COLLEGE OF SCIENCE, TECHNOLOGY AND AGRICULTURE

Industrial & Systems Engineering

Bachelor of Science (BS)

Industrial & Systems Engineering

PENDING STATE APPROVAL

Industrial & Systems Engineers design, analyze, and control complex systems, such as manufacturing systems, global supply chain, and service systems. Different from other engineering disciplines that apply skills to the specific areas, Industrial Engineering is the only engineering discipline that focuses on optimizing systems for maximum efficiency, minimum cost, quality improvement, safety, and other interests to the stakeholders of the system. It saves time, money, materials, energy, and other resources for the companies, industries, and essentially for our society. The skills of Industrial & Systems Engineers can be applied in an extremely wide range of organizations.

The Industrial & Systems Engineering program has a strong base of math and the physical sciences, fundamental engineering courses, and more specific courses on industrial management, manufacturing, and industrial engineering. A goal of the program is to get student to understand and then optimize the products, processes, tools, and technologies used in industry and other complex system. Many industrial & systems engineering jobs in this region will be in manufacturing and related industries. However, the skills can also be applied in municipalities, transportation and logistics, healthcare, and many other fields that use complex systems.

Industrial & Systems Engineering students will...

- Understand the fundamental concepts required to be a professional in the field, including concepts in mathematics, physical sciences, and engineering.
- Obtain a more specialized knowledge in industrial management, manufacturing, and engineering analysis than can be applied to industrial and other complex systems.
- Have the ability to design or optimize complex systems given economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints to meet the needs of society.
- Have experience using the techniques, skills, and tools necessary for modern careers in the field of industrial & systems engineering.

Career Planning

Career preparation is part of the mission of Southeast. In fact, more than 90% of Southeast students participate in internships, clinical opportunities, student teaching, research assistantships, and study abroad. Professional career counselors are available for all students. The Office of Career Services in Academic Hall 057 can provide students with professional career counseling, resume critiques, practice interviews, job search strategies, career events, networking opportunities, and more.

Demonstrated Career Proficiency is a Requirement of all Southeast Students		
CL001/CL002	First Semester	Complete the FOCUS2 assessment and develop a Career Action Plan.
CL003	Junior Year	Students gain information about career planning and job searching resources.
CL004	Senior Year	Students demonstrate advanced proficiency by identifying a position in their field, developing a cover letter, and tailoring a resume for the position. Materials are critiqued to ensure preparedness for a successful job search.

Career Opportunities

- Industrial engineer
- Systems engineer
- Manufacturing engineer
- Quality engineer
- Product/process engineer
- Plant engineer
- Engineering analyst

To learn more
Office of Admissions
(573) 651-2590
admissions@semo.edu
www.semo.edu

To explore the College of Science, Technology and Agriculture online, visit www.semo.edu/costa

For advising
Center for Academic Advising - North
(573) 651-5090
www.semo.edu/advising
advisingnorth@semo.edu

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SOUTHEAST MISSOURI STATE UNIVERSITY · 1873

Degree Map 2016-17

This is a guide based on the 2016-2017 Undergraduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on several factors such as dual enrollment, remediation, and summer enrollment. Students will meet with an academic advisor each semester and use DegreeWorks to monitor their individual progress.

PENDING STATE APPROVAL

CURRICULUM CHECKLIST

INDUSTRIAL & SYSTEMS ENGINEERING 82-83 Hour Major – No minor required

Required Courses:
___ EG201 Systems Engineering (1)
___ EG492 Modeling & Simulation (3)
___ EG5xx Operations Research (3)
___ EP100 Physics & Engineering Concepts (1)
___ EP240 Circuit Analysis (4)
___ EP261 Engineering Mechanics Statics (3)
___ EP361 Thermal Analysis (3)
___ ET304 Fundamentals of Programmable Logic Controllers (3)
___ IM301 Industrial Safety Supervision (3)
___ IM313 Facilities Planning (3)
___ IM315 Work Measurement (3)
___ IM411 Total Quality Assurance (3)
___ IM417 Manufacturing Resources Analysis (3)
___ MA140 Analytic Geometry and Calculus I (5)
___ MA145 Analytic Geometry and Calculus II (4)
___ MA240 Analytic Geometry and Calculus III (3)
___ MA345 Linear Algebra (3)
___ MA523 Probability & Statistics I (3)
___ MN120 Fundamentals of Engineering Design Process (3)
___ MN170 Engineering Materials & Testing (3)
___ MN203 Engineering Materials & Processes I (3)
___ MN324 Mechanical Design Processes (3)
___ MN412 Advanced Manufacturing Systems (3)
___ PH230 General Physics I (5)
___ PH231 General Physics II (5)
___ UI410 Manufacturing Research in a Global Society (3)

Choose one course:
___ MN260 Technical Computer Programming Applications (3)
___ CS155 Computer Science I (4)
___ CS177 Programming for Scientists & Engineers (3)

Additional requirements:
___ CH185 General Chemistry (5)
___ MN220 Engineering Economic Analysis (3)
___ SW207 Understanding Cultural &Social Diversity (3)
___ UI400 Business & Ethics (3)

University Studies Requirements **(not already listed above):**
UI100 First Year Seminar, EN100 English Composition, Artistic Expression, Written Expression, Oral Expression, Literary Expression, Behavioral Systems, Living Systems, Development of a Major Civilization, Political Systems, one IU/UI3XX

SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
FIRST YEAR	UI100	3	EG201	1
	EP100	1	MA145	4
	MA140	5	MN170	3
	MN120	3	MN260/CS155/CS177	3-4
	MN220	3	PH230	5
	Total	**15**	**Total**	**16-17**
	Milestone: maintain 2.0 cumulative GPA			
SECOND YEAR	IM301	3	CH185	5
	IM315	3	EN100	3
	MA240	3	EP240	4
	MA345	3	EP261	3
	PH231	5	MA523	3
	Total	**17**	**Total**	**18**
	Milestone: maintain 2.0 cumulative GPA			
THIRD YEAR	EP361	3	EG492	3
	IM313	3	ET304	3
	IM411	3	IM417	3
	MN203	3	MN324	3
	SW207	3	Artistic Expression	3
	IU/UI3XX	3	Behavioral Systems	3
	Total	**18**	**Total**	**18**
	Milestone: maintain 2.0 cumulative GPA			
FOURTH YEAR	EG5xx	3	MN412	3
	UI400	3	UI410	3
	Develop of a Major CIv	3	Living Expression	3
	Literary Expression	3	Oral Expression	3
	Written Expression	3	Political Systems	3
	Total	**15**	**Total**	**15**
	Milestone: maintain 2.0 cumulative GPA			

Degree requirements for all students: *a minimum of 120 credit hours, completion of University Studies program, career proficiencies (CL001-004), Writing Proficiency Exam (WP003), and completion of the Measure of Academic Proficiency and Progress (MAPP) at the senior level.*

A minimum 2.00GPA in the major and overall are required to graduate with a BS degree.

Refer to the Undergraduate Bulletin or DegreeWorks for additional graduation requirements (i.e. minimum GPA and coursework) for your program of study.

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