|  |  |  |
| --- | --- | --- |
| **MSE** | **Material Science Engineering**  Plan of Study: **Sophomore** Year Start University of Washington  <https://mse.washington.edu/student/undergraduate> Email: [askmse@uw.edu](mailto:askmse@uw.edu)  **Schedule an Advising Appointment:**  <https://mse.washington.edu/student/undergraduate/advising> | **Key**  **** = Admission Requirements – to be completed before applying at the end of Winter quarter Sophomore year |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Mathematics (24cr total required)** |  |  |  |  |
| **MATH 124, 125, 126 - Calculus with Analytical**  **Geometry I, II, III (15cr) or honors equivalents** |  |  | AMATH 301 - Beginning Scientific Computing(4cr) [pr:  MATH 125) OR CSE 142 - Computer Programming I (4cr) OR CSE 122 - Intro to Computer Programming II (4cr) |  |
| MATH 207/307 - Introduction to Differential Equations (3cr)  [pr: MATH 125] or Honors Calculus sequence |  |  | Eight credits from the Eng. Fund Elective list at https://mse.washington.edu/current/undergrad/courses |  |
| MATH 208/308 - Matrix Algebra with Applications (3cr)  [pr: MATH 126] or Honors Calculus sequence |  |  | **Departmental Core (51cr)** |  |
| **One course from the following:**  IND E 315; STAT 390; MATH 209/309; MATH 224/324; MATH 318. |  |  | MSE 311 – Integrated Undergraduate Lab. I (3cr) |  |
| Students who complete the honors calculus sequence will need  to complete additional MATH/STAT/INDE courses to reach 24 credits. |  |  | MSE 312 – Integrated Undergraduate Lab. II (3cr) |  |
| **Sciences (31cr required)** |  |  | MSE 313 – Integrated Undergraduate Lab III (3cr) |  |
| **CHEM 142 - General Chemistry (5cr) or honors/accel**  **equiv** |  |  | MSE 310 – Introduction to MSE (3cr) |  |
| CHEM 152 - General Chemistry (5cr) or honors/accel equiv |  |  | MSE 321 – Thermodynamics and Phase Equilibrium (4cr) |  |
| **PHYS 121/141 - Mechanics (5cr)** |  |  | MSE 331 – Crystallography and Structure (3cr) |  |
| PHYS 122/142 - Electromagnetism (5cr) [pr: MATH 125] |  |  | MSE 399 – Undergraduate Research Seminar (1cr) |  |
| PHYS 123/143 - Waves (5cr) [pr: MATH 126] |  |  | MSE 322 – Kinetics and Microstructural Evolution (4cr) |  |
| Two elective courses: From science elective list at  <https://mse.washington.edu/current/undergrad/courses> |  |  | MSE 342 – Materials Processing I (3cr) |  |
| **Engineering General Education Requirements (36cr)** |  |  | MSE 351 – Electronic Properties of Materials (3cr) |  |
| *Written and Oral Communication(12cr):* |  |  | MSE 333 – Materials Characterization (3cr) |  |
| **** **English Composition (5cr)** |  |  | MSE 352 – Functional Properties of Materials I (3cr) |  |
|  |  |  | MSE 362 – Mechanical Behavior of Materials I (3cr) |  |
| MSE 311, MSE 312, MSE 313 as W courses (7 cr requirement) |  |  | MSE 442 – Materials Processing II (3cr) |  |
| *Areas of Inquiry (24cr):* |  |  | MSE 493 – Introduction to Materials Design (1cr) |  |
| Arts & Humanities (A&H) (10cr) |  |  | MSE 494 – Design in Materials Engineering I (2cr) |  |
| Social Sciences (SSc) (10cr) |  |  | MSE 431 – Failure Analysis and Durability of Materials  (3cr) |  |
| A&H **OR** SSc (4cr) |  |  | MSE 495 – Design in Materials Engineering II (3cr) |  |
| Diversity-DIV (5cr) – (choose an overlap with A&H/SSc course) |  |  | **MSE Technical Electives (15cr)** |  |
| **Engineering Fundamentals (24cr)** |  |  | See <https://mse.washington.edu/current/undergrad/courses>  for list of eligible courses. |  |
| AA 210 - Engineering Statics (4cr) [pr: MATH 126; PHYS 121] |  |  | Wondering what technical electives to select? Check out MSE Concentration Areas: |  |
| CEE 220 - Intro to Mechanics of Materials (4cr) [pr: AA  210] |  |  | https://mse.washington.edu/current/undergrad/concentratio n-areas |  |
| MSE 170 – Fundamentals of Materials Science (4cr) [pr: CHEM 142] |  |  | **Total credits required for graduation: 180 cr** |  |

|  |  |  |
| --- | --- | --- |
| **MSE** | **Material Science Engineering**  Plan of Study: **Sophomore** Year Start University of Washington  <https://mse.washington.edu/student/undergraduate> Email: [askmse@uw.edu](mailto:askmse@uw.edu) | **Materials Science & Engineering Advising**  Office: 302B Roberts Hall, Box 352120 Seattle, WA 98195-2120  Phone: (206) 685-4922  **Schedule an Advising Appointment**: <https://mse.washington.edu/student/undergraduate/advising> |

This is a sample four-year plan for ENGRUD students who start in MSE Autumn quarter of Sophomore year.

\*\*Student completing the Nanoscience and Molecular Engineering (NME) degree option must enroll in NME 220 during Spring sophomore to declare before Autumn of the following academic year.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Freshman** | **Autumn Quarter** | **Cr** | **Winter Quarter** | **Cr** | **Spring Quarter** | **Cr** |
| **** **MATH 124 – Calculus with Analytical Geometry I** | 5 | **** **MATH 125 – Calculus with Analytical Geometry**  **II** | 5 | **** **MATH 126 – Calculus with Analytical Geometry III** | 5 |
| **** **CHEM 142 – General Chemistry** | 5 | CHEM 152 – General Chemistry | 5 | **** **PHYS 121 – Mechanics** | 5 |
| **** **English Composition** | 5 | A&H/SSc | 5 |
| ENGR 101 (ENGRUD only) | 1 |  |  | MSE 170 – Fundamentals of  Materials Science | 4 |
| **Qtr. Total:** | **15-16** | **Qtr. Total:** | **15** | **Qtr. Total:** | **14** |
| **Sophomore** | **Autumn Quarter** | **Cr** | **Winter Quarter** | **Cr** | **Spring Quarter \*\*** | **Cr** |
| PHYS 122 –  Electromagnetism | 5 | PHYS 123 – Waves | 5 | MATH 207/307 – Differential Equations | 3 |
| AMATH 301 – Sci Computing  (OR CSE 142 Programming I OR CSE 122 Intro to Programming II) | 4 | A&H/SSc | 5 | CEE 220 – Mechanics of Materials  [**Course Prereq. is AA 210**] | 4 |
| A&H/SSc | 4 | AA 210 – Engineering Statics | 4 | A&H/SSc | 5 |
| MSE 311 – Integrated Undergraduate Lab I | 3 | MSE 312 – Integrated Undergrad Lab II | 3 | MSE 313 – Integrated Undergrad Lab III | 3 |
| **Qtr. Total:** | **16** | **Qtr. Total:** | **17** | **Qtr. Total:** | **15** |
| **Junior** | **Autumn Quarter** | **Cr** | **Winter Quarter** | **Cr** | **Spring Quarter \*\*** | **Cr** |
| MSE 310 – Introduction to MSE | 3 | MSE 322 – Kinetics & Microstructural Evolution | 4 | MSE 333 – Materials Characterization | 3 |
| MSE 321 – Thermodynamics & Phase Equilibrium | 4 | MSE 342 – Materials Processing I | 3 | MSE 352 – Functional Properties  of Materials | 3 |
| MSE 331 – Crystallography &  Structure | 3 | MSE 351 – Electron  Properties of Materials | 3 | MSE 362 – Mechanical Behavior of Materials I | 3 |
| MSE 399 – UG Research Seminar | 1 | Science Elective | 3 | MATH Elective | 3 |
| MATH 208/308 – Matrix Algebra | 3 |  |  |  |  |
|  |  |  |  |  |  |
| **Qtr. Total:** | **14** | **Qtr. Total:** | **13** | **Qtr. Total:** | **12** |
| **Senior** | **Autumn Quarter** | **Cr** | **Winter Quarter** | **Cr** | **Spring Quarter \*\*** | **Cr** |
| MSE 442 – Materials Processing II | 3 | MSE 431 – Failure Analysis [**Course Prereq. is CEE 220**] | 3 | MSE 495 – Materials Design II | 3 |
| MSE 493 – Introduction to Materials Design | 1 | MSE 494 – Materials Design II | 2 | MSE Technical Elective | 3 |
| MSE Technical Elective | 3 | MSE Technical Elective | 3 | Science Elective | 3 |
| MSE Technical Elective | 3 | MSE Technical Elective | 3 | A&H/SSc | 5 |
| Engineering Elective | 4 | Engineering Elective | 4 |  |  |
|  |  |  |  |  |  |
| **Qtr. Total:** | **14** | **Qtr. Total:** | **15** | **Qtr. Total:** | **14** |

Updated Jan. 2025