Materials Science and Engineering (Nanotechnology Emphasis) – Program Map – 2021 – 22 (Math 005)

This guide is an unofficial document intended to be used for advising/course planning only. This document cannot be used to supersede or waive requirements listed in the UCM Catalog unless approved by your advisor.

Legend:
- - - - → Co-requisite
——→ Prerequisite

First Year
- Math 005 – Preparatory Calculus
- SPRK 001 – Spark Seminar
- CHEM 001 – Prep Chemistry
- WRI 001 – Academic Writing
- MATH 021 – Calc for Sci & Engr
- PHYS 008 & Lab – Intro Physics I
- CHEM 002 – Intro to Chem I
- WRI 010 – College Wri & Comp

Semester 3
- MATH 022 – Calc II for Sci & ENGR
- PHYS 009 & Lab – Intro Phys II
- ENGR 057 – Statics & Dynamics
- Computing Requirement: Choose ME 021 or BIOE 021
- ENGR 191 – Professional Sem.

Semester 4
- MATH 024 – Lin Algebra/Diff Equations
- MATH 023 – Vector Calculus
- ENGR 045 – Intro to Materials
- Bio/ESS Requirement

Choose one from: **ESS 001**, BIO 005, ESS 005

Global Awareness Badge: (Recommend: ESS 001)

Semester 5
- ENGR 130 – Thermodynamics
- MATH 032 – Probability & Stats
- ENGR 120 – Fluid Mechanics
- MSE 109 – Materials Thermo

For Nanotech emphasis Technical Elective requirements, choose one from: MSE 114, MSE 121 or MSE 195.

Semester 6
- MSE 113 – Mat. Characterization
- ENGR 151 – Strength of Materials
- MSE 112 – Mat. Select & Perform
- MSE 110 – Solid Stae Materials Prop

MSE 119 offered every other fall, next offer Fall 2022.

MSE 121 offered every other fall, next offer Fall 2021.

Semester 7
- MSE 111 – Kinetics and Process
- ENGR 170 or MSE 119 – Intro to Electron Micro or Materials Simulations
- MSE 118 – Introduction to Nanotechnology & Nanoscience
- Social Science, Arts, and Humanities GE

- Fall Only
- Spring Only

Semester 8
- Technical Elective
- MSE 126 – Nanodevice Fabrication, Bridging Research & Education
- ENGR 193 – Engineering Capstone Design I
- ENGR 155 – Engr Econ Analysis

Semester 9
- Social Science, Arts, and Humanities GE
- Crossroads
- ENGR 194 – Engineering Capstone Design II
- Social Science, Arts, and Humanities GE

Intellectual Badge Completion:
To complete badges, students must overlap Social Science, Arts, and Humanities GE's with badge categories. See page 2.

General Education Requirements – PAY ATTENTION TO

Crossroads – There is a place holder for this course. You will need to select a course.

AREA B: Social Science, Arts and Humanities. Students must take three courses in the area of Social Science, Arts and Humanities. At least one course must be from Social Science and one course must be from Arts and Humanities.
- Social Science – There is a place holder for this course. You will need to select a course. Cross with Intellectual Experience Badges.
- Arts and Humanities – There is a place holder for this course. You will need to select a course. Cross with Intellectual Experience Badges.
- Social Science, Arts and Humanities – There is a place holder for this course. You will need to select a course. Cross with Intellectual Experience Badges.

Intellectual Experience Badges – One course can count for a maximum of two badges.

	Intellectual Experience Badge Breakdown to Maximize Graduation Requirements & Required Courses								
	ONE COURSE CAN SATISFY A MAXIMUM OF TWO BADGES								
	Scientific Method	**Literary and Textual Analysis**	**Media and Visual Analysis**	**Quantitative and Numerical Analysis**	**Societies and Cultures of the Past**	**Diversity and Identity**	**Global Awareness**	**Sustainability**	**Ethics**
MSE	Completed with Major Requirements	**Take one class that overlaps with SSHA GE**	**Take one class that overlaps with SSHA GE**	Completed with Major Requirements	**Take one class that overlaps with SSHA GE**	**Take one class that overlaps with SSHA GE**	**Take ESS 001 (counts in major towards engr sci)**	Completed with Major Requirements	Completed with Major Requirements

Suggested Courses to overlap Social Science, Arts and Humanities courses and Intellectual Experience Badges
- **Social Science** – ANTH 003, COGS 005, SPAN 050
- **Arts and Humanities** – CCST 060, CHN 004, CRES 001, CRES 020, CRES 027, ENG 011, ENGR 018, ENG 020, ENG 021, ENG 032, ENG 033, ENG 056, ENG 066, ENG 067, FRE 003, FRE 004, GASP 006, GASP 007, GASP 059, GASP 060, HIST 010, HIST 011, HIST 016, HIST 017, HIST 039, HIST 040, HIST041, HIST 042, HIST 055, HIST 060, HIST 070, HIST 071, JPN 003, JPN 004, PHIL 002, SPAN 003, SPAN 004, SPAN 010, SPAN 011, SPAN 050, SPAN 060
- **Social Science, Arts and Humanities** – Select a Social Science, Arts, and Humanities course.

Subject to availability and updating, always check your Audit.