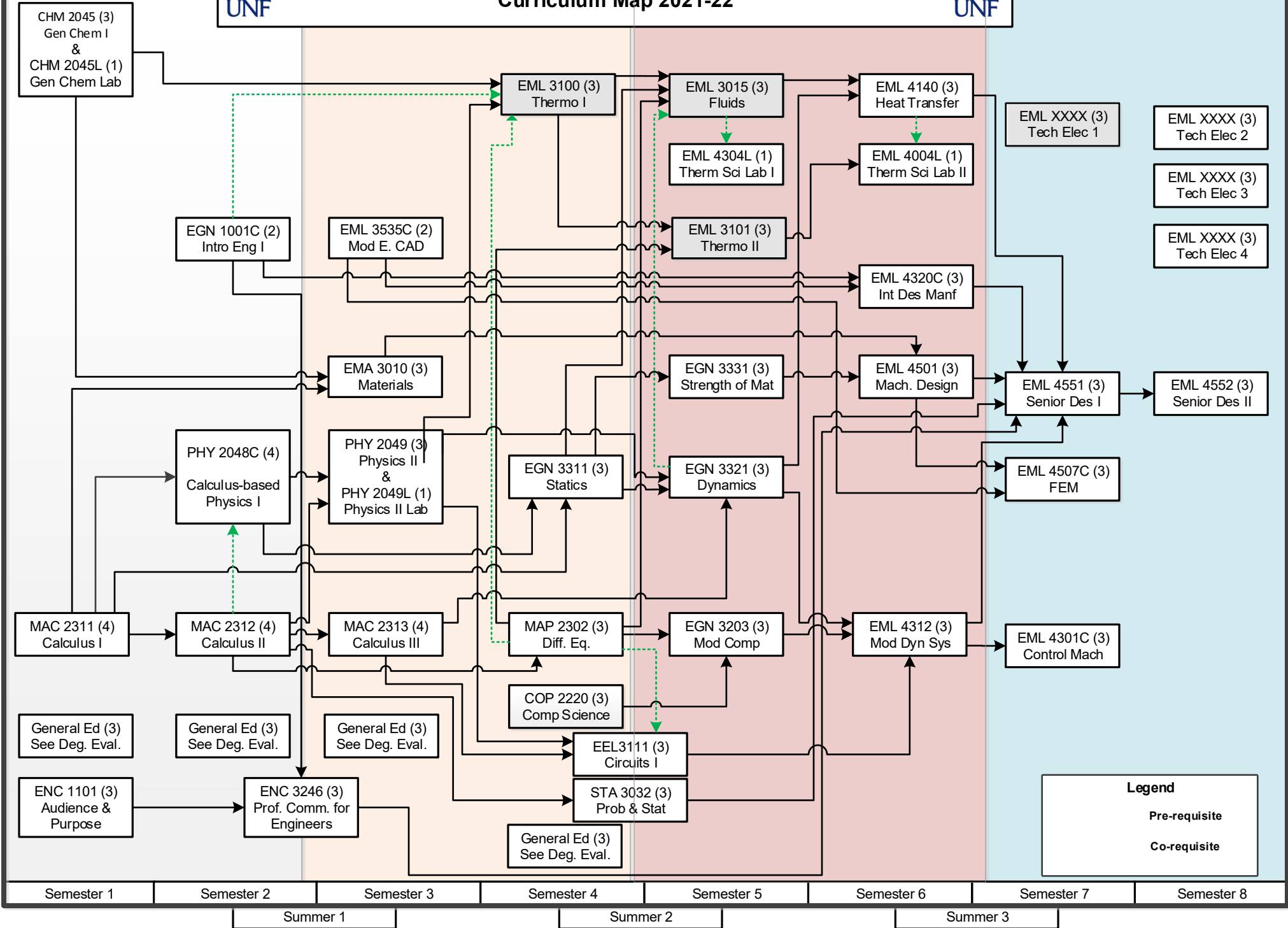




# Bachelors of Science in Mechanical Engineering Curriculum Map 2021-22



**Legend**

- Pre-requisite
- Co-requisite

# Bachelors of Science in Mechanical Engineering

## 4-Year Curriculum Map for 2021-2022

The page presents a flowchart of required courses arranged in 4 evenly sized vertical boxes. Each vertical box represents one year of the standard four-year curriculum and contains two columns representing the two semesters within each year. Semesters are identified by number indicated by labels at the bottom of each column. From left to right:

- The first column represents Year 1 and contains 2 columns of courses for Semester 1 and Semester 2 respectively
- The second column represents Year 2 and contains 2 columns of courses for Semester 3 and Semester 4 respectively
- The third column represents Year 3 and contains 2 columns of courses for Semester 5 and Semester 6 respectively
- The fourth column represents Year 4 and contains 2 columns of courses for Semester 7 and Semester 8 respectively
- Courses staggered across two vertical boxes indicate summer semesters listed in between the colored rectangles represent summer terms (Summer 1, 2 & 3 respectively)

Each box in the flowchart represents a single course, and contains the course prefix and number, number of credit hours and an abbreviate course title. Lines between the boxes define the relationship between the courses (pre-requisite, co-requisite, or non-engineering general education courses). A legend is provided to explain how colored lines (red and green) are used to indicate a prerequisite vs co-requisite relationship. The relationship indicated by the lines and their colors is fully described below:

### Courses in Year 1, Semester 1:

- CHM 2045 – General Chemistry I (3 credit hours)
  - Taught by another department
- CHM 2045L – General Chemistry I Lab (1 credit hour)
  - Taught by another department
- MAC 2311 – Calculus I (4 credit hours)
  - Prerequisite MAC 1147 (Precalculus)
  - Taught by another department
- ENC 1101 – Rhetoric and Writing (3 credit hours)
  - Taught by another department
- General Education Requirement, non-engineering course (3 credit hours)
  - Taught by another department – see degree evaluation for details

### Courses in Year 1, Semester 2:

- EGN 1001C – Introduction to Engineering I (2 credit hours)
  - Co-requisite course MAC 2311 (Precalculus) or any higher-level MAC course (2xxx)
- PHY 2048C – Calculus-based Physics I (4 credit hours)
  - Taught by another department
  - Pre-requisite course MAC 2311 (Calculus I)
  - Co-requisite course MAC 2312 (Calculus II)
- MAC 2312 – Calculus II (4 credit hours)
  - Taught by another department
  - Prerequisite MAC 2311 (Calculus I)
- General Education Requirement, non-engineering course (3 credit hours)
  - Taught by another department – see degree evaluation for details

### Course in Summer 1, Between Year 1 and Year 2:

- ENC 3246 – Professional Communications for Engineers (3 credit hours)
  - Taught by another department

**Courses in Year 2, Semester 3:**

- EML 3535C – Modern Engineering CAD (2 credit hours)
- EMA 3010 – Introduction to Materials Science and Engineering (3 credit hours)
  - Prerequisite course CHM 2045 (General Chemistry I), CHM 2045L (General Chemistry I Lab), and MAC 2311 (Calculus I)
- PHY 2049 – Calc-based Physics II (3 credit hours)
  - Taught by another department
  - Prerequisite PHY 2048C (Calc-based Physics I), and MAC 2312 (Calculus II)
- PHY 2049L – Calculus-based Physics II Lab
  - Taught by another department
  - Co-requisite PHY 2049 (Calculus-based Physics II)
- MAC 2313 – Calculus III (4 credit hours)
  - Taught by another department
  - Prerequisite MAC 2312 (Calculus II)
- General Education Requirement, non-engineering course (3 credit hours)
  - Taught by another department – see degree evaluation for details

**Courses in Year 2, Semester 4:**

- EML 3100 – Thermodynamics I (3 credit hours)
  - Prerequisite CHM 2045 (General Chemistry I), CHM 2045L (General Chemistry I Lab), PHY 2049 (Calc-based Physics II), and PHY 2049L (Calculus-based Physics II Lab)
  - Co-requisite EGN 1001C (Introduction to Engineering I) and MAP 2302 (Differential Equations)
- EGN 3311 Statics (3 credit hours)
  - Prerequisite MAC 2311 (Calculus I), PHY 2048C (Calc-based Physics I)
- MAP 2302 – Differential Equations (3 credit hours)
  - Taught by another department
  - Prerequisite MAC 2312 (Calculus II)
- COP 2220 – Programming I (3 credit hours)
  - Taught by another department
- General Education Requirement, non-engineering course (3 credit hours)
  - Taught by another department – see degree evaluation for details

**Courses in Summer 2, Between Year 2 and Year 3:**

- EEL 3111 – Circuit Analysis I (3 credit hours)
  - Prerequisite PHY 2049 (Calc-based Physics) and MAC 2313 (Calculus III)
  - Co-requisite MAP 2302 (Differential Equations)
- STA 3032 – Probability and Statistics for Engineers (3 credit hours)
  - Taught by another department
  - Prerequisite MAC 2312 (Calculus II)

**Courses in Year 3, Semester 5:**

- EML 3015 – Fluids (3 credit hours)
  - Prerequisite EML 3100 (Thermodynamics I), EGN 3311 (Statics), and MAP 2302 (Differential Equations)
  - Co-requisite EGN 3321 (Dynamics)
- EML 4304L – Thermal Sciences Laboratory I (1 credit hour)
  - Co-requisite EML 3015 (Fluids)
- EML 3101 – Thermodynamics II (3 credit hours)
  - Prerequisite EML 3100 (Thermodynamics I) and MAP 2302 (Differential Equations)
- EGN 3331 – Strength of Materials (3 credit hours)
  - Prerequisite EGN 3311 (Statics)
- EGN 3321 – Dynamics (3 credit hours)
  - Prerequisite EGN 3311 (Statics), PHY 2049 (Calc-based Physics II), PHY 2049L (Calculus-based Physics II Lab), and MAC 2313 (Calculus III)
- EGN 3203 – Modern Computation Methods (3 credit hours)
  - Prerequisite MAP 2302 (Differential Equations) and COP 2220 (Programming I)

**Courses in Year 3, Semester 6:**

- EML 4140 – Heat Transfer (3 credit hours)
  - Prerequisite EML 3015 (Fluids) and EGN 3321 (Dynamics)
- EML 4004L – Thermal Sciences Lab II (1 credit hour)
  - Prerequisite EML 3101 (Thermodynamics II) and EML4301L (Thermal Sciences Lab I)
  - Corequisite EML 4140 (Heat Transfer)
- EML 4320C – Integrated Design and Manufacturing (3 credit hours)
  - Prerequisite EGN 1001C (Introduction to Engineering I) and EML 3535C (Modern Engineering CAD)
- EML 4501 – Machine Design (3 credit hours)
  - Prerequisite EGN 3331 (Strength of Materials) and EMA 3010 (Introduction to Materials Science and Engineering)
- EML 4312 – Modeling and Analysis of Dynamic Systems
  - Prerequisite EGN 3321 (Dynamics), EGN 3203 (Modern Computation Methods), and EEL 3111 (Circuits I)

**Courses in Year 4, Semester 7:**

- EML 4551 – Senior Capstone Design I (3 credit hours)
  - Prerequisite EML 4140 (Heat Transfer), EML 4320C (Integrated Design and Manufacturing), EML 4501 (Machine Design), STA 3032 (Probability and Statistics for Engineers), ENC 3246 (Professional Communications for Engineers), and EML 4312 (Modeling and Analysis of Dynamic Systems)
- EML 4507C – Finite Element Model/Analysis (3 credit hours)
  - Prerequisite EML 3535C (Modern Engineering CAD) and EML 4501 (Machine Design)
- EML 4301C – Control of Machinery
  - Prerequisite EML 4312 (Modeling and Analysis of Dynamic Systems)
- EML XXXX – Technical Elective 1 (3 credit hours)
  - See course catalog for details

**Courses in Year 4, Semester 8:**

- EML 4552 – Senior Capstone Design II (3 credit hours)
  - Prerequisite EML 4551 (Senior Capstone Design I)
- EML XXXX – Technical Elective 2 (3 credit hours)
  - See course catalog for details
- EML XXXX – Technical Elective 3 (3 credit hours)
  - See course catalog for details
- EML XXXX – Technical Elective 4 (3 credit hours)
  - See course catalog for details