

MANUFACTURING SYSTEMS ENGINEERING, BS

This B.S. program will provide graduates the skills and knowledge for successful careers in manufacturing systems and processes with practical applications ranging from manufacturing processes to cyber-physical systems.

Manufacturing jobs have become a major staple in the state economy, and our department, joining forces by the College of Engineering and The University of Alabama, is doing what it can to supply a pipeline of workers. A manufacturing facility has been built as part of an initiative oriented to develop a premier hub for multidisciplinary research and education in intelligent and advanced manufacturing systems and processes.

Students earning the Bachelor of Science in Manufacturing Systems Engineering (BS) degree must complete all University, College and departmental degree requirements for a total of 129 credits. These include General Education requirements and the following major requirements and ancillary requirements. Additional information, including a semester-by-semester flowchart of degree requirements, can be found on the departmental website. Students completing the Bachelor of Science in Manufacturing Systems Engineering (BS) degree must comply with all College of Engineering academic policies and requirements and departmental policies.

Major and Ancillary Requirements Hours

Major Courses

ENGR 101	The World of Engineering	1
ENGR 104	Fundamentals of Engineering	3
ENGR 161	Small-Scale Eng. Graphics	1
AEM 201	Statics	3
AEM 250	Mechanics Of Materials I	3
AEM 251	Mechanics Of Materials I Lab	1
AEM 264 or AEM 311	Dynamics Fluid Mechanics	3
ECE 320	Fundmtl Electrical Engr	3
GES 400	Engineering Statistics	3
ME 215	Thermodynamics I	3
ME 383	Modern Manufacturg Processes	3
ME 410	Eng in Social & Global Context	3
MFE 290	Capstone Exp: Found of Program	3
MFE 320	Plant Engineering	3
MFE 332	Quality Control In Manufac Sys	3
MFE 342	Fundamentals of Material Proc.	3
MFE 385	Metrology	4
MFE 442	Adv Mat Sci and Add Processes	3
MFE 473	Dis Sim of Manufacturing Sys	3
MFE 483	Computer Aided Manufacturing	3
MFE 485	Mod Manufacturing Practices II	3
MFE 489	Manufacturing Eng. Design I	3
MFE 490	Capstone Exp: Manufac Design 2	3
MTE 271	Engr Matls: Struc Prop	3
Manufacturing Systems Engineering 200 level elective (See table for course options)		3
Manufacturing Systems Engineering 200/300 level elective (See table for course options)		3

Manufacturing Systems Engineering 300/400 level elective (See table for course options)	3
Credit Hours Subtotal:	76

Ancillary Courses

CH 101 or CH 117	General Chemistry Honors General Chemistry	4
MATH 125 or MATH 145	Calculus I Honors Calculus I	4
MATH 126 or MATH 146	Calculus II Honors Calculus II	4
MATH 227 or MATH 247	Calculus III Honors Calculus III	4
MATH 238	Appld Diff Equations I	3
PH 105 or PH 125	General Physics W/Calc I Honors Gen Ph W/Calculus	4
PH 106 or PH 126	General Physics W/Calc II Honors Gen Ph W/Calculus II	4
Approved Science (See table for course options)		4
Credit Hours Subtotal:	31	

General Education Courses

The specific courses each student completes in order to fulfill the University of Alabama's general education requirements will depend upon the particular degree program in which the student is enrolled. To determine how these general education requirements are integrated into your program of study, review your semester-by-semester flowchart and discuss with your academic advisor.

Manufacturing Systems Engineering (MFE) 200-level Elective		Hours
CS 200	Software Design & Engineering	4
CS 201	Data Structures and Algorithms	4
CS 202	Web Foundations	3
CS 285	Spreadsheet Applications	3
MFE 204	Basics of Manufac. and Auto.	3
MTE 275	Engineering Materials Lab	3
ST 260	Statistical Data Analysis	3

Other electives may be substituted for any of the above courses but require permission and approval of the program advisor and coordinator.

Manufacturing Systems Engineering (MFE) 200/300-level Elective		Hours
MFE 222	Robotic Welding	1
MFE 224	Industrial Auto with Robotics	1
MFE 226	Instrumentation for Automation	1
MFE 232	Flex Manufacturing Sys	1
MFE 262	Intro Industrial Intern Thngs	1
CS 302	Database Applications	3
CS 385	Advanced Spreadsheet Appl	3
ME 360	Contrl Instrumnt Components	3
ME 380	Engineering Leadership I	1
MTE 380	Synthesis,Proc & Mfg Matls.	3

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Other electives may be substituted for any of the above courses but require permission and approval of the program advisor and coordinator.

Manufacturing Systems Engineering (MFE) 300/400-level Elective		Hours
MFE 302	Advanced PLC	1
MFE 303	Adv Auto & Matl Handling	1
MFE 326	Process Monitoring and Control	1
MFE 338	Introduction to Industry 4.0	1
CE 414	Information Systems Design	3
CE 417	Advanced Project Management	3
CE 418	Engineering Management	3
CS 305	Adv. Comp. Database Systems	3
ECE 438	Intgr Circuit Fabr Prin	3
ME 421	Reliability & Maint. Engr.	3
ME 424	Automotive Manufacturing	3
ME 430	Fuzzy Set Theory & Application	3
ME 440	Failure of Engr Materials	3
ME 456	Mechatronics	3
ME 484	Product Innovation	3
MTE 455	Mech Behavior Of Mtls	4

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Approved Science		Hours
Select from the following:		
AY 101 & AY 102	Intro To Astronomy and Intro Astronomy Lab	4
AY 203 & AY 204	Observational Astronomy and Solar System Astronomy	5
BSC 108	Intro Biology Non Maj I	4
BSC 109	Intro Biology Non Maj II	4
BSC 114 & BSC 115	Principles Of Biology I and Laboratory Biology I	4
BSC 118	Honors General Biology I	4
CH 102	General Chemistry	4
CH 118	Honors General Chemistry	4
GEO 101	The Dynamic Earth	4
GEO 102	The Earth Through Time	4
GEO 105	Sustainable Earth	4
GY 101	Atmospheric Proc & Patterns	4
GY 102	Earth Surface Processes	4
GY 207	Field Water and Climate	4
PH 253 & PH 255	Intro Modern Physics and Modern Physics Lab	4

Learn more about opportunities in this field at the Career Center

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