

# BESA-Materials Science & Engineering

Spring 2022

## Bachelor of Engineering Studies and Arts (BESA)

### College of Engineering (ENG) Concentration in Materials Science & Engineering

**99 units (minimum)**

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#### **Mathematics & Science Prerequisites**

21-120	Differential and Integral Calculus (Gen Ed)	10
21-122	Integration and Approximation (Gen Ed)	10
21-254	Linear Algebra and Vector Calculus for Engineers	11
21-260	Differential Equations	9
15-110	Principles of Computing	10
33-141	Physics I for Engineering Students (Gen Ed)	12
33-142	Physics II for Engineering and Physics Students	12
09-105	Introduction to Modern Chemistry I	10

#### **Materials Science & Engineering Courses**

**72 units**

27-100	Engineering the Materials of the Future (Freshman year; co-req: 21-120, 33-141)	12
xx-xxx	2 <sup>nd</sup> Introduction to Engineering course, student's choice	12
27-211	Structure of Materials * (Fall, Sophomore year)	6
27-212	Defects in Materials * (Spring, Sophomore year)	6
27-215	Thermodynamics of Materials (Fall, Sophomore year; co-req: 27-100, 21-259)	12
27-216	Transport in Materials (Spring, Sophomore year; prereq: 27-215)	9
27-227	Phase Relations and Diagrams * (Spring, Sophomore year)	9
27-357	Introduction to Materials Selection (Spring, Sophomore year)	6

\* In consultation with the concentrations advisor, students may choose to complete the version of the course with lab component.

#### **Electives**

**27 units minimum**

Choose 3 elective courses in MSE and/or ENG with prerequisites in consultation with the concentration advisor.

#### **BESA Free Electives**

Take any Carnegie Mellon course. A maximum of 9 units of physical education and/or military science may be counted toward this requirement.