

ROADMAP TO YOUR GRADUATION

Metallurgical & Materials Engineering Curriculum – BS MTE Degree – Revised 2023-- Effective Spring 2024

126 hrs total

30

34

33

29

FRESHMAN YEAR

SOPHOMORE YEAR

JUNIOR YEAR

SENIOR YEAR

Pre

Fall
16 hrs

Spring
14 hrs

Fall
17 hrs

Spring
17 hrs

Fall
16 hrs

Spring
17 hrs

Fall
14 hrs

Spring
15 hrs

MA 005 (3)
Remedial
Mathematics

CH 101 (4) * N
General Chemistry 1
Placement = MA 115/125
CH 100 (5) if MA placement
is MA 112

CH 102 (4) * N
General Chemistry 2
Pre-reqs. = CH 100/101/117

PH 105 (4) * N
General Physics with
Calculus 1
Pre-reqs. = MA 125/145

PH 106 (4) * N
General Physics with
Calculus 2
Pre-reqs. = PH 105/125, MA
126/146

ADV. MATH (3) ¹

MA 100 (3)
Intermediate
Algebra

MA 125 (4) *
Calculus 1
Pre-reqs. = See catalog

MA 126 (4) *
Calculus 2
Pre-reqs. = MA 125/145

MA 227 (4)
Calculus 3
Pre-reqs. = MA 126/146

MA 238 (3)
Differential Equations 1
Pre-reqs. = MA 126/146
Co-req. = MA227/247

AEM 250 (3)
Mechanics of Materials
Pre-reqs. = MA 126/146,
AEM 201

MTE 455 (4)
Mechanical Behavior of
Materials
Pre-reqs. = AEM 250

MTE 481 (4) W *
Analytical Methods for
Materials
Pre-reqs. = MTE 271
Co-req. = MTE 275

MA 112 (3)
Precalculus Algebra
Pre-reqs. = See catalog

ENGR 103 (3)
Engineering
Foundations
Co-reqs. = MATH 125/145

AEM 201 (3)
Statics
Pre-reqs. = MA 125/145,
PH 105/125, ENGR 103

MTE 443 (3) #
Materials Engineering
Design 1
Pre-reqs. = EC 110, MTE
362, 373, 380
Co-reqs. = MTE 481

MTE 445 (3) #
Materials Engineering
Design 2
Pre-reqs. = MTE 316, 441,
443, 455, 481

MA 113 (3)
Precalculus Trig
OR
MA 115 (3)
Precalc Alg. & Trig

ENGR 161 (1)
Small-Scale
Engineering
Graphics
Co-reqs. = ENGR 103

MTE 271 (3)
Engineering
Materials 1
Pre-reqs. = CH 101/117,
MA 125/145

MTE 362 (4) C
Thermodynamics of
Materials
Pre-reqs. = MTE 252 or
CHE 254

MTE 373 (4) W
Physical Metallurgy
Pre-reqs. = MTE 271, 362

MTE 380 (3) ##
Synthesis, Processing
and Manufacturing of
Materials
Pre-reqs. = MTE 316,
AEM 250

MTE 121 (1) ‡
Introduction to
Metallurgical
Engineering

EN 102 (3) * FC
English
Composition 2
Pre-reqs. = EN 101

MTE 252 (3) *
Metallurgical Process
Calculations
Pre-reqs. = CH 102/118, ENGR
103, MA 125/145

MTE 275 (3)
Engineering Materials
Laboratory
Pre-reqs. = EN 101
Co-reqs. = MTE 271

MTE 316 (4) C
Fundamentals of Foundry
Processing
Pre-reqs. = MTE 275

MTE 353 (3) *
Transport Phenomena
Pre-req. = MTE 252
Co-req. = MA 238

MTE 441 (4)
Chemical Metallurgy
Pre-reqs. = MTE 353, MTE
362
Co-reqs. = MTE 443

MTE EL. (3) ².

EN 101 (3) * FC
English
Composition 1

EC 110 (3) * SB
Principles of
Microeconomics
Pre-reqs. = MA 100 or
higher

HU/L/FA (3) *

HU/L/FA (3) *

ADV. SCI. (3) ¹

HI/SB (3) *

MTE EL. (3) ².

MTE EL. (3) ².

HI/SB (3) *

HU/L/FA (3) *

* Core Curriculum courses

Senior standing

or ME 383

‡ MTE 121 is recommended, but can be satisfied by taking ENGR 111 or other engineering intro courses.

1. A list of acceptable science and math electives is available in the metallurgical and materials engineering department office.

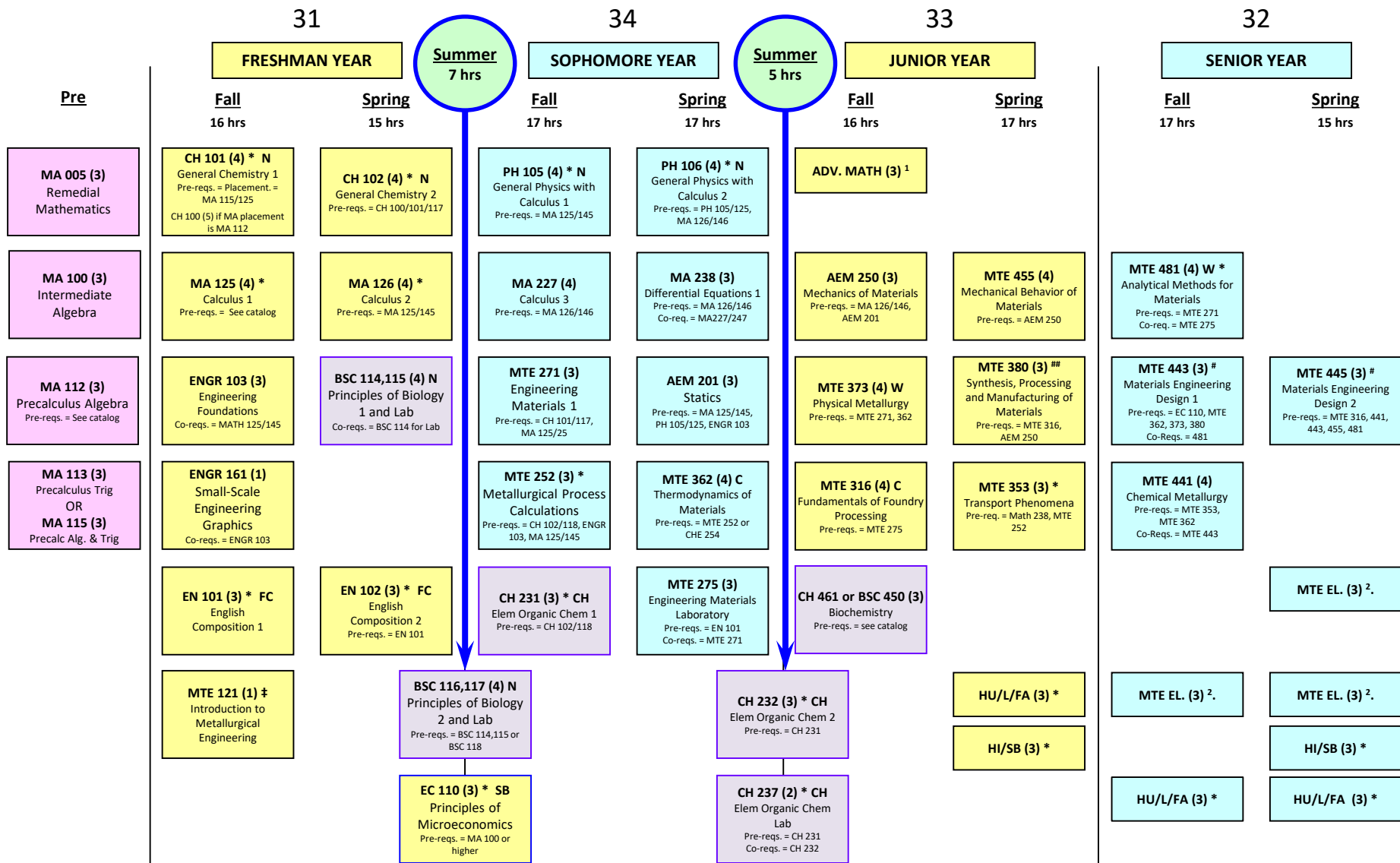
2. MTE students may take any MTE 400-level or higher courses with the permission of the instructor.

This is an unofficial flowchart prepared to assist students in planning their coursework. The UNIVERSITY CATALOG contains the official listing of academic information. The MTE Department may change prerequisites and corequisites from time to time as course content changes to keep pace with changing technology. These changes are posted on the academic bulletin board outside the Department office. Students should consult the CATALOG and Department bulletin board prior to registration. Revised 2023.

ROADMAP TO YOUR GRADUATION

Metallurgical & Materials Engineering Pre -Med Curriculum – BS MTE Degree – Revised 2023-- Effective Spring 2024

143 hrs total



* Core Curriculum courses

Senior standing

or MTE 383

† MTE 121 is recommended, but can be satisfied by taking ENGR 111 or other engineering intro courses.

1. A list of acceptable science and math electives is available in the metallurgical and materials engineering department office.

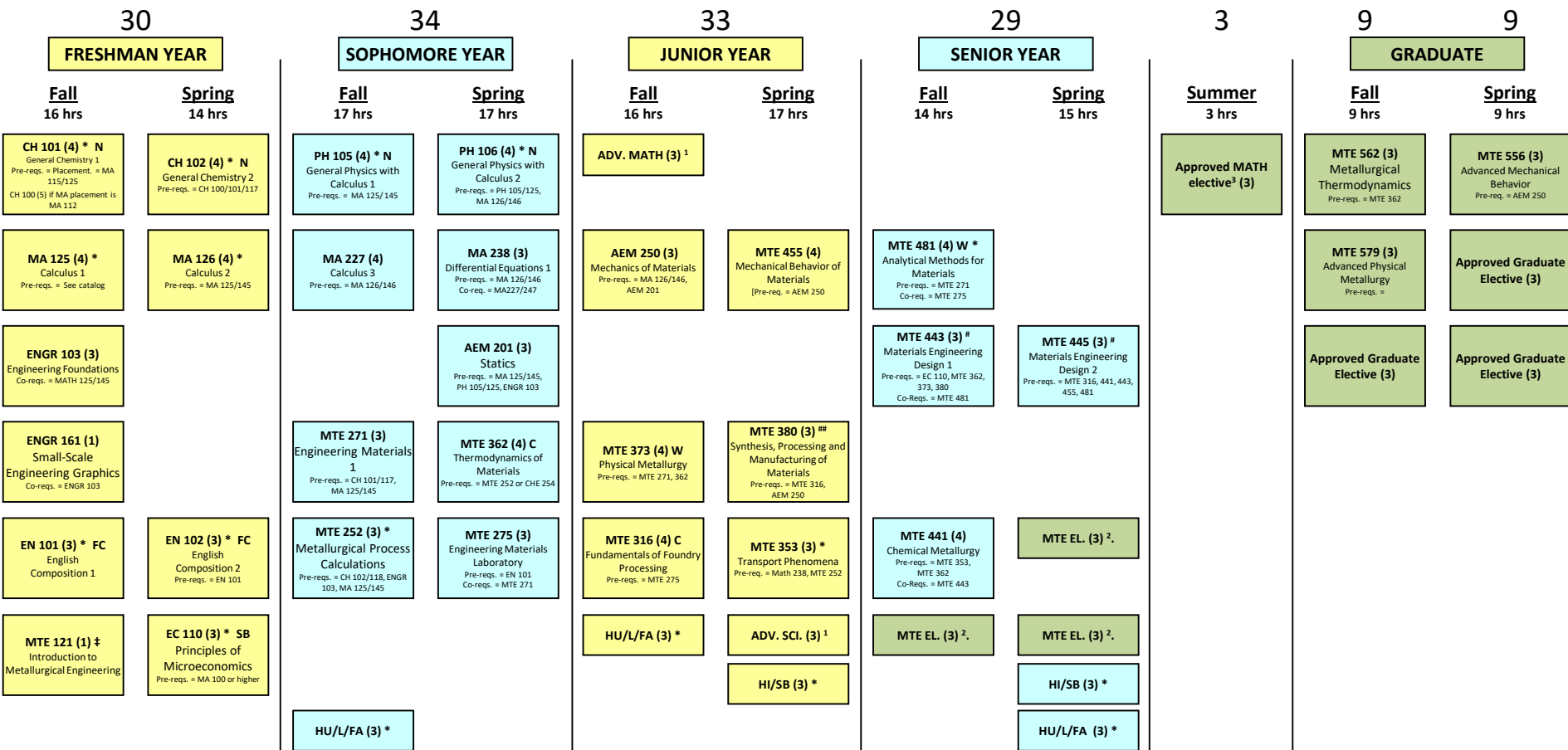
2. MTE students may take any MTE 400-level or higher courses with the permission of the instructor.

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ACCELERATED MASTERS PROGRAM ROADMAP (BS-MTE / MS-MTE(2))

Metallurgical & Materials Engineering Curriculum – BS MTE Degree – Revised 2023-- Effective Spring 2024

146 hrs total



* Core Curriculum courses

Senior standing

or ME 383/283

‡ MTE 121 is recommended, but can be satisfied by taking ENGR 111 or other engineering intro courses.

1. A list of acceptable science and math electives is available in the metallurgical and materials engineering department office. These courses must be taken at 400-level or higher. Prior approval must be obtained from the Instructor, Graduate Director and the Graduate School before the semester begins. All other coursework to count toward the Graduate degree must be taken at the 500-level or higher.
2. MTE Students may take up to six (6) hours of MTE 400-level coursework with prior approval from the Instructor, Graduate Director and the Graduate School before the semester begins. All other coursework to count toward the Graduate degree must be taken at the 500-level or higher.
3. A course in engineering-related mathematics (e.g., statistics, linear algebra, advanced calculus, or other math-based course that has been approved by the Department)

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Policy on MTE Electives

Each student may select any two MTE electives to satisfy the requirements of MTE elective courses. The technical elective requirement may be satisfied with an additional MTE elective or a 300 level or higher “materials-related” engineering, math, or science course by prior petition.

Policy on Humanities and Social Science Electives

Students must satisfy College of Engineering Core curriculum requirements. These include 9 semester hours of humanities (HU), literature (L), and arts (FA) courses. Nine semester hours are also required in history (HI) and social and behavioral sciences (SB). Six of these 18 semester hours must be from a single discipline (Depth Study). There is no mandatory requirement of literature or fine arts in metallurgical engineering.

Engineering Registration as a Professional Engineer

Engineering is a profession requiring state registration to become a “Professional Engineer.” The first step towards becoming registered is passing the Fundamentals of Engineering Exam. Students are strongly encouraged (but not required) to take and pass the Fundamentals of Engineering Exam before they graduate.

Approved Math Elective Courses*

MA 237 – Applied Matrix Theory
MA 257 – Linear Algebra
ST 260 – Statistical Data Analysis
MA 300 – Introduction to Numerical Analysis
MA 343 – Applied Differential Equations II
MA 411 – Introduction to Numerical analysis
GES 255 – Engineering Statistics I
GES 400 – Engineering Statistics
GES 451 – Matrix and Vector Analysis

* Other courses in “engineering-related” mathematics (e.g., statistics, linear algebra, advanced calculus, etc.) can be taken provided that it has been approved by the Department by prior petition.

Approved MTE/Science Elective Courses**

BSC 114 – Principles of Biology
CE 262 – Civil & Construction Engineering Materials
CE 425 – Air Pollution (see prerequisites in catalog)
CH 223 – Chemical Equilibria and Analyses
CH 231 – Elementary Organic Chemistry I
CHE 412 – Polymer Materials Engineering
ECE 320 – Fundamentals of Electrical Engineering
GEO 210 – Minerology
GY 339 – Natural Resources & Environmental Planning
MFE 342 – Fundamentals of Materials Processing
MFE 442 – Advanced Materials Science and Additive Processes
MTE 412 (or CHE 412) – Polymer Materials Engineering
MTE 439 – Metallurgy of Welding
MTE 449 – Powder Metallurgy
MTE 450 – Plasma Processing of Thin Films
MTE 467 – Strengthening Mechanisms in Materials
MTE 476 – Physical Ceramics
MTE 487 – Corrosion Science & Engineering
PH 253 – Modern Physics
PH 331 – Electricity and Magnetism I
PH 333 – Optics
PH 481 – Solid State Physics

** Other courses in “materials-related” or “engineering-related” sciences can be taken provided that it has been approved by the Department by prior petition.