

ENGINEERING INDUSTRIAL AND SYSTEMS ENGINEERING

REQUIREMENTS

CORE CURRICULUM The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at marshall.edu/gened.

CORE 1: CRITICAL THINKING

CODE	COURSE NAME	HRS	GRADE
FYS 100	First Year Seminar	3	_____
MTH 229	Critical Thinking Course I	5	_____
SFT 235	Critical Thinking Course	3	_____
Additional University Requirements			
_____	Writing Intensive	3	_____
_____	Writing Intensive	3	_____
SFT 235	Multicultural or International	3	_____
ENGR 473	Capstone	3	_____

CORE 2:

CODE	COURSE NAME	HRS	GRADE
ENG 101	Beginning Composition	3	_____
ENG 201	Advanced Composition	3	_____
CMM 103	Fund Speech-Communication	3	_____
MTH 229	Calculus I	5	_____
CHM 211/217	Principles of Chemistry I/Lab	5	_____
_____	Core II Humanities	3	_____
_____	Core II Social Science	3	_____
_____	Core II Fine Arts	3	_____

MAJOR-SPECIFIC

All Industrial and Systems Engineering majors are required to take the following courses:

CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
MTH 229	Calculus I	5	_____	ENGR 222	Engineering Cost Analysis & Economy	3	_____
MTH 230	Calculus II	4	_____	ENGR 318	Fluid Mechanics	3	_____
MTH 231	Calculus III	4	_____	ENGR 319	Fluid Mechanics Laboratory	1	_____
MTH 335	Differential Equations	3	_____	ENGR 451	Intro to Proj Management	3	_____
STA 345	Applied Prob and Stat	3	_____	ENGR 335	Adv Engineering Analysis	3	_____
CHM 211	Chemistry I	3	_____	ENGR 473	Capstone Senior Design	3	_____
CHM 217	Principles of Chem Lab I	2	_____	ME 245	Circuits and Instrumentation	3	_____
PHY 211	University Physics I	4	_____	ME 330	Manufacturing Methods/Design	3	_____
PHY 202	General Physics I Lab	1	_____	SFT 235	Intro to Occup Safety (CT)	3	_____
_____	Math/Science Elective	3-5	_____	_____	Engineering Elective Course	3-4	_____
ENGR 103	First-Year Engineering Semin	1	_____	IE 303	Work Design	3	_____
ENGR 104	Engineering Profession	1	_____	IE 305	Systems Engineering	3	_____
_____	CAD Course	2	_____	IE 401	Modeling & Quan Analysis	3	_____
_____	Computations Course	3	_____	IE 404	Quality Control	3	_____
ENGR 213	Statics	3	_____	MKT 350	Supply Chain Logistics	3	_____
ENGR 214	Dynamics	3	_____	SFT 373	Prin Ergonomics & Hum Factors	3	_____
ENGR 215	Engineering Materials	3	_____	SFT 373L	Prin Ergonomics Lab	1	_____
ENGR 216	Mech of Deformable Bodies	3	_____	_____	IE Elective 1	3	_____
ENGR 217	Engineering Career Prep	1	_____	_____	IE Elective 2	3	_____
ENGR 219	Engineering Thermodynamics	3	_____				

MAJOR INFORMATION

- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- The Engineering degree program requires a minimum of 124 credit hours of coursework for graduation.
- Course offerings and course attributes are subject to change each semester. Please consult each semester's schedule of courses for availability and attributes.
- Math/Science Elective Option: Select one of the following: BSC 120/120L, BSC 120H/120L, CHM 212/218, MTH 300, MTH 329, PHY 213/204, STA 445.
- CAD Course: Select one of the following: CE 102 or ENGR 102.
- Computations Course: Select one of the following: CS 110, ENGR 111, or ME 111.
- IE Elective Option: Any 300-level or higher IE course not taken to satisfy other degree requirements or area of emphasis requirements.

ENGINEERING INDUSTRIAL AND SYSTEMS ENGINEERING

Industrial and Systems engineers use scientific, mathematical, and statistical techniques to optimize processes involving materials, information, and people. They improve systems and processes to provide solutions to production.

YEAR ONE	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	CMM 103	Fund Speech Communication	3	_____	_____	CAD Course	2	_____
	ENG 101	Beginning Composition	3	_____	_____	Computations Course	3	_____
	ENGR 103	First-Year Engineering Semin	1	_____	MTH 230	Calculus II	4	_____
	ENGR 104	Engineering Profession	1	_____	PHY 211	University Physics I	4	_____
	FYS 100	First Year Sem Crit Thinking	3	_____	PHY 202	General Physics I Lab	1	_____
	MTH 229	Calculus I (CT)	5	_____	ENGR 201	Advanced Composition	3	_____
	UNI 100	Freshman First Class	1	_____				
	TOTAL HOURS		17		TOTAL HOURS		17	
	Summer Term (optional):							

YEAR TWO	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	CHM 211	Principles of Chemistry I	3	_____	ENGR 214	Dynamics	3	_____
	CHM 217	Principles of Chem Lab I	2	_____	ENGR 216	Mech of Deformable Bodies	3	_____
	ENGR 213	Statics	3	_____	ENGR 217	Engineering Career Prep	1	_____
	MTH 231	Calculus III	4	_____	ENGR 222	Engineering Cost Analysis & Economy	3	_____
	SFT 235	Intro to Occup Safety (CT)	3	_____	MTH 335	Differential Equations	3	_____
					IE 303	Work Design	3	_____
	TOTAL HOURS		15		TOTAL HOURS		16	
	Summer Term (optional):							

YEAR THREE	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	ENGR 215	Engineering Materials	3	_____	ENGR 219	Engr. Thermodynamics	3	_____
	ENGR 318	Fluid Mechanics	3	_____	ME 245	Circuits and Instrumentation	3	_____
	ENGR 319	Fluid Mechanics Laboratory	1	_____	ME 330	Manufacturing Methods/Design	3	_____
	STA 345	Applied Prob and Stat	3	_____	_____	Math/Science Elective	3-5	_____
	IE 305	Systems Engineering	3	_____	SFT 373	Prin Ergonomics & Hum Factors	3	_____
	MKT 350	Supply Chain Logistics	3	_____	SFT 373L	Prin Ergonomics Lab	1	_____
	TOTAL HOURS		16		TOTAL HOURS		16-18	
	Summer Term (optional):							

YEAR FOUR	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	ENGR 451	Intro to Proj Management	3	_____	ENGR 473	Capstone Senior Design	3	_____
	_____	Engineering Elective Course	3-4	_____	IE 404	Quality Control	3	_____
	IE 401	Modeling & Quan Analysis	3	_____	_____	IE Elective 2	3	_____
	_____	IE Elective 1	3	_____	_____	Core II Humanities (WI, CT)	3	_____
	_____	Core II Social Science (WI)	3	_____	_____	Core II Fine Arts	3	_____
	TOTAL HOURS		15-16		TOTAL HOURS		15	
	Summer Term (optional):							

General Education Requirement
College Requirement
Major Requirement
Area of Emphasis

Milestone Course: This is a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

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INDUSTRIAL AND SYSTEMS ENGINEERING – 2023-2024

INVOLVEMENT OPPORTUNITIES

- Student Government Association
- Campus Activity Board
- JMELI
- Commuter Student Advisory Board
- Club Sports
- Religious Organizations
- Political Organizations
- Residence Hall Association
- Cultural Organizations
- National Society of Leadership and Success

RELATED MAJORS

- Electrical Engineering
- Mathematics
- Statistics
- Education

GRADUATION REQUIREMENTS

- Have a minimum of 133 credit hours (some colleges or majors require more);
- Have an overall and Marshall Grade Point Average of 2.00 or higher;
- Have an overall Grade Point Average of 2.00 or higher in the major area of study;
- Have earned a grade of C or better in English 201 or 201 H;
- Have met all major(s) and college requirements;
- Have met the requirements of the Core Curriculum;
- Have met the residence requirements of Marshall University, including 12 hours of 300/400 level coursework in the student's college (see section entitled "Residence Requirements" in the undergraduate catalogue);
- Be enrolled at Marshall at least one semester of the senior year;
- Have transferred no more than 72 credit hours from an accredited West Virginia two-year institution of higher education.

Colleges and specific programs may have unique requirements that are more stringent than those noted above. Students are responsible for staying informed about and ensuring that they meet the requirements for graduation.

This academic map is to be used as a guide in planning your coursework toward a degree. Due to the complexities of degree programs, it is unfortunate but inevitable that an error may occur in the creation of this document. The official source of degree requirements at Marshall University is DegreeWorks available in your myMU portal. Always consult regularly with your advisor.

YEAR ONE



Have questions? Need to talk? You already have a Friend-At-Marshall ready to help you succeed. Find your FAM Peer Mentor here: www.marshall.edu/fam



Stay on the Herd Path and come to class! Class attendance is more important to your success than your high school GPA, your class standing, or your ACT/SAT scores.



In order to graduate on time, you need to take an average of 15 credits per semester. Are you on track? Take 15 to Finish.



Take a career self-assessment to help determine what majors fit your talents and interests and consider job shadowing opportunities.



Take a pulse check. Know what you need to do every year to keep your grants, scholarships, or federal financial aid.



Declare a major before your 30th hour. Participate in a Career Exploration Experience (job shadow) to help decide on your major and career goals.



Sign up for Handshake! Handshake is the #1 place to launch a career with no connections, experience, or luck required. The platform connects up-and-coming talent with 650,000+ employers.

YEAR THREE



Attend an intercultural festival or event on campus or in town.



Talk to faculty about pursuing optional professional certifications.



Are you on track to graduate? Meet with your advisor for your Junior Eval to make sure you know what requirements you have left.



Run for Student Government and represent your fellow students while making a longterm difference on Marshall's campus.



Networking is key! Attend a Career Expo to seek employment opportunities and network with employers in your field.



Prepare for and pass the FE exam.



Don't enter your field with zero experience! Secure an internship related to your field of study.

YEAR TWO



Are you completing enough credits to graduate on time? Dropping or failing a class can put you behind. Use summer terms to quickly get back on track.



Run for Student Government and represent your fellow students while making a longterm difference on Marshall's campus.



No need to wait until graduate school. Discuss undergraduate research opportunities with faculty in your major right now.



In order to work in your field, you need to take a certification exam. Develop a study strategy now. Check with your advisor.



Don't enter your field with zero experience! Secure an internship related to your field of study.



Join or create a club or organization on campus about a particular issue you care about. Marshall has more than 200 student organizations.



Meet with a career education specialist to conduct a "gap analysis." Figure out the skills you'll need for the career you want while you still have time to build them.

YEAR FOUR



This is it! Are you on track to graduate? Meet with your advisor for your Senior Eval to see what requirements you have left.



Want to continue your education and increase your opportunities? Talk to a faculty member about whether graduate school fits you career goals.



Strengthen your resume and enhance your presentation skills. Present what you've learned at an academic conference of campus.



Prepare for and pass the FE exam.



Don't enter your field with zero experience! Secure an internship related to your field of study.



Run for Student Government and represent your fellow students while making a longterm difference on Marshall's campus.



Be at the top of your professional game! Prepare a final resume and practice your interview skills with a career coach in Career Education.

TRANSFERABLE SKILLS ASSOCIATED WITH THIS MAJOR

- Analytical Skills
- Design Skills
- Oral and Written Communication Skills
- Critical Thinking Skills
- Leadership Skills
- The Ability to Work as Part of a Team

ASSOCIATED CAREERS

- Machine Design
- Systems Design
- Manufacturing and Production
- Energy Resources/Conservation
- Transportation and Environmental Impact



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