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| For Academic Affairs and Research Use Only |
| Proposal Number | ECS16 |
| CIP Code:  |  |
| Degree Code: |  |

**Program Modification Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

|  |
| --- |
| **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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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |

**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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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |

**Undergraduate Curriculum Council Chair** |
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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |

**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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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |

**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 MSE 4561 Manufacturing Processes Laboratory to move from elective and become a Major requirement.

1. **Effective Date**

Fall 2023 (2023-24 Bulletin Year)

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

The 1 credit hour general elective is substituted by a mandatory engineering laboratory. This change strengthens the hands-on experience of the students around manufacturing tools.

**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

# Industrial Systems Engineering, BS

## 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=1983&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 Industrial 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=1983&returnto=77) **Sem. Hrs:** **4**
* [EGRM 3013 - Project Management and Practice](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ENGR 2411 - Mechanics of Materials Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **1**
* [ENGR 2413 - Mechanics of Materials](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ENGR 2421 - Electric Circuits I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **1**
* [ENGR 2423 - Electric Circuits I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3443 - Engineering Thermodynamics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3103 - Modeling Engineering Data](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3113 - Quality Control](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3203 - Methods Engineering](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3303 - Introduction to Optimization](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 4303 - Analytical Stochastic Modeling](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 4311 - Systems Simulation Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **1**
* [ISE 4312 - Systems Simulation](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **2**
* [ISE 4323 - Production Systems Planning and Control](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ME 2502 - Solid Modeling for Mechanical Engineers](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **2**
* [ME 4563 - Introduction to Manufacturing Processes](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* ISE Approved General Elective **Sem. Hrs: 3**\*
* Management Systems Elective **Sem. Hrs: 3** \*
* Upper-Level Engineering Electives **Sem. Hrs: 12** \*
* General Elective **Sem. Hrs: 1** \*

### Sub-total: 63

## ADDITIONAL SUPPORT COURSES:

* [MATH 4403 - Differential Equations](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [PHYS 2044 - University Physics II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **4**

### Sub-total: 7

## TOTAL REQUIRED HOURS: 128

AFTER

# Industrial Systems Engineering, BS

## 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=1983&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 Industrial 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=1983&returnto=77) **Sem. Hrs:** **4**
* [EGRM 3013 - Project Management and Practice](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ENGR 2411 - Mechanics of Materials Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **1**
* [ENGR 2413 - Mechanics of Materials](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ENGR 2421 - Electric Circuits I Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **1**
* [ENGR 2423 - Electric Circuits I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ENGR 3443 - Engineering Thermodynamics I](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3103 - Modeling Engineering Data](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3113 - Quality Control](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3203 - Methods Engineering](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 3303 - Introduction to Optimization](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 4303 - Analytical Stochastic Modeling](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ISE 4311 - Systems Simulation Laboratory](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **1**
* [ISE 4312 - Systems Simulation](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **2**
* [ISE 4323 - Production Systems Planning and Control](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [ME 2502 - Solid Modeling for Mechanical Engineers](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **2**
* [ME 4563 - Introduction to Manufacturing Processes](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* MSE 4561 Manufacturing Processes Laboratory **Sem Hrs: 1**
* ISE Approved General Elective **Sem. Hrs: 3**\*
* Management Systems Elective **Sem. Hrs: 3** \*
* Upper-Level Engineering Electives **Sem. Hrs: 12** \*

### Sub-total: 63

## ADDITIONAL SUPPORT COURSES:

* [MATH 4403 - Differential Equations](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **3**
* [PHYS 2044 - University Physics II](https://catalog.astate.edu/preview_program.php?catoid=3&poid=1983&returnto=77) **Sem. Hrs:** **4**

### Sub-total: 7

## TOTAL REQUIRED HOURS: 128

**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: Industrial 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** |
| CHEM 1011 | General Chemistry I Lab | 1 | X |  | ENG 1013 | Composition II | 3 | X |
| CHEM 1013 | General Chemistry I | 3 | X |  | MATH 2214 | Calculus II | 4 | X |
| COMS 1203 | Oral Communication | 3 | X |  | ME 2502 | Solid Modeling for Mechanical Engineers | 2 |  |
| ENG 1003 | Composition I | 3 | X |  | PHYS 2034 | University Physics I | 4 | X |
| ENGR 1402 | Concepts of Engineering | 2 |  |  |  | + Fine Arts Elective | 3 | X |
| MATH 2204 | Calculus I | 4 | X |  |  |  |  |  |
| **Total Hours** |  | 16 |  |  | **Total Hours** |  | 16 |  |
| **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 |  |  | ENGR 2411 | Lab. For Mechanics of Materials | 1 |  |
| ENGR 2403 | Statics | 3 |  |  | ENGR 2413 | Mechanics of Materials | 3 |  |
| MATH 3254 | Calculus III | 4 | X |  | CS 2114 | Structured Programming | 4 |  |
| ENGR 1412 | Software Applications for Engineers | 2 |  |  | ENGR 3443 | Engineering Thermodynamics I | 3 |  |
| PHYS 2044 | University Physics II | 4 |  |  | ISE 3103 | Modeling Engineering Data | 3 |  |
|  | + Social Science Elective | 3 | X |  |  | + 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** |
| ENGR 2423 | Electric Circuits I | 3 |  |  | ENGR 3433 | Engineering Economics | 3 |  |
| ENGR 2421 | Electric Circuits I Lab | 1 |  |  | ISE 4303 | Analytical Stochastic Modelling | 3 |  |
| MATH 4403 | Differential Equations | 3 |  |  | ME 4563 | Introduction to Manufacturing processes | 3 |  |
| ISE 3113 | Quality Control | 3 |  |  | MSE 4561 | Manufacturing Processes Laboratory | 1 |  |
| ISE 3203 | Methods Engineering | 3 |  |  |  | +++ Upper level Engineering Elective+ General Elective | 3 |  |
| ISE 3303 | Introduction to Optimization | 3 |  |  |  | +++ Upper level Engineering Elective+ General Elective | 3 |  |
| **Total Hours** |  | 16 |  |  | **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** |
| ENGR 4401 | Senior Seminar | 1 |  |  | ENGR 4482 | Senior Design II | 2 |  |
| ENGR 4463 | Senior Design I | 3 |  |  | ISE 4323 | Production Systems Planning and Control | 3 |  |
| ENGR 4453 | Numerical Methods for Engineers | 3 |  |  |  | ++ISE Approved Elective | 3 |  |
| EGRM 3013 | Project Management and Practice | 3 |  |  |  | +++ Upper level Engineering Elective+ General Elective | 3 |  |
| ISE 4312 | Systems Simulation | 2 |  |  |  | ++++Management Systems Elective | 3 |  |
| ISE 4311 | Systems Simulation Laboratory | 1 |  |  |  |  |  |  |
|  | +++ Upper level Engineering Elective+ General Elective | 3 |  |  |  |  |  |  |
| **Total Hours** |  | 16 |  |  | **Total Hours** |  | 14 |  |
| **Total Jr/Sr Hours 68 Total Degree Hours 128** |
| + See General Education Requirements for College of Engineering.++ ISE Approved General Elective +++ Engineering Electives (upper level, EE or ENGR or ESE or ISE or ME or MSE prefix) ++++ Management Systems Elective  |