|  |  |
| --- | --- |
| For Academic Affairs and Research Use Only | |
| Proposal Number | ECS23 |
| CIP Code: |  |
| Degree Code: |  |

**Reconfiguration of Existing Degree Program Proposal Form**

(Also requires Arkansas Department of Higher Education (ADHE) approval)

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | Carlos Ramirez Jimenez | 9/26/2022 |   **Department Curriculum Committee Chair** | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **COPE Chair (if applicable)** |
| |  |  | | --- | --- | | Carlos Ramirez Jimenez | 9/26/2022 |   **Department Chair** | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **Head of Unit (if applicable)** |
| |  |  | | --- | --- | | Mary Elizabeth Spence | 10/13/2022 | | **Director of Assessment** |  | | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **Undergraduate Curriculum Council Chair** |
| |  |  | | --- | --- | | Jason Stewart | 10/11/2022 |   **College Curriculum Committee Chair** | |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **Graduate Curriculum Committee Chair** |
| |  |  | | --- | --- | | Abhijit Bhattacharyya | 10/12/2022 |   **College Dean** | |  |  | | --- | --- | | Alan Utter | 11/15/2022 |   **Vice Chancellor for Academic Affairs** |
| |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **General Education Committee Chair (if applicable)** |  |

1. **Contact Person** (Name, Email Address, Phone Number)

Carlos Ramirez Jimenez, cramirezjimenez@astate.edu, +52 419 689 0354 ext. 2034

1. **Title(s) of degree programs to be consolidated/reconfigured:**

Bachelor of Arts in Computer Science and Bachelor of Science in Electrical Systems Engineering

1. **Proposed title of consolidated/reconfigured program:**

Bachelor of Science in Computer Systems Engineering

1. **Proposed Effective Date:** Fall 2023 (2023-24 Bulletin Year)
2. **Reason for proposed program consolidation/reconfiguration:**

*(Indicate student need/demand (projected enrollment) for the proposed program and document that the program meets employer needs using the ADFA Workforce Analysis Form)*

Querétaro is in a region where multiple international companies have their manufacturing, research, and engineering facilities. Our expectation is that the Computer Systems Engineering graduates will fill in an ever-growing need for experts in computer systems engineering with the communication skills provided by the General Education part of the program. Furthermore, several large companies are projected to open data center facilities in the Querétaro region, with one about to begin operations. We project an annual enrollment of 50 students per year once the program is established.

This program includes 30 credit hours of Computer Science (CS) courses, and faculty resources will be needed to teach those courses on the Querétaro campus.

1. **Provide current and proposed curriculum outline by semester.**

*For undergraduate programs, please use Appendix A-8-semester plan form*

*Indicate total semester credit hours required for the proposed program. If new courses are needed for the reconfiguration, approval for the courses must be requested prior to approval for the new degree. Underline any new courses. Identify required general education core courses with an asterisk. If utilizing courses from other departments, please color-code them and provide a key.*

See Appendix A

1. **Will the proposed degree be offered:**
   1. **Traditional/Face-to-face** YES (Mexico campus only)
   2. **Distance/Online** NO
      1. **If yes, indicate mode of distance delivery, and the percentage of courses offered via this modality (<50%, 50-99%, or 100%).**

Enter text...

* + 1. **If online, will it be offered through Global Initiatives/Academic Partnerships (AP)?**

Enter text...

1. **Will the proposed degree be offered off-campus?** YES
   1. **If yes, identify the off-campus location**

Arkansas State University campus Queretaro

1. **Provide documentation that proposed program has received full approval by licensure/certification entity, if required.**

*(A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).*

Not Applicable

1. **List institutions offering similar program and identify the institutions used as a model to develop the proposed program.**

Henderson State University has a B.S. in Computer Engineering which served as basic model for the proposed program.

In Mexico, there are 3 universities offering similar ABET accredited programs. The most well-know is Monterrey’s Tech (ITESM) that offers a BS in Computer Science and Technology in 5 of its campuses (none of them near to Queretaro).

1. **Provide scheduled program review or specialized accreditation initial review date (within 10 years of program implementation).**

The program will seek ABET accreditation. However, the ABET accreditation process requires that the program produce at least 1 graduate before the accreditation evaluation can take place. Expected program review date is 2030.

1. **Is there differential tuition requested?** *If yes, please fill out the New Program/Tuition and Fees Change Form.*

NO

1. **Graduate programs only: Will this program require a comprehensive exam?**

Not Applicable

**Student Learning Outcomes**

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

**University Outcomes**

Please indicate the university-level student learning outcomes for which this new program will contribute. Please complete the table by adding program level outcomes (PLO) to the first column, and indicating the alignment with the university learning outcomes (ULO). If you need more information about the ULOs, go to the [University Level Outcomes Website](http://www.astate.edu/a/assessment/student-learning-outcomes/files/ULOs%20for%20Website2.pdf).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **ULO 1: Creative & Critical Thinking** | **ULO 2: Effective Communication** | **ULO 3: Civic & Social Responsibility** | **ULO 4: Globalization & Diversity** |
| **PLO 1**: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. | **X** |  |  |  |
| **PLO 2:** An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. | **X** |  | **X** |  |
| **PLO 3**: An ability to communicate effectively with a range of audiences. |  | **X** |  |  |
| **PLO 4:** An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. | **X** |  | **X** | **X** |
| **PLO 5:** An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. | **X** | **X** | **X** |  |
| **PLO 6:** An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. | **X** | **X** |  |  |
| **PLO 7:** An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. | **X** |  |  |  |

***Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.***

|  |  |
| --- | --- |
| **Outcome 1** | An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. |
| Assessment Procedure Criterion | Indirect Assessment  Surveys of graduating seniors (each semester) 85% of CSE graduating seniors feel prepared to well-prepared in this skill area.  Surveys of Alumni (every two years) 85% of CSE alumni surveyed feel prepared to well-prepared in this skill area based on their educational experience at ASUCQ.  Surveys of Employers (every two years) 80% of CSE employers surveyed feel that their ASUCQ graduates are prepared to well-prepared in this skill area.  Direct Assessment  90% of CSE students score 3.0 or higher on their portfolio evaluations (graded work, exams, papers, etc.) from the following courses:  CS 4313, Computer Networks  EE 4344, Embedded Systems |
| Which courses are responsible for this outcome? | CS 4313 and EE 4344 |
| Assessment  Timetable | Collect data whenever CS 4313 and EE 4344 are offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.  Direct assessment: the Professors who teach CS 4313 and EE 4344 . |

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| **Outcome 2** | An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. |
| Assessment Procedure Criterion | Indirect Assessment  Surveys of graduating seniors (each semester) 85% of CSE graduating seniors feel prepared to well-prepared in this skill area.  Surveys of Alumni (every two years) 85% of CSE alumni surveyed feel prepared to well-prepared in this skill area based on their educational experience at ASUCQ.  Surveys of Employers (every two years) 80% of CSE employers surveyed feel that their ASUCQ graduates are prepared to well-prepared in this skill area.  Direct Assessment  90% of CSE students score 3.0 or higher on their portfolio evaluations (graded work, exams, papers, etc.) from the following courses:  CS 4113, Software Engineering  ENGR 4482, Senior Design II |
| Which courses are responsible for this outcome? | CS 4113 and ENGR 4482 |
| Assessment  Timetable | Collect data whenever CS 4113 and ENGR 4482 are offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.  Direct assessment: the Professors who teach CS 4113 and ENGR 4482. |

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| **Outcome 3** | An ability to communicate effectively with a range of audiences. |
| Assessment Procedure Criterion | Indirect Assessment  Surveys of graduating seniors (each semester) 85% of CSE graduating seniors feel prepared to well-prepared in this skill area.  Surveys of Alumni (every two years) 85% of CSE alumni surveyed feel prepared to well-prepared in this skill area based on their educational experience at ASUCQ.  Surveys of Employers (every two years) 80% of CSE employers surveyed feel that their ASUCQ graduates are prepared to well-prepared in this skill area.  Direct Assessment  85% of CSE students evaluated on oral communication skills by performance appraisal in ENGR 4482 score 3.0 or higher using the assessment instrument  85% of CSE students evaluated on written communication skills by performance appraisal in ENGR 4482 score 3.0 or higher using the assessment instrument |
| Which courses are responsible for this outcome? | ENGR 4482 |
| Assessment  Timetable | Collect data whenever ENGR 4482 is offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.  Direct assessment: the Professor who teaches ENGR 4482. |

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| **Outcome 4** | An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. |
| Assessment Procedure Criterion | Indirect Assessment  Surveys of graduating seniors (each semester) 85% of CSE graduating seniors feel prepared to well-prepared in this skill area.  Surveys of Alumni (every two years) 85% of CSE alumni surveyed feel prepared to well-prepared in this skill area based on their educational experience at ASUCQ.  Surveys of Employers (every two years) 80% of CSE employers surveyed feel that their ASUCQ graduates are prepared to well-prepared in this skill area.  Direct Assessment  90% of CSE students score 3.0 or higher on their portfolio evaluations (graded work, exams, papers, etc.) from the following courses:  CS 4543, Database Systems  ENGR 4482, Senior Design II |
| Which courses are responsible for this outcome? | CS 4543 and ENGR 4482. |
| Assessment  Timetable | Collect data whenever CS 4543 and ENGR 4482 are offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.  Direct assessment: the Professors who teach CS 4543 and ENGR 4482. |

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| **Outcome 5** | An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objective. |
| Assessment Procedure Criterion | Indirect Assessment  Surveys of graduating seniors (each semester) 85% of CSE graduating seniors feel prepared to well-prepared in this skill area.  Surveys of Alumni (every two years) 85% of CSE alumni surveyed feel prepared to well-prepared in this skill area based on their educational experience at ASUCQ.  Surveys of Employers (every two years) 80% of CSE employers surveyed feel that their ASUCQ graduates are prepared to well-prepared in this skill area.  Direct Assessment  90% of CSE students evaluated by behavioral observation in ENGR 4482 score 3.0 (adequate/satisfactory) or higher using the assessment instrument |
| Which courses are responsible for this outcome? | ENGR 4482 |
| Assessment  Timetable | Collect data whenever ENGR 4482 is offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.  Direct assessment: the Professor who teaches ENGR 4482. |

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| **Outcome 6** | An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. |
| Assessment Procedure Criterion | Indirect Assessment  Surveys of graduating seniors (each semester) 85% of CSE graduating seniors feel prepared to well-prepared in this skill area.  Surveys of Alumni (every two years) 85% of CSE alumni surveyed feel prepared to well-prepared in this skill area based on their educational experience at ASUCQ.  Surveys of Employers (every two years) 80% of CSE employers surveyed feel that their ASUCQ graduates are prepared to well-prepared in this skill area.  Direct Assessment  90% of CSE students score 3.0 or higher on their portfolio evaluations (graded work, exams, papers, etc.) from the following courses:  EE 3401, Electronics I Lab  ENGR 4482, Senior Design II |
| Which courses are responsible for this outcome? | EE 3401 and ENGR 4482. |
| Assessment  Timetable | Collect data whenever EE 3401 and ENGR 4482 are offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.  Direct assessment: the Professors who teach EE 3401 and ENGR 4482. |

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| **Outcome 7** | An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. |
| Assessment Procedure Criterion | Indirect Assessment  Surveys of graduating seniors (each semester) 85% of CSE graduating seniors feel prepared to well-prepared in this skill area.  Surveys of Alumni (every two years) 85% of CSE alumni surveyed feel prepared to well-prepared in this skill area based on their educational experience at ASUCQ.  Surveys of Employers (every two years) 80% of CSE employers surveyed feel that their ASUCQ graduates are prepared to well-prepared in this skill area.  Direct Assessment100% of students in ENGR 4463 will score 70/100 on questions related to acquisition and application of new knowledge  90% of students evaluated by performance appraisals in ENGR 4482 for acquisition and application of new knowledge using appropriate learning strategies will score 3.0 (adequate/satisfactory) or higher using the assessment instrument |
| Which courses are responsible for this outcome? | ENGR 4463 and ENGR 4482 |
| Assessment  Timetable | Collect data whenever ENGR 4463 and ENGR 4482 are offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.  Direct assessment: the Professors who teach ENGR 4463 and ENGR 4482. |

**Appendix A, 8-Semester Plan**

(**Referenced in #9** - **Undergraduate Proposals Only)**

*Instructions: Please identify new courses in italics*.

Computer Science courses Electrical Systems Engineering courses

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Arkansas State University-Queretaro**  **Degree: Bachelor of Science**  **Major: Computer Systems Engineering**  **Year: 2023-24** | | | | | | | | |
| Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters. Developmental courses do not count toward total degree hours. **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions. In most cases, general education courses may be interchanged between semesters.** A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree. | | | | | | | | |
| **Year 1** | | | |  | **Year 1** | | | |
| **Fall Semester** | | | |  | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| CHEM 1011 | General Chemistry I Laboratory | 1 | \* |  | CS 1114 | Concepts of Programming | 4 |  |
| CHEM 1013 | General Chemistry I | 3 | \* |  | ENG 1013 | Composition II | 3 | \* |
| COMS 1203 | Oral Communication | 3 | \* |  | ENGR 1412 | Software Applications for Engineers | 2 |  |
| ENG 1003 | Composition I | 3 | \* |  | MATH 2214 | Calculus II | 4 | \* |
| ENGR 1402 | Concepts of Engineering | 2 |  |  | PHYS 2034 | University Physics I | 4 | \* |
| MATH 2204 | Calculus I | 4 | \* |  |  |  |  |  |
| **Total Hours** |  | 16 |  |  | **Total Hours** |  | 17 |  |
| **Year 2** | | | |  | **Year 2** | | | |
| **Fall Semester** | | | |  | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| ENGR 2401 | Applied Engineering Statistics | 1 |  |  | CS 2114 | Structured Programming | 4 |  |
| ENGR 2403 | Statics | 3 |  |  | EE 2322 | Electrical Workshop | 2 |  |
| ENGR 2421 | Electric Circuits I Laboratory | 1 |  |  | MATH 2183 | Discrete Structures | 3 |  |
| ENGR 2423 | Electric Circuits I | 3 |  |  |  | History Elective | 3 | \* |
| MATH 3254 | Calculus III | 4 | \* |  |  | Humanities Elective | 3 | \* |
|  | Fine Arts Elective | 3 | \* |  |  |  |  |  |
| **Total Hours** |  | 15 |  |  | **Total Hours** |  | 15 |  |
| **Year 3** | | | |  | **Year 3** | | | |
| **Fall Semester** | | | |  | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| CS 2124 | OOP and Fundamental Data Structures | 4 |  |  | CS 3113 | Algorithms and advanced data structures | 3 |  |
| ENGR 3433 | Engineering Economics | 3 |  |  | CS 3613 | Web application development | 3 |  |
| MATH 4403 | Differential Equations | 3 |  |  | EE 3401 | Electronics I Lab | 1 |  |
| PHYS 2044 | University Physics II | 4 |  |  | EE 3403 | Electronics I | 3 |  |
|  | Engineering Elective 1 | 3 |  |  | ENGR 4453 | Numerical Methods for Engineers | 3 |  |
|  |  |  |  |  |  | Engineering Elective 2 | 3 |  |
| **Total Hours** |  | 17 |  |  | **Total Hours** |  | 16 |  |
| **Year 4** | | | |  | **Year 4** | | | |
| **Fall Semester** | | | |  | **Spring Semester** | | | |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| CS 3233 | Operating Systems | 3 |  |  | CS 4313 | Computer Networks | 3 |  |
| CS 4113 | Software Engineering | 3 |  |  | CS 4543 | Database Systems | 3 |  |
| EE 3331 | Digital Electronics I Lab | 1 |  |  | EE 4344 | Embedded Systems | 4 |  |
| EE 3333 | Digital Electronics I | 3 |  |  | ENGR 4401 | Senior Seminar | 1 |  |
| ENGR 4463 | Senior Design 1 | 3 |  |  | ENGR 4482 | Senior Design II | 2 |  |
|  | Engineering Elective 3 | 3 |  |  |  | Engineering Elective 4 | 3 |  |
| **Total Hours** |  | 16 |  |  | **Total Hours** |  | 16 |  |
| **Total Jr/Sr Hours 49 Total Degree Hours 128** | | | | | | | | |
| **Graduation Requirements:** | | | | | | | | |

**Bulletin Changes**

|  |
| --- |
| **Instructions** |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Please include a before (with changed areas highlighted) and after of all affected sections.**  **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.** |

INSERT:

**Computer Systems Engineering, BS**

UNIVERSITY REQUIREMENTS:

See University General Requirements for Baccalaureate degrees

FIRST YEAR MAKING CONNECTIONS COURSE:

ENGR 1402, Concepts of Engineering Sem. Hrs. 2 (See Engineering Core Courses)

GENERAL EDUCATION REQUIREMENTS:

See General Education Curriculum for Engineering Sem. Hrs: 38

ENGINEERING CORE COURSES:

Refer to Engineering Core Courses Sem. Hrs: 20

MAJOR REQUIREMENTS:

Electives denoted with an asterisk (\*) may be selected from any courses within the designated elective group; subject to a program advisor’s approval. They must make a rational contribution to the student’s personal and professional education goals. In addition to the University requirements for all Baccalaureate Degrees, a Bachelor of Science in Computer Systems Engineering requires that one of the two following conditions be met: 1. “C” or better in each course in the major courses; OR 2. 2.5 (or greater) grade point average in the major courses listed below.

CS 1114 - Concepts of Programming Sem. Hrs: 4

CS 2114 - Structured Programming Sem. Hrs: 4

CS 2124 - OOP and Fundamental Data Structures Sem. Hrs: 4

CS 3113 - Algorithms and Advanced Data Structures Sem. Hrs: 3

CS 3233 - Operating Systems Sem. Hrs: 3

CS 3613 - Web Application Development Sem. Hrs: 3

CS 4113 - Software Engineering Sem. Hrs: 3

CS 4313 - Computer Networks Sem. Hrs: 3

CS 4543 - Database Systems Sem. Hrs: 3

EE 2322 - Electrical Workshop Sem. Hrs: 2

EE 3331 - Digital Electronics I Laboratory Sem. Hrs: 1

EE 3333 - Digital Electronics I Sem. Hrs: 3

EE 3401 - Electronics I Laboratory Sem. Hrs: 1

EE 3403 - Electronics I Sem. Hrs: 3

EE 4344 - Embedded Systems Sem. Hrs: 4

ENGR 2423 - Electric Circuits I Sem. Hrs: 3

ENGR 2421 - Electric Circuits I Laboratory Sem. Hrs: 1

Sub-total: 48

ELECTIVES:

\* Electives (CS, EE, ENGR, ESE, ISE, ME or MSE prefix) Sem. Hrs. 12

Sub-total: 12

ADDITIONAL SUPPORT COURSES:

MATH 2183 - Discrete Structures Sem. Hrs: 3

MATH 4403 - Differential Equations Sem. Hrs: 3

PHYS 2044 - University Physics II Sem. Hrs: 4

Sub-total: 10

TOTAL REQUIRED HOURS: 128

UCC Information (not included on program page of bulletin)

**GENERAL EDUCATION CURRICULUM FOR ENGINEERING**

Communication

ENG 1003 - Composition I Sem. Hrs: 3

ENG 1013 - Composition II Sem. Hrs: 3

COMS 1203 - Oral Communication Sem. Hrs: 3 (Required Departmental Gen. Ed. Option)

Mathematics

MATH 2204 - Calculus I Sem. Hrs: 4

Science

CHEM 1013 - General Chemistry I Sem. Hrs: 3

CHEM 1011 - General Chemistry I Laboratory Sem. Hrs: 1

PHYS 2034 - University Physics I Sem. Hrs: 4

Arts and Humanities

Fine Arts

(select one of the following):

ART 2503 - Fine Arts-Visual Sem. Hrs: 3

MUS 2503 - Fine Arts-Music Sem. Hrs: 3

THEA 2503 - Fine Arts-Theatre Sem. Hrs: 3

Humanities

(select one of the following):

ENG 2003 - World Literature to 1660 Sem. Hrs: 3

ENG 2013 - World Literature since 1660 Sem. Hrs: 3

PHIL 1103 - Introduction to Philosophy Sem. Hrs: 3

Social Sciences

The State Minimum General Education Core allows engineering students to substitute higher-level math and/or science courses as part of this requirement.

Select one of the following:

HIST 2763 - The United States to 1876 Sem. Hrs: 3

HIST 2773 - The United States since 1876 Sem. Hrs: 3

POSC 2103 - Introduction to United States Government Sem. Hrs: 3

Substitution of Higher Math

(student must complete both):

MATH 2214 - Calculus II Sem. Hrs: 4

MATH 3254 - Calculus III Sem. Hrs: 4

TOTAL: 38

**ENGINEERING CORE COURSES:**

Grade of “C” or better required.

ENGR 1402 - Concepts of Engineering Sem. Hrs: 2

ENGR 1412 - Software Applications for Engineers Sem. Hrs: 2

ENGR 2401 - Applied Engineering Statistics Sem. Hrs: 1

ENGR 2403 - Statics Sem. Hrs: 3

ENGR 3433 - Engineering Economics Sem. Hrs: 3

ENGR 4401 - Senior Seminar Sem. Hrs: 1

ENGR 4453 - Numerical Methods for Engineers Sem. Hrs: 3

ENGR 4463 - Senior Design I Sem. Hrs: 3

ENGR 4482 - Senior Design II Sem. Hrs: 2

TOTAL: 20