

## CHEMISTRY: MATERIALS & NANOSCIENCE SPECIALIZATION (CMN)

This track integrates chemistry and engineering, emphasizing materials chemistry, nanotechnology, and computational science. For simplicity, the recommended path through the major is presented. See advising worksheet for alternative paths that satisfy this major's requirements.

### Core Chemistry Courses

1. General Chemistry with Quantitative Analysis (2 semesters)
  - o Recommended: CH109 + CH110
  - o **or** CH101 + CH102 + CH201(2 units) **or** CH101 + CH116 + CH201(2 units)
2. Organic Chemistry with Qualitative Analysis (2 semesters)
  - o Recommended: CH211 + CH212
  - o **or** CH203 + CH214 **or** CH203 + CH204 + CH220(2 units)
3. Inorganic Chemistry (1 semester)
  - o CH232 (spring)
4. Mathematical Methods for Molecular Science (1 semester)
  - o CH225 (fall)
5. Physical Chemistry (3 semesters)
  - o CH351 – Physical Chemistry I: Quantum Mechanics (spring)
  - o CH352 – Physical Chemistry II: Statistical Thermodynamics (fall)
  - o CH354 – Physical Chemistry Laboratory (spring)

### Required Related Courses

1. General Physics (2 semesters, calculus-based)
  - o Recommended: PY211 + PY212 **or** PY251 + PY252
2. Calculus (2 semesters)
  - o MA123 + MA124

### Specialization Courses

1. Introduction to Materials Science (1 semester)
  - o ENG ME306 (both semesters)
2. Materials & Nanoscience Breadth Requirement (choose 2, all offered in the spring):
  - o CH550, CH551, or ENG EK481
3. Advanced Electives (2 semesters)
  - o See [the bulletin](#) for approved options

**Sample 4-Year Plan**

Year	Fall Semester	Spring Semester	Notes
<b>First</b>	CH109*, MA123, Language 1, CC101/WR120	CH110*, MA124, Language 2 WR15x	CH225 may be taken in Fall of Year 1 if MA124 is complete. CH195 is not required, but it is a good way to get oriented in the major and meet other aspiring chemists.
	<b><u>Optional</u></b> CH195/FY101		
<b>Second</b>	CH211*, CH225, PY211*, Language 3	CH212*, CH232*, PY212*, Language 4	Some students delay CH232 to avoid three lab courses in one semester.
<b>Third</b>	CH352, ENG ME306, Open/HUB x2	CH351, CH354*, CMN Breadth #1, Open/HUB	Materials coursework begins in junior year.
<b>Fourth</b>	CH401/461/Open, CMN Elective #1, Open/HUB x2	CH402/462/Open, CMN Breadth #2, CMN Elective #2, Open/HUB	Research or ENG MS/BE electives complete the specialization
		<b><u>Optional</u></b> SY101	

\* = laboratory course