junior engineering student completing Engineering Design I and having a high GPA and a distinguished record of service to the engineering department, the University and the community.

SCHOLARSHIP INFORMATION

Engineering students are eligible to apply for unrestricted scholarships available at Baylor University. Applications for these scholarships should be submitted directly to the Office of Academic Scholarships and Financial Aid.

A number of additional scholarships are available only for engineering and computer science students.

- School of Engineering and Computer Science Board of Advocates Endowed Scholarship
- Engineering Endowed Scholarship
- Dr. and Mrs. James H. Nolen Endowed Computer and Engineering Science Scholarship
- William Eldon Mearse Family Endowed Scholarship

The following scholarships are available exclusively for engineering students.

- Texas Society of Professional Engineers (Central Texas Chapter) Scholarship
- Neill Morris Memorial Scholarship
- The Department of Engineering Scholarship
- The Baylor Engineering Alumni/Faculty Scholarship
- R. Bryan Nichols Estate Scholarship
- James R. Bargainer, Jr. Endowed Scholarship

Applications for these scholarships are available on the School of Engineering and Computer Science website during the spring. The website also contains information about scholarships that are offered by various organizations outside of Baylor University.

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BACHELOR OF SCIENCE DEGREES IN ENGINEERING

Students pursuing the B.S. in engineering choose one of the three programs. Because the common core extends through the second semester, a student may elect to delay the declaration of a particular major until third semester registration. During the fourth semester or the last semester of the technical core, application must be made for admission to the upper division of engineering. No later than the time of upper division application, students must select the Electrical and Computer Engineering major, the Mechanical Engineering major, or the Engineering major.

B.S. DEGREE REQUIREMENTS

Minimum 136 hours including the following:

I. Humanities and Social Sciences ..... 18-23 sem. hrs.
   - A. Great Texts – GTX 2301, 2302 ..... 6 hrs.
   - B. REL 1310 and 1350 ..... 6 hrs.
   - C. Foreign Language ..... 3-8 hrs.
     Second level proficiency (at least 1302, 1402 or 1412) must be achieved.
     1. Complete one course to reach second level proficiency (1302, 1402, 1403, 2310 or 2320).
     2. Complete two courses to reach second level proficiency (beginning with 1301 or 1401).
   - D. ENG 2301 or PSC 2302 ..... 3 hrs.
   - E. Chapel–two semesters ..... no credit

II. Mathematics and Basic Sciences ..... 32 hrs.
   - A. CHE 1301 ..... 3 hrs.
   - B. MTH 1321, 1322, 2311, 2321, 3325, STA 3381 ..... 18 hrs.
   - C. PHY 1422 and 2435 ..... 8 hrs.
   - D. Additional Mathematics or Basic Science ..... 3 hrs.
     MTH 4329 is required for the Electrical and Computer Engineering major.
     MTH 3326 is required for the Mechanical Engineering major.
     Mathematics or Basic Science elective is required for the Engineering major.

III. Other requirements ..... 19 hrs.

A. Computer Science – CSI 1430 ..... 4 hrs.
B. Writing/Communication – ENG 1302 and 3300 ..... 6 hrs.
C. Engineering Economics – ECO 3308 ..... 3 hrs.
D. Ethics Elective – REL 3390, 3392, 4393, 4395, BUS 3350, or EGR 3305 ..... 3 hrs.
E. Human Performance – three activity courses ..... 3 hrs.
(Note: HED 1145 may be substituted for 1 hour of HP.)

IV. Major (see individual majors below) ..... 67 hrs.

Electrical and Computer Engineering Major

I. Engineering ..... 64 hrs.
A. EGR 1301, 1302, 2345, 2430, 3335, 3380, 4332 and 4390 ..... 25 hrs.
B. EGR 2337, 3333, 3336, 3337, 3338, 3414, 4438, and 4451 ..... 27 hrs.
C. Four courses from EGR 3331, 3395, 4315, 4330,4333
4337, 4350, 4353, 4360, 4372, 4396, 4V97 ..... 12 hrs.
Students completing the AFROTC program may substitute AS 4302 for EGR 3395.
II. CSI 1336 ..... 3 hrs.
III. MTH 4329 (counted in Sec II.D above)

Mechanical Engineering Major

I. Engineering ..... 67 hrs.
A. EGR 1301, 1302, 2345, 2430, 3335, 3380, 4332, and 4390 ..... 25 hrs.
B. EGR 2320, 2321, 3320, 3321, 3322, 3323, 3345, 4322, 4323, 4335, and 4345 ..... 33 hrs.
C. Three courses from EGR 3310, 3395, 4320, 4330, 4336, 4344,
4347, 4348, 4370, 4374, 4382, 4396, 4V97 ..... 9 hrs.
Students completing the AFROTC program may substitute AS 4302 for EGR 3395.
II. MTH 3326 (counted in Sec. II.D above)

Engineering Major

I. Engineering ..... 51-52 hrs.
A. EGR 1301, 1302, 2320, 2345, 2430, 3335, 3380, and 4390 ..... 25 hrs.
B. Engineering Electives (A minimum of six hours must be at
the "4000" level) ..... 26-27 hrs.
II. Approved Concentration Electives (A minimum of nine hours must
be at the "3000" level or above.) ..... 16-15 hrs.
III. Mathematics or Basic Science Elective (counted in Sec. II.D above)

Students desiring the Engineering major must submit a list of proposed electives (forty-five semester hours, Sections I.B, II, and III above) not later than the time of the application for upper division admission. The electives must include one of the following engineering stems:

A. Electronics – EGR 3333, 3335*, 3337, 3414, 4372
B. Signal Processing – CSI 1336, EGR 3335*, 3336, 4350, 4353, 4451
C. Computer Systems – CSI 1336, EGR 2337, 3336, 3338, 3414, 4438
D. Mechanical Design – EGR 2321, 3320, 3322, 3323, 4390*
E. Fluids and Thermal Energy – EGR 2345*, 3321, 3345, 4335, 4345
F. Biomechanics – EGR 3320, 3322, 4370, 4372, 4374, 4V97
G. Biomedical Signals – EGR 4332, 4353, 4372, 4374, 4452

**Denotes courses already required for the Engineering major, and thus not counted in the twenty-six to twenty-seven engineering elective hours.*

The concentration and other electives then become the required list of courses that must be completed for the major. Substitutions or modifications to the approved list must be resubmitted for approval. To ensure degree credit, concentration and other electives should be approved before registering for any of these electives. The objectives of the approval process are to ensure sufficient purpose, depth and coherence in the proposed concentration and other electives and compliance with the specific program requirements

ELECTRICAL AND COMPUTER ENGINEERING (B.S.E.C.E.)

The Electrical and Computer Engineering curriculum consists of two main course stems. In the electrical stem, students study signals and systems, electromagnetics, electrical materials, electronic circuit design and control systems design. In the computer stem, students study digital logic design, computer architecture, embedded computer systems hardware/software design and digital signal processing. With these two required stems, students gain a foundation in the major areas of electrical and computer engineering and are prepared for careers in a broad spectrum of industries. Elective courses selected from communication, electromagnetic fields, electronic design, bioinstrumentation, imaging, robotics, digital controls, networks, and software systems, allow a student to study a specialized field of interest.

BSECE Program Educational Objectives

The objectives of the B.S. in Electrical and Computer Engineering program are:

1. to provide graduates with the academic preparation necessary to be productive and successful engineers.
2. to prepare graduates with the knowledge and skills necessary for interacting effectively with society.
3. to prepare graduates, within an educational environment shaped by Christian ideals, for the thoughtful integration of work and life and to view the engineering profession as a lifelong commitment to serving others.

BSECE Expected Graduate Outcomes

In support of the program objectives, graduates of the program must demonstrate that they have:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

SAMPLE SCHEDULE – B.S.E.C.E. DEGREE
ELECTRICAL AND COMPUTER ENGINEERING MAJOR

FRESHMAN YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 1301-Intro to Engineering	3	EGR 1302-Engineering Analysis	3
MTH 1321-Calculus I	3	MTH 1322-Calculus II	3
CHE 1301-Modern Chemistry I	3	PHY 1422-General Physics I	4
ENG 1302-Thinking and Writing	3	REL 1350-Christian Heritage	3
REL 1310-Christian Scriptures	3	Foreign Language (see B.S. Req. Sec. I.C)	3
Human Performance	1	Human Performance	1
Chapel	0	Chapel	0
	16		17

SOPHOMORE YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 2430-Electrical Circuit Theory	4	EGR 2337-Digital Logic Design	3
MTH 2321-Calculus II	3	MTH 2311-Linear Algebra	3
PHY 2435-General Physics II	4	MTH 3325-Differential Equations	3

CSI 1430-Intro to Comp Science I	4	CSI 1336-Comp. Algorithms, Egr. Appl.	3
GTX 2301-Intell. Trad. Ancient World	3	GTX 2302-Medieval Intell. Tradition	3
	18		15

SUMMER

EGR Elective (see list below)	3	ENG 2301-British Literature or	
STA 3381-Statistical Methods	3	PSC 2302-American Constitutional Gov't	3
			9

UPPER DIVISION ENGINEERING

JUNIOR YEAR

Fall	**sem. hrs.**	**Spring**	**sem. hrs.**
EGR 2345-Thermodynamics	3	EGR 3338-Computer Organization	3
EGR 3335-Signals and Systems	3	EGR 3414-Electronic Design	4
EGR 3336-Microprocessor Systems	3	EGR 4332-Automatic Control Systems	3
EGR 3337-Applied Electromagnetics	3	MTH 4329-Complex Variables	3
EGR 3380-Engineering Design I	3	ENG 3300-Technical Writing	3
Human Performance	1		16
	16		

SENIOR YEAR

Fall	**sem. hrs.**	**Spring**	**sem. hrs.**
EGR 3333-Electrical Materials	3	EGR 4390-Engineering Design II	3
EGR 4438-Computer Systems Design	4	EGR 4451-Digital Signal Processing	4
EGR Elective (see list below)	3	EGR Elective (see list below)	3
EGR Elective (see list below)	3	Ethics Elective (see B.S. Req. Sec. III.D)	3
ECO 3308-Engineering Economics	3		13
	16		

Electrical and Computer Engineering Electives:

EGR 3331-Electrical Networks & Systems	EGR 4350-Principles of Communication
EGR 3395-Internship Experience	EGR 4353-Image Formation and Processing
EGR 4315-Electronic Design II	EGR 4360-Software Systems
EGR 4330-Introduction to Robotics	EGR 4372-Bioinstrumentation
EGR 4333-Digital Control Systems	EGR 4396-Special Topics in Engineering
EGR 4337-Applied Electromagnetism	EGR 4V97-Special Projects in Engineering

SAMPLE SCHEDULE – B.S.E.C.E. DEGREE ELECTRICAL AND COMPUTER ENGINEERING MAJOR (HONORS TRACK)

Honors students must complete at least 21 of the 31 hours of undergraduate Honors courses listed in the freshman and sophomore years. Freshmen Honors students must participate in two para-curricular activities.

FRESHMAN YEAR

Fall	**sem. hrs.**	**Spring**	**sem. hrs.**
EGR 1301-Intro to Engineering	3	EGR 1302-Engineering Analysis	3
EMTH 1321-Calculus I (Honors)	3	MTH 1322-Calculus II (Honors)	3
CHE 1301-Modern Chemistry I (Honors)	3	PHY 1422-General Physics I (Honors)	4
ENG 1302-Thinking & Writing (Honors) or		REL 1350-Christian Heritage (Honors)	3
FYS 1399-Fresh. Seminar (Honors)	3	GTX 2301-Ancient World (Honors)	3
REL 1310-Christian Scriptures (Honors)	3	Human Performance	1
Human Performance	1	Chapel	0
Chapel	0		17
	16		

SOPHOMORE YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 2430-Electrical Circuit Theory	4	EGR 2337-Digital Logic Design	3
MTH 2321-Calculus III	3	MTH 2311-Linear Algebra	3
PHY 2435-General Physics II	4	MTH 3325-Differential Equations	3
CSI 1430-Intro to Computer Science I	4	CSI 1336-Computer Algorithms	3
GTX 2302-Medieval Tradition (Honors)	3	Foreign Language (see B.S. Req. Sec. 1.C)	3
	18		15

To continue in the Honors program a student must have a GPA of 3.0 or above after 60 hours.

SUMMER

EGR Elective (see list below)	3	STA 3381-Statistical Methods	3
		ENG 2301 British Literature or PSC 2302 American Constitutional Govern (Honors)	3
			9

UPPER DIVISION ENGINEERING

JUNIOR YEAR

Fa ll	sem. hrs	Spring	sem. hrs.
EGR 2345-Thermodynamics	3	EGR 3338-Computer Organization	3
EGR 3335-Signals and Systems	3	EGR 3414-Electronic Design	4
EGR 3336-Microprocessor Systems	3	EGR 4332-Automatic Control Systems	3
EGR 3337-Applied Electromagnetics	3	MTH 4329-Complex Variables	3
EGR 3380-Engineering Design I	3	ENG 3300-Technical Writing	3
HON 3200-Colloquium (Honors)	2	HON 3100 Independent Readings* (Honors)	1
	17	HON 3101 Independent Readings* (Honors)	1
			18

SENIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 3333-Electrical Materials	3	EGR 4390-Engineering Design II	3
EGR 4438-Computer Systems Design	4	EGR 4451-Digital Signal Processing	4
EGR Elective (see list below)	3	EGR Elective (see list below)	3
ECO 3308 Engineering Economics	3	Ethics Elective (see B.S.Req. Sec. III.D)	3
Human Performance	1	HON 4187 Thesis Research III* (Honors)	1
HON-4177 Thesis Research I*(Honors)	1	HON 4188 Thesis Research IV* (Honors)	1
HON-4178 Thesis Research II*(Honors)	1		15
	16		

* Independent Readings and Thesis Research must be approved and supervised by ECE Program Faculty. HON 4178, 4187, and 4188 count as 3 semester hours of engineering electives.

Electrical and Computer Engineering Electives:

EGR 3331-Electrical Networks & Systems	EGR 4350-Principles of Communication
EGR 3395-Internship Experience	EGR 4353-Image Formation and Processing
EGR 4315-Electronic Design II	EGR 4360-Software Systems
EGR 4330-Introduction to Robotics	EGR 4372-Bioinstrumentation
EGR 4333-Digital Control Systems	EGR 4396-Special Topics in Engineering
EGR 4337-Applied Electromagnetism	EGR 4V97-Special Projects in Engineering

MECHANICAL ENGINEERING (B.S.M.E.)

The Mechanical Engineering curriculum consists of two main course stems. In the thermal/fluids stem, students study fluid mechanics, heat transfer and thermodynamics. In the materials/mechanical systems stem, students study engineering materials, manufacturing processes, control systems and machine design. With these two required stems, students gain a foundation for the major areas of mechanical engineering and are prepared to enter a variety of industries. In addition to the required stems, students can further specialize by choosing electives in the areas of data acquisition systems and instrumentation, analysis and design of propulsion systems, advanced structural analysis, computational methods for fluids-thermo, biomaterials, biomechanics, robotics manufacturing processes, and other topics. These electives add to the student's ability to apply fundamentals and to design machines and energy systems.

BSME Program Educational Objectives

Upon successful completion of the B.S. in Mechanical Engineering program, the graduate will be able to:

1. apply knowledge of mathematics, basic science and engineering science to bring creatively a project from problem statement to final design.
2. be professionally competent and engaged in life-long learning, serving society in a professional career or by continuing their education in a graduate program.
3. work in interdisciplinary teams and clearly communicate ideas through a variety of media.
4. be a responsible professional with a strong sense of vocation, ethics, and integrity developed in an educational environment shaped by Christian ideals, enabling graduates to become leaders in their churches, communities, professional societies, and society as a whole.

BSME Expected Graduate Outcomes

In support of the program objectives, graduates of the program must demonstrate that they have:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

SAMPLE SCHEDULE – B.S.M.E. DEGREE
MECHANICAL ENGINEERING MAJOR

FRESHMAN YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 1301-Intro to Engineering	3	EGR 1302-Engineering Analysis	3
MTH 1321-Calculus I	3	MTH 1322-Calculus II	3
CHE 1301-Modern Chemistry I	3	PHY 1422-General Physics I	4
ENG 1302-Thinking and Writing	3	Foreign Language (see B.S. Req. Sec I.C)	3
REL 1310-Christian Scriptures	3	REL 1350-Christian Heritage	3
Human Performance	1	Human Performance	1
Chapel	0	Chapel	0
	16		17

SOPHOMORE YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 2320-Statics	3	EGR 2321-Dynamics	3
MTH 2321-Calculus III	3	EGR 2430-Electrical Circuit Theory	4
PHY 2435-General Physics II	4	MTH 2311-Linear Algebra	3
CSI 1430-Intro to Comp Science I	4	MTH 3325-Differential Equations	3
GTX 2301-Intell.Trad. Ancient World	3	GTX 2302-Medieval Intell. Tradition	3
	17		16

SUMMER

EGR Elective (see list below)	3	ENG 2301-British Literature or	
STA 3381-Statistical Methods	3	PSC 2302-American Contitutional Gov't	3
			9

UPPER DIVISION ENGINEERING

JUNIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 2345-Thermodynamics	3	EGR 3321-Fluid Mechanics	3
EGR 3320-Strength of Materials	3	EGR 3322-Materials and Mfg. Proc.	3
EGR 3335-Signals and Systems	3	EGR 3323-Machine Design	3
EGR 3380-Engineering Design I	3	EGR 3345-Advanced Thermodynamics	3
MTH 3326-Partial Differential Equations	3	ENG 3300-Technical Writing	3
Human Performance	1		15
	16		

SENIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 4323-Mechanical Vibrations	3	EGR 4322-Computer-Aided Design	3
EGR 4332-Automatic Control Systems	3	EGR 4335-Mech. Engineering Lab	3
EGR 4345-Heat Transfer	3	EGR 4390-Engineering Design II	3
EGR Elective (see list below)	3	EGR Elective (see list below)	3
ECO 3308-Engineering Economics	3	Ethics Elective (see B.S.Req. Sec. III.D)	3
	15		15

Mechanical Engineering Electives:

EGR 3310-Design of DAQ Systems
EGR 3395 Internship Experience
EGR 4320-Computer-Aided Structural Analysis
EGR 4330-Introduction to Robotics
EGR 4336-Energy Systems Design
EGR 4344-Composite Materials
EGR 4347-Analysis and Design of Propulsion Systems
EGR 4348-Comp. Methods Thermo-Fluids
EGR 4370-Biomaterials-Form and Function
EGR 4374-Biomechanics
EGR 4382-Selection of Materials & Manuf. Processes in Design
EGR 4396-Special Topics in Engineering
EGR 4V97-Special Projects in Engineering

SAMPLE SCHEDULE – B.S.M.E. DEGREE
MECHANICAL ENGINEERING MAJOR (Honors Track)

Honors students must complete at least 21 of the 31 hours of undergraduate Honors courses listed in the freshman and sophomore years. Freshmen Honors students must participate in two para-curricular activities.

FRESHMAN YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 1301-Intro to Engineering	3	EGR 1302-Engineering Analysis	3
MTH 1321-Calculus I (Honors)	3	MTH 1322-Calculus II (Honors)	3
CHE 1301-Modern Chemistry I (Honors)	4	PHY 1422-General Physics I (Honors)	3
ENG 1302-Thinking and Writing (Honors) or FYS 1399-Freshman Seminar (Honors)	3	GTX 2301-Ancient World (Honors)	3
REL 1310-Christian Scriptures (Honors)	3	REL 1350-Christian Heritage (Honors)	3
Human Performance	1	Human Performance	1
Chapel	0	Chapel	0
	16		17

SOPHOMORE YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 2320-Statics	3	EGR 2321-Dynamics	3
MTH 2321-Calculus III	3	EGR 2430-Electrical Circuit Theory	4
PHY 2435-General Physics II	4	MTH 2311-Linear Algebra	3
CSI 1430-Intro to Computer Science I	4	MTH 3325-Differential Equations	3
GTX 2302-Medieval Tradition (Honors)	3	Foreign Language (see B.S.Req. Sec. 1.C)	3
	17		16

To continue in the Honors program a student must have a GPA of 3.0 or above after 60 hours.

SUMMER

EGR Elective (see list below)	3	ENG 2301-British Literature or PSC-2302 American Constitutional Gov't (Honors)	3
STA 3381-Statistical Methods	3		9

UPPER DIVISION ENGINEERING

JUNIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 2345-Thermodynamics	3	EGR 3321-Fluid Dynamics	3
EGR 3320-Strength of Materials	3	EGR 3322-Materials and Mfg. Proc.	3
EGR 3335-Signals & Systems	3	EGR 3323-Machine Design	3
EGR 3380-Engineering Design I	3	EGR 3345-Advanced Thermodynamics	3
MTH 3326-Partial Differential Equations	3	ENG 3300-Technical Writing	3
HON 3200 Colloquium (Honors)	2	HON 3100-Independent Readings* (Honors)	1
	16	HON 3101-Independent Readings* (Honors)	1
			17

SENIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 4323-Mechanical Vibrations	3	EGR 4322-Computer-Aided Design	3
EGR 4332-Automatic Control Systems	3	EGR 4345-Mech. Engineering Lab	3

EGR 4345-Heat Transfer	3	EGR 4390-Engineering Design II	3
ECO 3308-Engineering Economics	3	EGR Elective (see list below)	3
Human Performance	1	Ethics Elective (see B.S. Req. Sec. III.D)	3
HON 4177-Thesis Research I* (Honors)	1	HON 4187-Thesis Research III* (Honors)	1
HON 4178-Thesis Research II* (Honors)	1	HON 4188-Thesis Research IV* (Honors)	1
	16		17

*Independent Readings and Thesis Research must be approved and supervised by ME Program Faculty. HON 4178, 4187, and 4188 count as 3 semester hours of engineering electives.

Mechanical Engineering Electives:
EGR 3310-Design of DAQ Systems
EGR 3395-Internship Experience
EGR 4320-Computer-Aided Structural Analysis
EGR 4330-Introduction to Robotics
EGR 4336-Energy Systems Design
EGR 4344-Composite Materials
EGR 4347-Analysis and Design of Propulsion Systems
EGR 4348-Comp. Methods Thermo-Fluids
EGR 4370-Biomaterials-Form and Function
EGR 4374-Biomechanics
EGR 4382-Selection of Materials & Manuf. Processes in Design
EGR 4396-Special Topics in Engineering
EGR 4V97-Special Projects in Engineering

ENGINEERING (B.S.E.)

The Engineering curriculum consists of: 1) a broad engineering core, 2) one engineering stem that provides an integrated sequential development of strength and depth, including a laboratory experience, appropriate for professional employment in a traditional area of engineering practice, and 3) elective courses that can be selected to provide either further engineering concentration or concentrations in non-engineering fields. The concentration electives allow students to build a foundation for fields such as medicine, law, computer science, international business, business administration, engineering management, and applied science. The engineering stem is selected from the following seven choices: electronics, signal processing, computer systems, mechanical design, fluids and thermal energy, biomechanics, or biomedical signals.

BSE Program Educational Objectives

The objectives of the program leading to the Bachelor of Science in Engineering (B.S.E.) degree are:

1. to prepare graduates with the fundamental technical skills and knowledge required for entry into the engineering profession, or into graduate or professional study.

2. to provide students with the flexibility to prepare for career paths which differ from those associated with traditional discipline-specific engineering programs.

3. to prepare graduates, within an educational environment shaped by Christian ideals, with the knowledge and skills necessary for success in a professional environment, including clarity in communication, ability to work on a team, an understanding of professional and ethical responsibilities, and recognition of the need for lifelong learning.

BSE Expected Graduate Outcomes

In support of the program objectives, graduates of the program must demonstrate that they have:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context

(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

SAMPLE SCHEDULE – B.S.E. DEGREE ENGINEERING MAJOR

FRESHMAN YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 1301-Intro to Engineering	3	EGR 1302-Engineering Analysis	3
MTH 1321-Calculus I	3	MTH 1322-Calculus II	3
CHE 1301-Modern Chemistry I	3	PHY 1422-General Physics I	4
ENG 1302-Thinking and Writing	3	REL 1350-Christian Heritage	3
REL 1310-Christian Scriptures	3	Foreign Language (see B.S.Req. Sec. I.C)	3
Human Performance	1	Human Performance	1
Chapel	0	Chapel	0
	16		17

SOPHOMORE YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 2320-Statics	3	EGR 2345-Thermodynamics	3
MTH 2321-Calculus III	3	EGR 2430-Electrical Circuit Theory	4
PHY 2435-General Physics II	4	MTH 2311-Linear Algebra	3
CSI 1430-Intro to Comp Science I	4	MTH 3325-Differential Equations	3
GTX 2301-Intell. Trad. Ancient World	3	GTX 2302-Medieval Intell. Tradition	3
	17		16

SUMMER

EGR Elective (see B.S. Req. major Sec. I.B)	3	ENG 2301-British Literature or	
STA 3381-Statistical Methods	3	PSC 2302-American Constutional Gov't	3
			9

UPPER DIVISION ENGINEERING

JUNIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR 3335-Signals and Systems	3	EGR Elective (see B.S. Req. major Sec. I.B)	3
EGR 3380-Engineering Design I	3	EGR Elective	3
EGR Elective (see B.S. Req. major Sec. I.B)	3	EGR Elective	3
Math and Basic Science Elective	3	Concentration Elective (see B.S. Req. major Sec. II)	3
Concentration Elective (see B.S. Req. major Sec. II)	3	ENG 3300-Technical Writing	3
Human Performance	1		15
	16		

SENIOR YEAR

Fall	sem. hrs.	Spring	sem. hrs.
EGR Elective (see B.S. Req. major Sec. I.B)	3	EGR 4390-Engineering Design II	3
EGR Elective	3	EGR Elective (see B.S. Req. major Sec. I.B)	3
Concentration Elective (see B.S. Req. major Sec. II)	3	EGR Elective	3
Concentration Elective	3	Concentration Elective (see B.S. Req. major Sec. II)	3
ECO 3308-Engineering Economics	3	Ethics Elective (see B.S. Req. Sec. III.D)	3
	15		15

Engineering Elective Stems:

Electronics
EGR 3333-Electrical Materials
EGR 3335-Signals and Systems*
EGR 3337-Applied Electromagnetic Fields
EGR 3414-Electronic Design
EGR 4372-Bioinstrumentation

Signal Processing
CSI 1336-Computer Alogrithms
EGR 3335-Signals and Systems*
EGR 3336-Microprocessor Systems
EGR 4350-Principles of Communication
EGR 4353-Image Formation and Processing
EGR 4451-Digital Signal Processing

Mechanical Design
EGR 2321-Dynamics
EGR 3320-Strength of Materials
EGR 3322-Mechanical Materials
EGR 3323-Machine Design
EGR 4390-Engineering Design II*

Computer Systems
CSI 1336-Computer Alogrithms
EGR 2337-Digital Logic Design
EGR 3336-Microprocessor Systems
EGR 3338-Computer Organization
EGR 3414-Electronic Design
EGR 4438-Computer Systems Design

Fluids and Thermal Energy
EGR 2345-Thermodynamics*
EGR 3321-Fluid Mechanics
EGR 3345-Advanced Thermodynamics
EGR 4345-Heat Transfer
EGR 4335-Mechanical Engineering Laboratory

Biomechanics
EGR 3320-Strength of Materials
EGR 3322-Mechanical Materials
EGR 4370-Biomaterials-Form and Function
EGR 4372-Bioinstrumentation
EGR 4374-Biomechanics
EGR 4V97-Special Projects

Biomedical Signals
EGR 4332-Automatic Control Systems
EGR 4353-Image Formation & Processing
EGR 4372-Bioinsturmentation
EGR 4374-Biomechanics
EGR 4452-Biomedical Digital Signal Processing

**denotes course already required in engineering major*

SAMPLE SCHEDULE – B.S.E. DEGREE ENGINEERING MAJOR HONORS TRACK

Honors students must complete at least 21 of the 31 hours of undergraduate Honors courses listed in the freshman and sophomore years. Freshmen Honors students must participate in two para-curricular activities.

FRESHMAN YEAR

Fall	**sem. hrs.**	**Spring**	**sem. hrs.**
EGR 1301-Intro to Engineering	3	EGR 1302-Engineering Analysis	3
MTH 1321-Calculus I (Honors)	3	MTH 1322-Calculus II (Honors)	3
CHE 1301-Modern Chemistry I (Honors)	3	PHY 1422-General Physics I (Honors)	4
ENG 1302-Thinking and Writing (Honors) or FYS 1399 Fresh Seminar (Honors)	3	REL 1350-Christian Heritage (Honors)	3
REL 1310-Christian Scriptures (Honors)	3	GTX 2301 Ancient World (Honors)	3
Human Performance	1	Human Performance	1
Chapel	0	Chapel	0
	16		17

SOPHOMORE YEAR

Fall	**sem. hrs.**	**Spring**	**sem. hrs.**
EGR 2320-Statics	3	EGR 2345-Thermodynamics	3
MTH 2321-Calculus III	3	EGR 2430-Electrical Circuit Theory	4
PHY 2435-General Physics II	4	MTH 2311-Linear Algebra	3
CSI 1430-Intro to Computer Science I	4	MTH 3325-Differential Equations	3
GTX 2302-Medieval Tradition (Honors)	3	Foreign Language (see B.S.Req. Sec. I.C)	3
	17		16

To continue in the Honors program a student must have a GPA of 3.0 or above after 60 hours.

SUMMER

EGR Elective (see B.S.Req. major Sec. I.B)	3	ENG 2301-British Literature or PSC 2302-	
STA 3381-Statistical Methods	3	American Constitution Gov't (Honors)	3
			9

UPPER DIVISION ENGINEERING
JUNIOR YEAR

Fall	**sem. hrs.**	**Spring**	**sem. hrs.**
EGR 3335-Signals and Systems	3	EGR Elective (see B.S.Req. major Sec. I.B)	3
EGR 3380-Engineering Design I	3	EGR Elective	3
EGR Elective (see B.S.Req. major Sec. I.B)	3	EGR Elective	3
Math or Science Elective	3	EGR Concentration Elective	
EGR Concentration Elective		(see B.S.Req. major Sec. II)	3
(see B.S.Req. major Sec. II)	3	ENG 3300-Technical Writing	3
HON 3200-Colloquium (Honors)	2	HON 3100-Independent Readings*(Honors)	1
	17	HON 3101-Independent Readings*(Honors)	1
			17

SENIOR YEAR

Fall	**sem. hrs.**	**Spring**	**sem. hrs.**
EGR Elective (see B.S.Req. major Sec. I.B)	3	EGR 4390-Engineering Design II	3
ECO 3308-Engineering Economics	3	EGR Elective (see B.S.Req. major Sec. I.B)	3
Concentrative Elective		EGR Elective	3
(see B.S.Req. major Sec. II)	3	Concentrative Elective	
Concentrative Elective	3	(see B.S.Req. major Sec. II)	3
Human Performance	1	Ethics Elective	
HON 4177-Thesis Research I*(Honors)	1	(see B.S.Req. Sec. III.D)	3
HON 4178-Thesis Research II*(Honors)	1	HON 4187-Thesis Research III*(Honors)	1
	15	HON 4188-Thesis Research IV*(Honors)	1
			17

***Independent Readings and Thesis Research must be approved and supervised by the EGR Program Faculty. HON 4178, 4187, and 4188 count as 3 semester hours of engineering electives.**

A degree plan with proposed electives must be submitted and approved before registering for any engineering or concentration electives and prior to admission to the engineering upper division.

Engineering Elective Stems:

Electronics	Signal Processing
EGR 3333-Electrical Materials	CSI 1336-Computer Alogrithms
EGR 3335-Signals and Systems*	EGR 3335-Signals and Systems*

EGR 3337-Applied Electromagnetic Fields
EGR 3414-Electronic Design
EGR 4372-Bioinstrumentation

Mechanical Design
EGR 2321-Dynamics
EGR 3320-Strength of Materials
EGR 3322-Mechanical Materials
EGR 3323-Machine Design
EGR 4390-Engineering Design II*

Fluids and Thermal
EGR 2345-Thermodynamics*
EGR 3321-Fluid Mechanics
EGR 3345-Advanced Thermodynamics
EGR 435-Mechanical Engineering Laboratory

Biomedical Signals
EGR 4332-Automatic Control Systems
EGR 4353-Image Formation & Processing
EGR 4372-Bioinstrumentation
EGR 4374-Biomechanics

EGR 3336-Microprocessor Systems
EGR 4350-Principles of Communication
EGR 4353-Image Formation and Processing
EGR 4451-Digital Signal Processing

Computer Systems
CSI 1336-Computer Alogrithms
EGR 2337-Digital Logic Design
EGR 3336-Microprocessor Systems
EGR 3338-Computer Organization
EGR 3414-Electronic Design
EGR 4438-Computer Systems Design

Energy Biomechanics
EGR 3320-Strength of Materials
EGR 3322-Mechanical Materials
EGR 4370-Biomaterials-Form and Function
EGR 4372-Bioinstrumentation
EGR 4374-Biomechanics
EGR 4V97-Special Projects

*denotes course already required in Engineering major