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| For Academic Affairs and Research Use Only |
| Proposal Number | ECS15 |
| CIP Code:  |  |
| Degree Code: |  |

**Program Modification Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

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| **Modification Type: [ ]Admissions, [ ]Curricular Sequence, or [X]Other**  |

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

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| Carlos Ramirez Jimenez | 2/23/2023 |

**Department Curriculum Committee Chair** |

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**COPE Chair (if applicable)** |
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| Carlos Ramirez Jimenez | 2/23/2023 |

**Department Chair**  |

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**Head of Unit (if applicable)**   |
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| Jason Stewart | 3/6/2023 |

**College Curriculum Committee Chair** |

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**Undergraduate Curriculum Council Chair** |
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**Director of Assessment** *(only for changes impacting assessment)* |

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**Graduate Curriculum Committee Chair** |
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| Abhijit Bhattacharyya | 3/6/2023 |

**College Dean** |

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| Len Frey | 4/20/2023 |

**Vice Chancellor for Academic Affairs** |
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**General Education Committee Chair (if applicable)**   |  |

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

Carlos Ramirez Jimenez, cramirejimenez@astate.edu, +52 442 3431 871

1. **Proposed Change** (for undergraduate curricular changes please provide an 8-semester plan (appendix A), if applicable)

We are proposing for 5 courses (16 credits) to be moved from electives and become upper Major requirements. Also, we propose to arrange the list of courses described in the bulletin in alpha-numeric order, which currently they are not. Also, upper level engineering courses from which electives may be chosen should also include ISE courses (which were previously not included as possibilities).

1. **Effective Date**

Fall 2023 (2023-24 Bulletin Year)

1. **Justification –** *Please provide details as to why this change is necessary.*

We had initially considered the use of concentrations to group courses which could become areas of specialization for our students on their senior year. In order to do that, we allowed for 30 credits to become elective on our fist approach. Now, after careful revision and in order to maintain a strong electrical/electronic core, facilitate programming and optimize resources, we are proposing changing elective courses into upper major requirements.

**Bulletin Changes**

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| **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.**  |

**BEFORE**

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| Electrical Systems Engineering, BS |
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Return to {$returnto_text} Return to: [Programs by Department](https://catalog.astate.edu/content.php?catoid=3&navoid=77) |
| UNIVERSITY REQUIREMENTS:See [University General Requirements for Baccalaureate degrees](https://catalog.astate.edu/content.php?catoid=3&navoid=67#university-general-requirements-for-all-baccalaureate-degrees)  FIRST YEAR MAKING CONNECTIONS COURSE:* [ENGR 1402 - Concepts of Engineering](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **2** (See Engineering Core Courses)

GENERAL EDUCATION REQUIREMENTS:* See [General Education Curriculum for Engineering](https://catalog.astate.edu/preview_program.php?catoid=3&poid=542) **Sem. Hrs: 38**

ENGINEERING CORE COURSES:* Refer to [Engineering Core Courses](https://catalog.astate.edu/preview_program.php?catoid=3&poid=543) **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 Electrical 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 2114 - Structured Programming](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **4**
* [EE 3401 - Electronics I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **1**
* [EE 3403 - Electronics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 4313 - Control Systems Theory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 4353 - Power Systems](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 2322 - Electrical Workshop](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **2**
* [EE 3313 - Electric Circuits II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 3331 - Digital Electronics I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **1**
* [EE 3333 - Digital Electronics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 3353 - Signals and Systems](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 2421 - Electric Circuits I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **1**
* [ENGR 2423 - Electric Circuits I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3443 - Engineering Thermodynamics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* Upper level Electrical Engineering Electives (EE prefix) **Sem. Hrs: 6**\*
* Upper level Engineering Electives (EE or ENGR or ESE or ME or MSE prefix) **Sem. Hrs: 15** \*
* Engineering Electives (EE or ENGR or ESE or ME or MSE prefix) **Sem. Hrs: 6** \*

Professional Development Elective (Advisor approval required) - Req. Hrs: 3This elective may be selected outside the Engineering Programs, subject only to the following list or advisor’s approval.  It must make a rational contribution to the student’s personal and professional education goals.  Pre-approved Professional Development Electives: * [CHEM 1023 - General Chemistry II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 4343 - Digital Signal Processing](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 2413 - Mechanics of Materials](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3423 - Dynamics](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3473 - Fluid Mechanics](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [MATH 3243 - Linear Algebra](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [MATH 3323 - Mathematical Modeling](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**

Sub-total: 63ADDITIONAL SUPPORT COURSES:* [MATH 4403 - Differential Equations](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [PHYS 2044 - University Physics II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **4**

Sub-total: 7TOTAL REQUIRED HOURS: 128 |
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**AFTER**

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| Electrical Systems Engineering, BS |
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Return to {$returnto_text} Return to: [Programs by Department](https://catalog.astate.edu/content.php?catoid=3&navoid=77) |
| UNIVERSITY REQUIREMENTS:See [University General Requirements for Baccalaureate degrees](https://catalog.astate.edu/content.php?catoid=3&navoid=67#university-general-requirements-for-all-baccalaureate-degrees)  FIRST YEAR MAKING CONNECTIONS COURSE:* [ENGR 1402 - Concepts of Engineering](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **2** (See Engineering Core Courses)

GENERAL EDUCATION REQUIREMENTS:* See [General Education Curriculum for Engineering](https://catalog.astate.edu/preview_program.php?catoid=3&poid=542) **Sem. Hrs: 38**

ENGINEERING CORE COURSES:* Refer to [Engineering Core Courses](https://catalog.astate.edu/preview_program.php?catoid=3&poid=543) **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 Electrical Systems Engineering requires that one of the two following conditions be met:* “C” or better in each course in the major courses; **OR**
* 2.5 (or greater) grade point average in the major courses listed below.
* [CS 2114 - Structured Programming](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **4**
* [EE 2322 - Electrical Workshop](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **2**
* [EE 3313 - Electric Circuits II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 3331 - Digital Electronics I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **1**
* [EE 3333 - Digital Electronics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 3353 - Signals and Systems](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 3401 - Electronics I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **1**
* [EE 3403 - Electronics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 4313 - Control Systems Theory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* EE 4343 Digital Signal Processing Sem**. Hrs:** **3**
* EE 4344 Embedded Systems **Sem. Hrs: 4**
* [EE 4353 - Power Systems](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* EE 4373 Electronics II **Sem. Hrs: 3**
* EE 4773 Electronics II Laboratory **Sem. Hrs: 3**
* [ENGR 2421 - Electric Circuits I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **1**
* [ENGR 2423 - Electric Circuits I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3443 - Engineering Thermodynamics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* ESE 3003 Introduction to Energy Systems **Sem. Hrs:** **3**
* Upper level Engineering Electives (EE or ENGR or ESE or ISE or ME or MSE prefix) **Sem. Hrs: 11** \*

Professional Development Elective (Advisor approval required) - Req. Hrs: 3This elective may be selected outside the Engineering Programs, subject only to the following list or advisor’s approval.  It must make a rational contribution to the student’s personal and professional education goals.  Pre-approved Professional Development Electives: * [CHEM 1023 - General Chemistry II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [EE 4343 - Digital Signal Processing](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 2413 - Mechanics of Materials](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3423 - Dynamics](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3473 - Fluid Mechanics](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [MATH 3243 - Linear Algebra](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [MATH 3323 - Mathematical Modeling](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**

Sub-total: 63ADDITIONAL SUPPORT COURSES:* [MATH 4403 - Differential Equations](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **3**
* [PHYS 2044 - University Physics II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1980&returnto=77) **Sem. Hrs:** **4**

Sub-total: 7TOTAL REQUIRED HOURS: 128 |

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**Appendix A, 8-Semester Plan**

(**Referenced in #2** - **Undergraduate Proposals Only)**

*Instructions: Please identify new courses in italics*.

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| **Arkansas State University campus Queretaro****Degree: Bachelor of Science****Major: Electrical Systems Engineering****Year: 2023** |
| 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** |
| COMS 1203 | Oral Communication | 3 | X |  | ENG 1013 | Composition II | 3 | X |
| ENG 1003 | Composition I | 3 | X |  | ENGR 1412 | Software Applications for Engineers | 2 |  |
| ENGR 1402 | Concepts of Engineering | 2 |  |  | ENGR 2421 | Electric Circuits I Lab | 1 |  |
| MATH 2204 | Calculus I | 4 | X |  | ENGR 2423 | Electric Circuits I | 3 |  |
| PHYS 2034 | University Physics I | 4 | X |  | MATH 2214 | Calculus II | 4 | X |
|  |  |  |  |  | PHYS 2044 | University Physics II | 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** |
| CHEM 1011 | General Chemistry I Lab | 1 | X |  | CS 2114 | Structured Programming | 4 |  |
| CHEM 1013 | General Chemistry I | 3 | X |  | EE 3313 | Electric Circuits II | 3 |  |
| EE 2322 | Electrical Workshop | 2 |  |  | EE 3331 | Digital Electronics I Lab | 1 |  |
| ENGR 2401 | Applied Engineering Statistics | 1 |  |  | EE 3333 | Digital Electronics I | 3 |  |
| ENGR 2403 | Statics | 3 |  |  | ENGR 3443 | Engineering Thermodynamics I | 3 |  |
| MATH 3254 | Calculus III | 4 | X |  | MATH 4403 | Differential Equations | 3 |  |
|  | ++ Humanities Elective | 3 | X |  |  |  |  |  |
| **Total Hours** |  | 17 |  |  | **Total Hours** |  | 17 |  |
| **Year 3** |  | **Year 3** |
| **Fall Semester** |  | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| EE 3353 | Signals and Systems | 3 |  |  | ENGR 3433 | Engineering Economics | 3 |  |
| EE 3401 | Electronics I Lab | 1 |  |  | EE 4373 | Electronics II | *3* |  |
| EE 3403 | Electronics I | 3 |  |  | EE 4773 | Electronics II laboratory | *3* |  |
| ENGR 4453 | Numerical Methods for Engineers | 3 |  |  |  | + Engineering Elective Upper Level | 3 |  |
| ESE 3003 | Introduction to Energy Systems | *3* |  |  |  | + Engineering Elective Upper Level | 3 |  |
|  | + Engineering Elective Upper Level | 3 |  |  |  |  |  |  |
| **Total Hours** |  | 16 |  |  | **Total Hours** |  | 15 |  |
| **Year 4** |  | **Year 4** |
| **Fall Semester** |  | **Spring Semester** |
| **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |  | **Course No.** | **Course Name** | **Hrs** | **Gen Ed** |
| EE 4313 | Control Systems Theory | 3 |  |  | ENGR 4482 | Senior Design II | 2 |  |
| EE 4353 | Power Systems | 3 |  |  | EE 4343 | Digital signal Processing | 3 |  |
| ENGR 4401 | Senior Seminar | 1 |  |  | EE 4344 | Embedded Systems | 4 |  |
| ENGR 4463 | Senior Design I | 3 |  |  |  | + Engineering Elective Upper Level | 3 |  |
|  | +++ Professional Development Elective | 2 |  |  |  | ++ Fine Arts Elective | 3 | X |
|  | ++ Social Science Elective | 3 | X |  |  |  |  |  |
| **Total Hours** |  | 15 |  |  | **Total Hours** |  | 15 |  |
| **Total Jr/Sr Hours 70 Total Degree Hours 128** |
| + Any upper-level engineering course: EE, ENGR, ESE, ISE, ME or MSE.++ See General Education Requirements for Engineering.+++ Approved Professional Development Elective. Advisor approval required. |