

# METALLURGICAL ENGINEERING, BS

It is the objective of the Department of Metallurgical and Materials Engineering undergraduate program to provide an educational experience that develops the fundamental scientific and technical engineering principles to prepare the student for the 21st century. Students receive an integrated learning experience, which includes classroom and laboratory courses that enhance their analytical, experimental, synthesis, and design skills for problem solving, that address their responsibilities to society and the environment. These experiences emphasize the growth of their teamwork, communicative, and leadership skills.

## Program Objectives

The University of Alabama Department of Metallurgical and Materials Engineering has adopted the following objectives to ensure that our graduates are equipped to meet known and anticipated technical challenges in our profession. Graduates of the metallurgical and materials engineering program are expected within a few years of graduation to:

1. Be successful in applying fundamental principles of metallurgical engineering to solve contemporary engineering problems.
2. Communicate effectively in a wide variety of situations.
3. Succeed in the global engineering professional community.

## Student Educational Outcomes

The Department of Metallurgical and Materials Engineering at The University of Alabama will demonstrate that its graduates have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration for public health, safety, and welfare, as well as global, cultural, social, environmental, economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

## Metallurgical Engineering Curriculum

The College of Engineering enforces a C- or higher requirement for any course that is a pre-requisite for another required course. Click here for the details regarding the College of Engineering policy on repeating courses and residency.

### Freshman

Fall	Hours	Spring	Hours
CH 101	4	CH 102	4
EN 101	3	EC 110	3

MATH 125	4	EN 102	3
MTE 121 or ENGR 111	1	MATH 126	4
ENGR 103 or 123	3		
ENGR 161 (must be taken during the fall or spring of freshman year)	1		
		<b>16</b>	<b>14</b>

### Sophomore

Fall	Hours	Spring	Hours
MATH 227	4	AEM 201	3
MTE 252	3	MATH 238	3
MTE 271	3	MTE 275	3
PH 105	4	MTE 362	4
Humanities Elective (HU/L/FA)	3	PH 106	4
		<b>17</b>	<b>17</b>

### Junior

Fall	Hours	Spring	Hours
ECE 320	3	MTE 353	3
MTE 373	4	MTE 416	0 or 4
MTE 380	3	MTE 455	4
Humanities elective (HU/L/FA)	3	Social and behavioral sciences elective (HI/SB)	3
AEM 250	3	Advanced science elective	3
		<b>16</b>	<b>13-17</b>

### Senior

Fall	Hours	Spring	Hours
MTE 441	4	MTE 445	3
MTE 443	3	MTE elective	3
MTE 481	4	Advanced Mathematics or Statistics elective	3
MTE elective	3	Humanities elective (HU/L/FA)	3
		History or Social Behavioral Sciences elective (HI/SB)	3
		<b>14</b>	<b>15</b>

**Total Hours: 122-126**

### Footnotes

- 1 A list of acceptable science and math electives is available in the metallurgical and materials engineering department's office.
- 2 MTE students may take any MTE 400-level course or higher with the permission of the instructor.

Our graduates are employed in almost every engineering-related industry. Our recent graduates are employed in the aerospace, semiconductor chip, oil and petroleum, automotive, power, and metal casting industries. Our graduates are also employed in government labs.

## Types of Jobs Accepted

Our graduates have distinguished themselves in many careers, holding a wide range of managerial, scientific, and engineering positions in industry, government, and education. Our recent graduates have

accepted positions at the following: NASA, Intel, Lockheed Martin, Exxon Mobil, Honda Manufacturing, US Steel, Nucor Steel, TVA, Motorola, ThyssenKrupp, Oak Ridge National Lab, and National Institute of Standards and Technology.

## **Jobs of Experienced Alumni**

Our alumni are leaders in the field of metallurgical and materials engineering. The positions they hold at metallurgical/materials engineering companies include president and owner, president and CEO, president and general manager, vice president, COO, senior engineer, technology director, systems engineer manager, senior process engineer, and site manager.

Learn more about opportunities in this field at the Career Center