

MECHANICAL ENGINEERING (BS)

Program Description

Mechanical engineers apply hands-on physics to model, analyze, and design mechanical and energy systems such as automobiles, aircraft, ships, heating and cooling systems, prosthetics, robots, household appliances, or industrial equipment and machinery. In this major, you'll learn to think critically and solve quandaries through multiple, extended hands-on projects.

The BS in Mechanical Engineering degree is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org/>).

Entering and Completing the Major

In order to earn a degree, you must complete at least one academic major. SPU encourages students to explore various academic paths, so if you change your mind about a major, or want to include an additional program, you are able to do so, as outlined below.

Note that the University encourages you to enter your chosen major(s) as soon as you have determined it and are eligible to join it, especially by the start of your junior year. Students who transfer as juniors and seniors should enter a major within their first two quarters at SPU.

- If this is your first quarter at SPU and you identified a major in this department as your first choice on your application for admission to the University, you have gained entry to the major. To change or add a major, follow these instructions (<https://spu.atlassian.net/l/cp/a3th1keb/>).
- If you are an SPU student with an SPU cumulative GPA of 2.0 or better, follow these instructions (<https://spu.atlassian.net/l/cp/a3th1keb/>) to enter a major in this department.
- The University requires a grade of C- or better in all classes that apply to a major; however, programs may require higher minimum grades in specific courses. You may repeat an SPU course only once for a higher grade.
- To advance in this program, meet with your faculty advisor regularly to discuss your grades, course progression, and other indicators of satisfactory academic progress. If your grades or other factors indicate that you may not be able to successfully complete the major or minor, your faculty advisor can work with you to explore options, which may include choosing a different major.
- You must complete the major requirements that are in effect in the SPU Undergraduate Catalog for the year you enter the major.

Mechanical Engineering (BS)

131 Credits Minimum, Including 45 Upper Division (UD)

| Code | Title | Credits |
|---------------------------------|--|---------|
| Engineering Requirements | | |
| EE 2726 | Electric Circuits I | 5 |
| EGR 1501 | Computer Aided Design Applications for Engineers | 1 |
| EGR 1502 | Machining and Fabricating | 1 |
| EGR 1503 | Engineering Tools and Systems | 1 |
| EGR 3000 | Principles of Professional Practice | 1 |

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|-------------------------------------|--|----|
| or GS 3001 | Internship and Job Search Strategies | |
| EGR 3311 | Experimental Methods I | 3 |
| EGR 3810 | General Engineering Design | 5 |
| EGR 4811 | Engineering Senior Design I | 3 |
| EGR 4812 | Engineering Senior Design II | 3 |
| EGR 4899 | Engineering Capstone and Senior Design | 3 |
| EGR 4941 | Engineering Professional Experience ¹ | 1 |
| ME 2891 | Statics | 4 |
| ME 3300 | Properties of Materials | 3 |
| ME 3310 | Mechanics of Materials | 4 |
| ME 3400 | Dynamics | 5 |
| ME 3430 | System Dynamics | 5 |
| ME 3500 | Thermal Science I: Thermodynamics | 5 |
| ME 3501 | Thermal Science II: Fluid Mechanics | 5 |
| ME 3502 | Thermal Science III: Heat Transfer | 5 |
| ME 4410 | Mechanical Design | 4 |
| ME 4910 | WA State FE Preparation for Mechanical Engineers | 1 |
| Section Credits Required | | 68 |
| Mathematics Requirements | | |
| MAT 1234 | Calculus I | 5 |
| MAT 1235 | Calculus II | 5 |
| MAT 1236 | Calculus III | 5 |
| MAT/EGR 2200 | Engineering Probability and Statistics | 3 |
| MAT 2401 | Linear Algebra | 3 |
| MAT 3237 | Differential Equations | 3 |
| MAT 3238 | Vector Calculus | 3 |
| Section Credits Required | | 27 |
| Science Requirements | | |
| CSC 1230 | Problem Solving and Programming | 5 |
| or CSC 2230 | Computer Programming for Engineers | |
| CHM 1211 | General Chemistry I | 5 |
| or CHM 1310 | Survey of General Chemistry | |
| PHY 1121 | Physics for Science and Engineering | 5 |
| PHY 1122 | Physics for Science and Engineering | 5 |
| PHY 1123 | Physics for Science and Engineering | 5 |
| Section Credits Required | | 25 |
| Technical Electives | | |
| Select 11 credits of the following: | | 11 |
| BUS 3682 | Social Venture Planning | |
| CPE 3350 | Operating Systems Programming | |
| CPE 4350 | Advanced Operating Systems | |
| CPE 4750 | Computer Networks | |
| CPE 4760 | Advanced Computer Architecture | |
| EE 2727 | Electric Circuits II | |
| EE 3028 | Electric Circuits III | |
| EE 3280 | Microcontroller System Design | |
| EE 3315 | Electricity and Magnetism I | |
| EE 3410 | Signal and System Analysis | |
| EE 3500 | Power Systems Fundamentals | |
| EE 3510 | Power Electronics Fundamentals | |
| EE 3550 | Communication System Analysis | |
| EE 3721 | Electronics I - Analog Devices and Circuits | |

| | | |
|--------------------------|---|------------|
| EE 3722 | Electronics II Analog Electronics | |
| EE 3760 | Computer Organization and Assembly Language | |
| EE 4311 | Optics and Lasers | |
| EE 4410 | Embedded and Fixed Point Digital Signal Processing | |
| EE 4450 | Control System Design | |
| EE 4560 | Wireless Communication Systems | |
| EGR 3211 | Acoustics | |
| EGR/PHY 3312 | Experimental Methods II | |
| EGR/PHY 3313 | Experimental Methods III | |
| EGR 3611 | Appropriate and Sustainable Engineering I: Alternative Energy Systems | |
| EGR 3612 | Appropriate and Sustainable Engineering II | |
| EGR 3614 | Appropriate and Sustainable Engineering III | |
| EGR 3800 | Biomedical Engineering I | |
| EGR 4450 | Control Systems Design | |
| EGR 4610 | Systems Design | |
| EGR 4615 | Engineering Project Management | |
| EGR 4900 | Independent Study in Engineering | |
| EGR 4930 | Practicum - Service ² | |
| EGR 4931 | Engineering Practicum ² | |
| EGR 4950 | Special Topics: General Engineering | |
| EGR 4960 | Senior Project ² | |
| EGR 4970 | Research ² | |
| MAT 3724 | Applied Analysis | |
| Section Credits Required | | 11 |
| Total Credits | | 131 |

1

A tech internship or professional experience must be approved before enrolling in EGR 4941 and must be completed before passing EGR 4941.

2

Can apply a maximum of eight credits to meet the Technical Electives requirement from the combination of the following courses: EGR 4930, EGR 4931, EGR 4960, and EGR 4970.

Suggested Course Sequences

Four Year Plan Starting with Calculus

| Course | Title | Credits |
|------------------------------|---|-----------|
| Freshman | | |
| Variable | | |
| Take one of each per quarter | | 15 |
| WRI 1000 & WRI 1100 | Academic Inquiry and Writing Seminar and Disciplinary Research and Writing Seminar ¹ | |
| UFDN 1000 | The Christian Faith | |
| Credits | | 15 |
| Autumn | | |
| EGR 1502 | Machining and Fabricating | 1 |
| MAT 1234 | Calculus I | 5 |
| PHY 1121 | Physics for Science and Engineering | 5 |
| UCOL 1000 | University Colloquium ² | 1 |
| Credits | | 12 |
| Winter | | |
| EGR 1501 | Computer Aided Design Applications for Engineers | 1 |

| | | |
|--|--|-----------|
| MAT 1235 | Calculus II | 5 |
| PHY 1122 | Physics for Science and Engineering | 5 |
| Credits | | 11 |
| Spring | | |
| EGR 1503 | Engineering Tools and Systems | 1 |
| MAT 1236 | Calculus III | 5 |
| PHY 1123 | Physics for Science and Engineering | 5 |
| Credits | | 11 |
| Sophomore | | |
| Variable | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | |
| GS 3001 | Internship and Job Search Strategies ³ | 1 |
| Credits | | 1 |
| Autumn | | |
| ME 2891 | Statics | 4 |
| EE 2726 | Electric Circuits I | 5 |
| MAT 3238 | Vector Calculus | 3 |
| CSC 2230 | Computer Programming for Engineers | 5 |
| Credits | | 17 |
| Winter | | |
| MAT 3237 | Differential Equations | 3 |
| ME 3310 | Mechanics of Materials | 4 |
| ME 3400 | Dynamics | 5 |
| CHM 1211 or CHM 1310 | General Chemistry I or Survey of General Chemistry | 5 |
| Credits | | 17 |
| Spring | | |
| MAT 2200 | Engineering Probability and Statistics | 3 |
| MAT 2401 | Linear Algebra | 3 |
| Credits | | 6 |
| Junior | | |
| Variable | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed | | |
| Tech Electives ⁴ | | |
| Credits | | 0 |
| Autumn | | |
| ME 3430 | System Dynamics ⁵ | 5 |
| PHY 3311 | Experimental Methods I | 3 |
| ME 3300 | Properties of Materials ⁵ | 3 |
| GS 3001 | Internship and Job Search Strategies ⁶ | 1 |
| Credits | | 12 |
| Winter | | |
| ME 3501 | Thermal Science II: Fluid Mechanics | 5 |
| ME 4410 | Mechanical Design | 4 |
| ME 3500 | Thermal Science I: Thermodynamics | 5 |
| Credits | | 14 |
| Spring | | |
| ME 3502 | Thermal Science III: Heat Transfer | 5 |
| EGR 3810 | General Engineering Design | 5 |
| Credits | | 10 |
| Senior | | |
| Variable | | |
| EGR 4941 | Engineering Professional Experience ⁷ | 1 |
| Tech Electives ⁴ | | |

Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>) and Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>) as needed

| | Credits | |
|---------------|--|------------|
| Autumn | | 1 |
| ME 4910 | WA State FE Preparation for Mechanical Engineers | 1 |
| ME 3430 | System Dynamics ^{5,6} | 5 |
| EGR 4811 | Engineering Senior Design I | 3 |
| ME 3300 | Properties of Materials ^{5,6} | 3 |
| | Credits | 12 |
| Winter | | |
| EGR 4812 | Engineering Senior Design II | 3 |
| | Credits | 3 |
| Spring | | |
| EGR 4899 | Engineering Capstone and Senior Design | 3 |
| | Credits | 3 |
| | Total Credits | 145 |

1

Engineering majors should take a WRI 1100 section taught by an engineering faculty member.

2

Engineering majors should take a UCOL taught by an engineering faculty member.

3

Or Fall of junior year.

4

11 credits spread over junior and senior year. See link at the bottom of this page for a list.

5

ME 3430 System Dynamics and ME 3300 Properties of Materials will change from being offered every year to alternate years after 2023. Fall 2024: 3430 (no 3300) Fall 2025: (no 3430)

6

If not already completed.

7

Must be taken AFTER completing an approved internship or pursuing an approved certification.

| Code | Title | Credits |
|---|---|---------|
| Tech Elective | | |
| Select 11 credits of tech electives | | 11 |
| Common Curriculum | | |
| UCOR 2000 | The Emergence of the Modern Global System | 5 |
| UFDN 2000 | Christian Scripture | 5 |
| UCOR 3000 | Faith, Philosophy, and Science | 5 |
| UFDN 3100 | Christian Theology | 5 |
| Exploratory Curriculum | | |
| with DTA or AA see Advisor | | |
| Ways of Knowing in the Arts (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wkatext) | | 20 |
| Cultural Understanding and Engagement (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/cue-requirement/) | | |

Ways of Knowing in the Social Sciences (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wksstext>)

Ways of Engaging (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wetext>)

Ways of Knowing in the Humanities (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wkhtext>)

Four Year Plan Starting with Algebra or Trigonometry

| Course | Title | Credits |
|--|---|-----------|
| Freshman | | |
| Variable | | |
| Take one of each per quarter | | 15 |
| WRI 1000 & WRI 1100 | Academic Inquiry and Writing Seminar and Disciplinary Research and Writing Seminar ¹ | |
| UFDN 1000 | The Christian Faith | |
| | Credits | 15 |
| Autumn | | |
| EGR 1502 | Machining and Fabricating | 1 |
| PHY 1121 or PHY 1101 | Physics for Science and Engineering or General Physics | 5 |
| MAT 1010 | College Algebra (if needed) | 3 |
| UCOL 1000 | University Colloquium ² | 1 |
| | Credits | 10 |
| Winter | | |
| EGR 1501 | Computer Aided Design Applications for Engineers | 1 |
| MAT 1110 | Precalculus | 5 |
| CHM 1310 or CHM 1211 | Survey of General Chemistry or General Chemistry I | 5 |
| | Credits | 11 |
| Spring | | |
| EGR 1503 | Engineering Tools and Systems | 1 |
| MAT 1234 | Calculus I | 5 |
| Exploratory Curriculum | | 5 |
| | Credits | 11 |
| Sophomore | | |
| Variable | | |
| GS 3001 | Internship and Job Search Strategies ³ | 1 |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | |
| | Credits | 1 |
| Autumn | | |
| ME 2891 | Statics | 4 |
| CSC 2230 | Computer Programming for Engineers | 5 |
| MAT 1235 | Calculus II | 5 |
| | Credits | 14 |
| Winter | | |
| ME 3310 | Mechanics of Materials | 4 |
| ME 3400 | Dynamics | 5 |
| PHY 1122 | Physics for Science and Engineering | 5 |
| | Credits | 14 |
| Spring | | |
| MAT 2401 | Linear Algebra | 3 |
| MAT 1236 | Calculus III | 5 |
| PHY 1123 | Physics for Science and Engineering | 5 |
| | Credits | 13 |

Junior**Variable**

Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>) and Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>) as needed

| | | | |
|-----------------------------|----------------|--|----------|
| Tech Electives ⁴ | | | |
| | Credits | | 0 |

| | | | |
|---------------|---|---|--|
| Autumn | | | |
| PHY 3311 | Experimental Methods I | 3 | |
| EE 2726 | Electric Circuits I | 5 | |
| ME 3300 | Properties of Materials ⁵ | 3 | |
| MAT 3238 | Vector Calculus | 3 | |
| GS 3001 | Internship and Job Search Strategies ⁶ | 1 | |

| | | | |
|--|----------------|--|-----------|
| | Credits | | 15 |
|--|----------------|--|-----------|

| | | | |
|---------------|-------------------------------------|---|--|
| Winter | | | |
| ME 3500 | Thermal Science I: Thermodynamics | 5 | |
| ME 3501 | Thermal Science II: Fluid Mechanics | 5 | |
| ME 4410 | Mechanical Design | 4 | |
| MAT 3237 | Differential Equations | 3 | |

| | | | |
|--|----------------|--|-----------|
| | Credits | | 17 |
|--|----------------|--|-----------|

| | | | |
|---------------|------------------------------------|---|--|
| Spring | | | |
| ME 3502 | Thermal Science III: Heat Transfer | 5 | |
| EGR 3810 | General Engineering Design | 5 | |

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|--|----------------|--|-----------|
| | Credits | | 10 |
|--|----------------|--|-----------|

Senior**Variable**

| | | | |
|----------|--|---|--|
| EGR 4941 | Engineering Professional Experience ⁷ | 1 | |
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|--|----------------|--|----------|
| Tech Electives ⁴ | | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed | | | |
| | Credits | | 1 |

| | | | |
|--|----------------|--|----------|
| | Credits | | 1 |
|--|----------------|--|----------|

| | | | |
|---------------|--|---|--|
| Autumn | | | |
| ME 4910 | WA State FE Preparation for Mechanical Engineers | 1 | |
| ME 3430 | System Dynamics ⁵ | 5 | |
| EGR 4811 | Engineering Senior Design I | 3 | |
| ME 3300 | Properties of Materials ^{5,6} | 3 | |

| | | | |
|--|----------------|--|-----------|
| | Credits | | 12 |
|--|----------------|--|-----------|

| | | | |
|---------------|------------------------------|---|--|
| Winter | | | |
| EGR 4812 | Engineering Senior Design II | 3 | |

| | | | |
|--|----------------|--|----------|
| | Credits | | 3 |
|--|----------------|--|----------|

| | | | |
|---------------|--|---|--|
| Spring | | | |
| EGR 4899 | Engineering Capstone and Senior Design | 3 | |

| | | | |
|--|----------------|--|----------|
| | Credits | | 3 |
|--|----------------|--|----------|

| | | | |
|--|----------------------|--|------------|
| | Total Credits | | 150 |
|--|----------------------|--|------------|

1

Engineering majors should take a WRI 1100 section taught by an engineering faculty member.

2

Engineering majors should take a UCOL taught by an engineering faculty member.

3

Or Fall of junior year.

4

11 credits spread over junior and senior year. See link at the bottom of this page for a list.

5

ME 3430 System Dynamics and ME 3300 Properties of Materials will change from being offered every year to alternate years after 2023. Fall 2024: 3430 (no 3300) Fall 2025: (no 3430).

6

If not already completed.

7

Must be taken AFTER completing an approved internship or pursuing an approved certification.

| Code | Title | Credits |
|------|-------|---------|
|------|-------|---------|

Tech Elective

| | | |
|-------------------------------------|--|----|
| Select 11 credits of tech electives | | 11 |
|-------------------------------------|--|----|

Common Curriculum

| | | |
|-----------|---|---|
| UCOR 2000 | The Emergence of the Modern Global System | 5 |
|-----------|---|---|

| | | |
|-----------|---------------------|---|
| UFDN 2000 | Christian Scripture | 5 |
|-----------|---------------------|---|

| | | |
|-----------|--------------------------------|---|
| UCOR 3000 | Faith, Philosophy, and Science | 5 |
|-----------|--------------------------------|---|

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|-----------|--------------------|---|
| UFDN 3100 | Christian Theology | 5 |
|-----------|--------------------|---|

Exploratory Curriculum

with DTA or AA see Advisor

| | | |
|---|--|----|
| Ways of Knowing in the Arts (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wkatext) | | 20 |
|---|--|----|

| | | |
|---|--|--|
| Ways of Knowing in the Humanities (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wkhtext) | | |
|---|--|--|

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|--|--|--|
| Ways of Knowing in the Social Sciences (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wksstext) | | |
|--|--|--|

| | | |
|--|--|--|
| Ways of Engaging (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wetext) | | |
|--|--|--|

| | | |
|---|--|--|
| Cultural Understanding and Engagement (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/cue-requirement/) | | |
|---|--|--|

Four Year Plan with Study Abroad

| Course | Title | Credits |
|--------|-------|---------|
|--------|-------|---------|

Freshman**Variable**

| | | |
|------------------------------|--|----|
| Take one of each per quarter | | 15 |
|------------------------------|--|----|

| | | |
|---------------------|---|--|
| WRI 1000 & WRI 1100 | Academic Inquiry and Writing Seminar and Disciplinary Research and Writing Seminar ¹ | |
|---------------------|---|--|

| | | |
|-----------|---------------------|--|
| UFDN 1000 | The Christian Faith | |
|-----------|---------------------|--|

| | | |
|--|----------------|-----------|
| | Credits | 15 |
|--|----------------|-----------|

Autumn

| | | |
|----------|---------------------------|---|
| EGR 1502 | Machining and Fabricating | 1 |
|----------|---------------------------|---|

| | | |
|----------|------------|---|
| MAT 1234 | Calculus I | 5 |
|----------|------------|---|

| | | |
|----------|-------------------------------------|---|
| PHY 1121 | Physics for Science and Engineering | 5 |
|----------|-------------------------------------|---|

| | | |
|-----------|------------------------------------|---|
| UCOL 1000 | University Colloquium ² | 1 |
|-----------|------------------------------------|---|

| | | |
|--|----------------|-----------|
| | Credits | 12 |
|--|----------------|-----------|

Winter

| | | |
|----------|--|---|
| EGR 1501 | Computer Aided Design Applications for Engineers | 1 |
|----------|--|---|

| | | |
|----------|-------------|---|
| MAT 1235 | Calculus II | 5 |
|----------|-------------|---|

| | | |
|----------|-------------------------------------|---|
| PHY 1122 | Physics for Science and Engineering | 5 |
|----------|-------------------------------------|---|

| | | |
|--|----------------|-----------|
| | Credits | 11 |
|--|----------------|-----------|

Spring

| | | |
|----------|-------------------------------|---|
| EGR 1503 | Engineering Tools and Systems | 1 |
|----------|-------------------------------|---|

| | | |
|----------|-------------------------------------|---|
| MAT 1236 | Calculus III | 5 |
| PHY 1123 | Physics for Science and Engineering | 5 |

Credits 11

Sophomore

Variable

Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>) and Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>)

| | | |
|---------|--------------------------------------|---|
| GS 3001 | Internship and Job Search Strategies | 1 |
|---------|--------------------------------------|---|

Credits 1

Autumn

| | | |
|----------|------------------------------------|---|
| ME 2891 | Statics | 4 |
| EE 2726 | Electric Circuits I | 5 |
| MAT 3238 | Vector Calculus | 3 |
| CSC 2230 | Computer Programming for Engineers | 5 |

Credits 17

Winter

| | | |
|-------------------------|---|---|
| MAT 3237 | Differential Equations | 3 |
| ME 3310 | Mechanics of Materials | 4 |
| ME 3400 | Dynamics | 5 |
| CHM 1211 or CHM 1310 | General Chemistry I or Survey of General Chemistry | 5 |

Credits 17

Spring

| | | |
|----------|--|---|
| MAT 2200 | Engineering Probability and Statistics | 3 |
| MAT 2401 | Linear Algebra | 3 |

Credits 6

Junior

Variable

Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>) and Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>) as needed

| | | |
|-----------------------------|--|--|
| Tech Electives ³ | | |
|-----------------------------|--|--|

Credits 0

Autumn

Study Abroad Quarter 15

Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>) and Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>)

| | | |
|---------|--|--|
| ME 3430 | System Dynamics ^{4,5} | |
| ME 3300 | Properties of Materials ^{4,5} | |

Credits 15

Winter

| | | |
|---------|-------------------------------------|---|
| ME 3500 | Thermal Science I: Thermodynamics | 5 |
| ME 3501 | Thermal Science II: Fluid Mechanics | 5 |
| ME 4410 | Mechanical Design | 4 |

Credits 14

Spring

| | | |
|----------|------------------------------------|---|
| ME 3502 | Thermal Science III: Heat Transfer | 5 |
| EGR 3810 | General Engineering Design | 5 |

Credits 10

Senior

Variable

| | | |
|-----------------------------|--|---|
| EGR 4941 | Engineering Professional Experience ⁶ | 1 |
| Tech Electives ³ | | |

Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>) and Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>) as needed

Credits 1

Autumn

| | | |
|----------|--|---|
| EGR 4811 | Engineering Senior Design I | 3 |
| ME 4910 | WA State FE Preparation for Mechanical Engineers | 1 |
| ME 3430 | System Dynamics ^{4,7} | 5 |
| ME 3300 | Properties of Materials ^{4,7} | 3 |
| PHY 3311 | Experimental Methods I | 3 |

Credits 15

Winter

| | | |
|----------|------------------------------|---|
| EGR 4812 | Engineering Senior Design II | 3 |
|----------|------------------------------|---|

Credits 3

Spring

| | | |
|----------|--|---|
| EGR 4899 | Engineering Capstone and Senior Design | 3 |
|----------|--|---|

Credits 3

Total Credits 151

1

Engineering majors should take a WRI 1100 section taught by an engineering faculty member.

2

Engineering majors should take a UCOL taught by an engineering faculty member.

3

11 credits spread over junior and senior year. See link at the bottom of this page for a list.

4

ME 3430 System Dynamics and ME 3300 Properties of Materials will change from being offered every year to alternate years after 2023. Fall 2024: 3430 (no 3300) Fall 2025: (no 3430)

5

Taken while abroad if offered at SPU that year.

6

Must be taken AFTER completing an approved internship or pursuing an approved certification.

7

If not already completed.

| Code | Title | Credits |
|------|-------|---------|
|------|-------|---------|

Tech Elective

| | | |
|-------------------------------------|--|----|
| Select 11 credits of tech electives | | 11 |
|-------------------------------------|--|----|

Common Curriculum

| | | |
|-----------|---|---|
| UCOR 2000 | The Emergence of the Modern Global System | 5 |
| UFDN 2000 | Christian Scripture | 5 |
| UCOR 3000 | Faith, Philosophy, and Science | 5 |
| UFDN 3100 | Christian Theology | 5 |

Exploratory Curriculum

with DTA or AA see Advisor

| | | |
|---|--|----|
| Ways of Knowing in the Arts (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wkatext) | | 20 |
|---|--|----|

Ways of Knowing in the Humanities (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wkstext>)

Ways of Knowing in the Social Sciences (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wksstext>)

Ways of Engaging (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wetext>)

Cultural Understanding and Engagement (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/cue-requirement/>)

Two Year Plan for Transfer Students with or without a DTA

See below for the pre-requisite courses required to complete the degree in two years. Note also that without a DTA, it will depend on how many of the General Education Courses (Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>), Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>), etc (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/graduation-requirements-policies/>)). are completed before transferring as to whether or not the degree can be completed in two years. Check the quarter, day and time in the current schedule as course offerings may change. Pay close attention to the pre-requisites of the courses

| Course | Title | Credits |
|---|---|-----------|
| First Year | | |
| Variable | | |
| MAT 2200 | Engineering Probability and Statistics ¹ | 3 |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed ² | | |
| Tech Electives ³ | | |
| Credits | | 3 |
| Autumn | | |
| GS 3001 | Internship and Job Search Strategies | 1 |
| EGR 1502 | Machining and Fabricating | 1 |
| PHY 3311 | Experimental Methods I | 3 |
| ME 3300 | Properties of Materials ⁴ | 3 |
| ME 3430 | System Dynamics ⁴ | 5 |
| Credits | | 13 |
| Winter | | |
| ME 3500 | Thermal Science I: Thermodynamics | 5 |
| ME 3501 | Thermal Science II: Fluid Mechanics | 5 |
| ME 4410 | Mechanical Design | 4 |
| Credits | | 14 |
| Spring | | |
| EGR 1503 | Engineering Tools and Systems | 1 |
| EGR 3810 | General Engineering Design | 5 |
| ME 3502 | Thermal Science III: Heat Transfer | 5 |
| Credits | | 11 |
| Second Year | | |
| Variable | | |
| Tech Electives ³ | | |
| MAT 2200 | Engineering Probability and Statistics ⁵ | 3 |
| EGR 4941 | Engineering Professional Experience ⁶ | 1 |

Common Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/>) and Exploratory Curriculum (<https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/>) as needed ²

| | | Credits | |
|---------------|--|----------------------|-----------|
| | | | 4 |
| Autumn | | | |
| EGR 4811 | Engineering Senior Design I | | 3 |
| ME 4910 | WA State FE Preparation for Mechanical Engineers | | 1 |
| ME 3300 | Properties of Materials ⁷ | | 3 |
| ME 3430 | System Dynamics ⁷ | | 5 |
| | | Credits | 12 |
| Winter | | | |
| EGR 4812 | Engineering Senior Design II | | 3 |
| | | Credits | 3 |
| Spring | | | |
| EGR 4899 | Engineering Capstone and Senior Design | | 3 |
| | | Credits | 3 |
| | | Total Credits | 63 |

1

May be taken the first or second year.

2

Spread between first and second year.

3

See Catalog for list. Pay attention to pre-reqs. Spread between first and second year. See link at the bottom of this page for a list.

4

Offered alt years. May be taken in year 2.

5

If not already completed.

6

Completed approved internship or certification is a required pre-req.

7

If not already completed. Offered alt years.

Prerequisites for the Two Year Plan

The following courses must be completed before coming to SPU in order to finish at SPU in two years.

| Code | Title | Credits |
|---|--|---------|
| Calculus Equivalent to SPU's | | |
| MAT 1234 | Calculus I | |
| MAT 1235 | Calculus II | |
| MAT 1236 | Calculus III | |
| Additional Math Equivalents to SPU's | | |
| MAT 2401 | Linear Algebra | |
| MAT 3237 | Differential Equations | |
| MAT 3238 | Vector Calculus | |
| Physics Equivalent to SPU's | | |
| PHY 1121 | Physics for Science and Engineering | |
| PHY 1122 | Physics for Science and Engineering | |
| PHY 1123 | Physics for Science and Engineering | |
| Chemistry Equivalent to SPU's | | |
| CHM 1310 | Survey of General Chemistry (or a similar class) | |
| | or CHM 1211 General Chemistry I | |

Engineering Courses Equivalent to SPU's

| | |
|----------|--|
| EGR 1501 | Computer Aided Design Applications for Engineers |
|----------|--|

| | |
|---------|---------|
| ME 2891 | Statics |
|---------|---------|

| | |
|---------|------------------------|
| ME 3310 | Mechanics of Materials |
|---------|------------------------|

| | |
|---------|----------|
| ME 3400 | Dynamics |
|---------|----------|

A Programming Course Equivalent to SPU's

| | |
|----------|------------------------------------|
| CSC 2230 | Computer Programming for Engineers |
|----------|------------------------------------|

or CSC 1230 Problem Solving and Programming

| | |
|------------------------------------|------------|
| A Circuits I Class with Lab | 0-5 |
|------------------------------------|------------|

Technical Electives List

See the Requirements (p. 1) tab for a complete list of technical electives.