

2024 - 2025 Major Map

Mechanical Engineering (Computational Mechanics), BSE

School/College: [Ira A. Fulton Schools of Engineering](#)
ESMAECBSE

| Term 1 0 - 16 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
|---|-------|---------------|---|
|  MAT 265: Calculus for Engineers I (MATH OR MA) | 3 | C | <ul style="list-style-type: none"> ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students. FSE 100 is required for first-year students and should be completed the first semester. Non-first year students: see advisor for petitioning replacement electives. If ENG 105 is taken, a 3 hour applicable elective must also be taken prior to graduation. See advisor. Prep for success using the First-Year Student Guide. Join a Fulton community. Explore engineering and technical professions. |
| ASU 101-MEE: The ASU Experience | 1 | | |
| FSE 100: Introduction to Engineering | 2 | C | |
| CHM 114: General Chemistry for Engineers (SCIT OR SQ) OR CHM 116: General Chemistry II (SCIT OR SQ) | 4 | C | |
| ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition | 3 | C | |
| Humanities, Arts and Design (HUAD) | 3 | | |
|  Minimum 2.00 GPA ASU Cumulative. | | | |
| Term hours subtotal: | 16 | | |

| Term 2 16 - 32 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
|---|-------|---------------|---|
|  PHY 121: University Physics I: Mechanics (SCIT OR SQ) | 3 | C | <ul style="list-style-type: none"> Create a Handshake profile. Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center. |
|  PHY 122: University Physics Laboratory I (SCIT OR SQ) | 1 | C | |
|  MAT 266: Calculus for Engineers II (MATH OR MA) | 3 | C | |
|  MAT 242: Elementary Linear Algebra | 2 | C | |
| MAE 215: Introduction to Programming in MATLAB | 1 | C | |
| ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition | 3 | C | |
| Sustainability (SUST) | 3 | | |
|  Complete ENG 101 OR ENG 105 OR ENG 107 course(s). | | | |
|  Minimum 2.00 GPA ASU Cumulative. | | | |
| Term hours subtotal: | 16 | | |

| Term 3 32 - 46 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
|---|-------|---------------|---|
|  MAE 201: Mechanics of Particles and Rigid Bodies I: Statics | 3 | C | <ul style="list-style-type: none"> Prep for success using the Sophomore Guide. |
|  MAT 267: Calculus for Engineers III (MATH OR MA) | 3 | C | |
|  MAT 275: Modern Differential Equations (MATH OR MA) | 3 | C | |
|  PHY 131: University Physics II: Electricity and Magnetism (SCIT OR SQ) | 3 | C | |

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|--|----|---|
| PHY 132: University Physics Laboratory II (SCIT OR SQ) | 1 | C |
| MAE 214: Computer-Aided Engineering I | 1 | C |
| Complete CHM 114 OR CHM 116 course(s). | | |
| Complete First-Year Composition requirement. | | |
| Minimum 2.00 GPA ASU Cumulative. | | |
| Complete Mathematics (MATH) requirement. | | |
| Term hours subtotal: | 14 | |

| Term 4 46 - 62 Credit Hours Critical course signified by ⚠ | Hours | Minimum Grade | Notes |
|---|-------|---------------|---|
| MAE 202: Mechanics of Particles and Rigid Bodies II: Dynamics | 3 | C | <ul style="list-style-type: none"> Pursue an undergraduate research experience. Apply for internships. Attend career fairs and events. |
| MAE 213: Mechanics of Materials | 3 | C | |
| MAE 241: Introduction to Thermodynamics | 3 | C | |
| EEE 202: Circuits I | 4 | C | |
| MAE 384: Advanced Mathematical Methods for Engineers (QTRS OR CS) | 3 | C | |
| Term hours subtotal: | 16 | | |

| Term 5 62 - 77 Credit Hours Necessary course signified by ★ | Hours | Minimum Grade | Notes |
|--|-------|---------------|--|
| MEE 322: Structural Mechanics | 3 | C | <ul style="list-style-type: none"> Plan for success using the Junior Guide Network at student organization competitions or professional societies. |
| MSE 250: Structure and Properties of Materials | 3 | C | |
| MAE 242: Introduction to Fluid Mechanics | 3 | C | |
| MAE 301: Applied Experimental Statistics | 3 | C | |
| CSE 100: Principles of Programming with C++ (QTRS OR CS) OR CSE 110: Principles of Programming (QTRS OR CS) | 3 | C | |
| Term hours subtotal: | 15 | | |

| Term 6 77 - 91 Credit Hours Necessary course signified by ★ | Hours | Minimum Grade | Notes |
|---|-------|---------------|---|
| MEE 342: Principles of Mechanical Design | 3 | C | <ul style="list-style-type: none"> Research and prepare for graduate school Apply for an engineering 4+1 program. Develop a professional profile online. Upper Division SOBE track course must be selected from the course list at the bottom of the major map. |
| MAE 318: System Dynamics and Control I | 3 | C | |
| MEE 323: Computer-Aided Engineering II | 2 | C | |
| MEE 340: Heat Transfer | 3 | C | |
| Upper Division SOBE Track Course | 3 | | |
| Term hours subtotal: | 14 | | |

| Term 7 91 - 106 Credit Hours Necessary course signified by ★ | Hours | Minimum Grade | Notes |
|--|-------|---------------|---|
| MEE 488: Mechanical Engineering Design I | 3 | C | <ul style="list-style-type: none"> For additional information regarding Upper Division Computational Mechanics Technical Electives, please go to: Upper Division Computational Mechanics Technical Electives. Plan for success using the Senior Guide. Use Handshake to apply for full-time positions. Complete an in person or virtual practice interview. |
| PHI 306: Applied Ethics (CIVI OR HU) | 3 | | |
| Complete 2 courses: Upper Division Computational Mechanics Technical Elective | 6 | C | |
| American Institutions (AMIT) | 3 | | |
| Term hours subtotal: | 15 | | |

| Term 8 106 - 120 Credit Hours Necessary course signified by ★ | Hours | Minimum Grade | Notes |
|---|-------|---------------|-------|
| MEE 489: Mechanical Engineering Design II | 3 | C | |

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|---|----|---|
| AEE 471: Computational Fluid Dynamics OR MAE 404: Finite Elements in Engineering OR MAE 460: Applied Computational Fluid Dynamics | 3 | C |
| JUS 334: Science, Technology and Inequality (GCSI OR C) | 3 | |
| MEE 491: Experimental Mechanical Engineering (L) | 2 | C |
| Humanities, Arts and Design (HUAD) | 3 | |
| Term hours subtotal: | 14 | |

- For additional information about Upper Division Computational Mechanics Technical Electives, please go to: [Upper Division Computational Mechanics Technical Electives](#).

Hide Course List(s)/Track Group(s)

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|--|--|
| Upper Division Computational Mechanics Technical Electives | Upper Division Social and Behavioral Sciences (SOBE) Track Courses |
| AEE 360: Aerodynamics (L) | PAF 311: Leadership and Change (SOBE OR SB) |
| AEE 471: Computational Fluid Dynamics | PAF 410: Building Leadership Skills (SOBE OR SB) |
| IEE 305: Information Systems Engineering | SWU 349: Stress Management Tools II (SOBE OR SB) |
| IEE 376: Operations Research Deterministic Techniques/Applications | SWU 350: Whole Person Health Across the Lifespan (SOBE OR SB) |
| MAE 404: Finite Elements in Engineering | POS 301: Empirical Political Inquiry (SOBE OR SB) |
| MAE 460: Applied Computational Fluid Dynamics | STS 304: Science, Technology and Society (SOBE OR SB) |
| MAE 501: Linear Algebra in Engineering | |
| MAE 502: Partial Differential Equations in Engineering | |
| MAT 420: Scientific Computing | |
| MAT 421: Applied Computational Methods (MATH OR CS) | |
| MAT 423: Numerical Analysis I (MATH OR CS) | |
| MAT 425: Numerical Analysis II (CS) | |
| MAT 451: Mathematical Modeling (CS) | |
| MAT 461: Applied Complex Analysis | |
| MSE 494: Intro to FEA for Matl Design and Characterization | |
| MSE 494: Semiconductor materials, devices, and fabrication | |
| By approval only: | |
| MAE 484: Internship | |
| MAE 492: Honors Directed Study | |
| MAE 493: Honors Thesis (L) | |
| MAE 499: Individualized Instruction | |

*Students who do not meet the enrollment requirements for these courses may be allowed to enroll with instructor consent. Courses not listed here require a program petition prior to enrollment. Please check with your advisor. A max of 3 credits from MAE 484/499 can be applied toward the TE requirements.

- **Total Hours:** 120
- **Upper Division Hours:** 45 minimum
- **University Undergraduate Graduation Requirements**

Notes:

Mathematics Placement Assessment score determines placement in first mathematics course.

General Studies designations listed next to courses on the major map were valid for the 2024 - 2025 academic year. Please refer to the course catalog for current General Studies designations at time of class registration. General Studies credit is applied according to the designation the course carries at the time the class is taken.