# B.S. IN MATERIALS SCIENCE & ENGINEERING

## CATALOG YEAR 2021-2022

Below is the *advised sequence* of courses for this degree program and prerequisites as of 12/18/20.
The official degree requirements and prerequisites found in the University General Catalog and the prerequisites are subject to change.

| COURSE NUMBER AND TITLE | UNITS | PREREQUISITES |
|---|---|---|
| **1ST SEMESTER** | | |
| MATH 122 A/B or MATH 125 Calculus I with Applications | 5/3 | Appropriate Math Placement |
| CHEM 151 General Chemistry I or CHEM 161/163 | 4 | Appropriate Math Placement |
| ENGL 101 or 107 or 109H First-Year Composition | 3 | |
| ENGR 102A/B Introduction to Engineering or ENGR 102 | 3 | ENGR102A: MATH 112; ENGR102B: Concurrently enrolled or completion of MATH 122B or 125; FR & SOPH Status |
| Tier I General Education | 3 | |
| Semester Total | **18/16** | |
| **2ND SEMESTER** | | |
| MATH 129 Calculus II | 3 | MATH 122B or 125 with C or better |
| MSE 110 Solid State Chemistry | 4 | CHEM 151 or 161/163 |
| PHYS 141 Introductory Mechanics or PHYS 161H | 4 | MATH 122B or 125 or appropriate Math Placement Level |
| ENGL 102 or 108 First-Year Composition | 3 | ENGL 101 or ENGL 107 |
| Tier I General Education | 3 | |
| Semester Total | **17** | |
| **3RD SEMESTER** | | |
| MSE 222 Introduction to Materials Science and Engineering I – Fall Only | 3 | CHEM 151; MSE 110 or CHEM 152; MATH 122B or MATH 125 |
| MATH 223 Vector Calculus | 4 | MATH 129 with C or better |
| PHYS 241 Introductory Electricity and Magnetism or PHYS 261H | 4 | For PHYS 241 or 261H: PHYS 141 or 161H; MATH 129 or appropriate Math Placement Level |
| MSE 280 Introduction to Computer Methods in MSE – Fall Only | 2 | MATH 129; MSE 110 or consult with department |
| Tier 1 General Education | 3 | |
| Semester Total | **16** | |
| **4TH SEMESTER** | | |
| MSE 223R Introduction to Materials Science and Engineering II - Spring Only | 3 | MSE 222 or 331R |
| MSE 223L Materials Processing Laboratory - Spring Only | 2 | |
| MSE 345 Thermodynamics - Spring Only | 4 | MATH 129, CHEM 151; MSE 110 or CHEM 152 or Department Consent |
| MATH 254 Intro to Ordinary Differential Equations | 3 | MATH 129 or 223 with C or better |
| Tier I General Education | 3 | |
| Semester Total | **15** | |

| COURSE NUMBER AND TITLE | UNITS | |
|---|---|---|
| **CURRENT PREREQUISITES FOR UPPER DIVISION COURSES CAN BE FOUND IN THE UA GENERAL CATALOG** | | |

| COURSE NUMBER AND TITLE | UNITS |
|---|---|
| **ADVANCED STANDING IS REQUIRED FOR 3XX AND 4XX COURSES (SEE ADVISOR FOR REQUIREMENTS)** | |
| **5TH SEMESTER** | |
| MSE Technical Elective – See major advisor for course approval | 3 |
| Math Elective – See major advisor for course approval | 3 |
| MSE 370 Mechanical Behavior of Materials – Fall Only | 3 |
| ECE 207 Elements of Electrical Engineering | 3 |
| MSE 365 Physical Properties of Materials – Fall Only | 3 |
| Semester Total | **15** |
| **6TH SEMESTER** | |
| MSE 360L Materials Lab – Spring Only | 1 |
| MSE Technical Elective – See major advisor for course approval | 3 |
| MSE 480 Advanced Characterization Methods in MSE – Spring Only | 3 |
| MSE 415 Transport Phenomena & Kinetics in Materials Processing – Spring Only | 4 |
| Advanced Science Elective – See major advisor for course approval | 3 |
| Semester Total | **14** |
| **7TH SEMESTER** | |
| ENGR 498A Cross-disciplinary Design (Fall Only) – Senior Status or MSE 498 Senior Capstone | 3 |
| MSE Technical Elective – See major advisor for course approval | 3 |
| Technical Elective – See major advisor for course approval | 3 |
| Technical Elective – See major advisor for course approval | 3 |
| Tier II General Education | 3 |
| Semester Total | **15** |
| **8TH SEMESTER** | |
| ENGR 498B Cross-disciplinary Design (Spring Only) – Senior Status or MSE 498 Senior Capstone | 3 |
| MSE Technical Elective – See Advisor for Course Approval | 3 |
| Technical Elective – See major advisor for course approval | 3 |
| Technical Elective – See major advisor for course approval | 3 |
| Tier II General Education | 3 |
| Semester Total | **15** |

*Tier I and II General Education Courses must meet University general education requirements. One course must be recognized by the university as meeting the Diversity Requirement.