

Date Submitted: 10/21/21 9:50 am

Viewing: **INEGBS : Industrial Engineering,
Bachelor of Science in Industrial Engineering**

Last approved: 06/29/21 12:53 pm

Last edit: 10/29/21 5:19 pm

Changes proposed by: cassady

Catalog Pages Using
this Program

[Industrial Engineering B.S.I.E.](#)

[Industrial Engineering.\(INEG\)](#)

Submitter: User ID: **cassady tellenbe** Phone:
575-3156 575-6734

Program Status Active

Academic Level Undergraduate

Type of proposal Major/Field of Study

Select a reason for this modification

Revising Curriculum of an Existing Certificate or Degree--(LON)

Are you adding a concentration?

No

Are you adding or modifying a track?

No

Are you adding or modifying a focused study?

No

Effective Catalog Year Fall 2022

College/School Code

College of Engineering (ENGR)

Department Code

Department of Industrial Engineering (INEG)

In Workflow

1. ENGR Dean Initial
2. Provost Initial
3. Director of Curriculum Review and Program Assessment
4. Registrar Initial
5. Institutional Research
6. INEG Chair
7. ENGR Curriculum Committee
8. ENGR Faculty
9. ARSC Dean
10. WCOB Dean
11. ENGR Dean
12. Global Campus
13. Provost Review
14. University Course and Program Committee
15. Faculty Senate
16. Provost Final
17. Provost's Office-- Documentation sent to System Office
18. Higher Learning Commission
19. Board of Trustees
20. ADHE Final
21. Provost's Office-- Notification of Approval
22. Registrar Final
23. Catalog Editor Final

Program Code INEGBS
Degree Bachelor of Science in Industrial Engineering
CIP Code

Approval Path

1. 10/25/21 9:40 am
Kevin Hall (kdhall):
Approved for ENGR
Dean Initial
2. 10/25/21 10:00 am
Ketevan
Mamiseishvili
(kmamisei):
Approved for
Provost Initial
3. 10/25/21 4:06 pm
Alice Griffin
(agriffin): Approved
for Director of
Curriculum Review
and Program
Assessment
4. 10/29/21 5:19 pm
Lisa Kulczak
(lkulcza): Approved
for Registrar Initial
5. 11/01/21 4:31 pm
Doug Miles
(dmiles): Approved
for Institutional
Research
6. 11/01/21 4:49 pm
Ed Pohl (epohl):
Approved for INEG
Chair
7. 11/04/21 2:02 pm
Manuel Rossetti
(rossetti): Approved
for ENGR
Curriculum
Committee
8. 11/04/21 4:19 pm
Kevin Hall (kdhall):

Approved for ENGR
Faculty

9. 11/08/21 12:02 pm
Jeannie Hulen
(jhulen): Approved
for ARSC Dean
10. 11/08/21 7:52 pm
Alan Ellstrand
(aellstra): Approved
for WCOB Dean
11. 11/10/21 10:37 am
Kevin Hall (kdhall):
Approved for ENGR
Dean
12. 11/10/21 10:50 am
Suzanne Kenner
(skenner): Approved
for Global Campus
13. 11/10/21 11:57 am
Ketevan
Mamiseishvili
(kmamisei):
Approved for
Provost Review
14. 11/19/21 4:36 pm
Alice Griffin
(agriffin): Approved
for University
Course and Program
Committee

History

1. Aug 15, 2014 by
Leepfrog
Administrator
(clhelp)
2. Mar 13, 2015 by
Tamara Ellenbecker
(tellenbe)

3. Apr 3, 2015 by
Tamara Ellenbecker
(tellenbe)
4. May 16, 2016 by
Tamara Ellenbecker
(tellenbe)
5. Mar 1, 2017 by
Manuel Rossetti
(rossetti)
6. May 30, 2017 by
Charlie Alison
(calison)
7. May 8, 2018 by
cassady
8. Aug 1, 2018 by
Charlie Alison
(calison)
9. May 31, 2019 by
Charlie Alison
(calison)
10. Jan 22, 2021 by
Tamara Ellenbecker
(tellenbe)
11. May 19, 2021 by
Tamara Ellenbecker
(tellenbe)
12. Jun 29, 2021 by
Charlie Alison
(calison)

14.3501 - Industrial Engineering.

Program Title

Industrial Engineering, Bachelor of Science in Industrial Engineering

Program Delivery

Method

On Campus

Is this program interdisciplinary?

No

Does this proposal impact any courses from another College/School?

Yes

College(s)/School(s)

College/School Name
Fulbright College of Arts and Sciences (ARSC)
Walton College of Business (WCOB)
Walton College of Business (WCOB)

What are the total hours needed to complete the program?

123 126

Program Requirements and Description

Requirements

The total graduation requirement in industrial engineering is **123 126** hours. For further information please visit the [departmental website](#).

Technical Electives

The purpose of technical electives is to provide students with the opportunity to expand their ~~their~~ education along lines of ~~within a~~ particular interest to them. ~~area of interest~~. Each student is responsible for their technical elective program. Students may seek specific advice on technical elective selections from their advisor. Courses satisfying technical elective requirements cannot fulfill more than one BSIE requirement. A minimum of 12 credit hours from ~~Humanities/Social Science Electives~~ ~~Although any elective included on the~~ approved technical elective course ~~University Core humanities/social science~~ list ~~must~~ ~~may~~ be taken to satisfy technical elective requirements ~~selected, PSYC 2003 General Psychology (ACTS Equivalency – PSYC 1103) is recommended~~ for the BSIE. ~~industrial engineers~~: At least 6 of these 12 credit hours must be chosen from INEG and/or OPAN courses. No more than 3 of these credits may be based in individual/ independent study, no more than 4 of these credits may be based in honors thesis (honors thesis courses offered by our department include: INEG 400VH, INEG 3812H, and INEG 4812H), and no more than 3 of these credits may be based in cooperative education.

Approved Technical Elective Course List

1. Any BENG, BIOL, BMEG, CHEG, CHEM, CVEG, CSCE, ELEG, GNEG, INEG, MATH, MEEG, OPAN, and PHYS course that is at the 3000-level or above is approved.

Exceptions are:

CVEG 4513 is not approved.

GNEG 3801 is not approved.

GNEG 3811 is approved only if the student has completed at least three semesters of GNEG 3811.

INEG 3313 is not approved.

MATH 3013 and MATH 3133 are not approved.

PHYS 3603 is not approved.

2. Students may count one of MATH 2574 and MATH 2584 as a technical elective.

3. Courses at the 3000-level or above that are explicitly listed (not part of a blanket statement like “... 3000-to-4000-level ...”) in the Catalog of Studies under Minors for Non-Business Students are approved.

Exception:

ISYS 3393 is not approved if the student is also seeking technical elective credit for INEG 4683.

4. Courses at the 3000-level or above that are explicitly listed on the Sustainability Minor Courses website under Natural, Managed, or Built Systems are approved.

5. Courses at the 3000-level or above that are explicitly listed ~~Science Electives~~The approved list of science electives is available in the Catalog of Studies in the Analytics group for the Data Analytics Minor are approved. ~~the industrial engineering departmental office:~~

6. Additional approved courses are EXSC 3153, EXSC 3353, and HNRC 4013H.

~~Technical Electives The purpose of technical electives is to provide students with the opportunity to expand their education within a particular area of interest.~~

8-Semester Plan

Industrial Engineering B.S.I.E.

Eight-Semester Degree Program

The following section contains the list of courses required for the Bachelor of Science in Industrial Engineering degree and a suggested sequence. Not all courses are offered every semester, so students who deviate from the suggested sequence must pay careful attention to course scheduling and course prerequisites. Students wishing to follow the eight-semester degree plan should see the [Eight-Semester Degree Policy](#) in the Academic Regulations chapter for university requirements of the program.

Students are required to complete 40 hours of upper division courses (3000-4000 level). It is recommended that students consult with their adviser when making course selections.

~~selections. At least 12 hours of technical electives must be selected from INEG courses:~~

First Year	Units
	Fall Spring
GNEG 1111 Introduction to Engineering I	1
MATH 2554 Calculus I (ACTS Equivalency = MATH 2405) (Satisfies General Education Outcome 2.1)	4
CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture)	3
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013) (Satisfies General Education Outcome 1.1)	3
Select one of the following courses to satisfy General Education Outcome 4.2:1	3
HIST 2013 History of the American People, 1877 to Present (ACTS Equivalency = HIST 2123)	

<u>HIST 2003</u> History of the American People to 1877 (ACTS Equivalency = HIST 2113)	
<u>PLSC 2003</u> American National Government (ACTS Equivalency = PLSC 2003)	
<u>GNEG 1121</u> Introduction to Engineering II	1
<u>MATH 2564</u> Calculus II (ACTS Equivalency = MATH 2505)	4
<u>ENGL 1033</u> Technical Composition II (ACTS Equivalency = ENGL 1023) (Satisfies General Education Outcome 1.2)1, 2	3
BIOL 1543/1541L or CHEM 1123/1121L or GEOS 1113/1111L or PHYS 2074	4
<u>PHYS 2054</u> University Physics I (ACTS Equivalency = PHYS 2034) (Satisfies General Education Outcome 3.4)1	4
Year Total:	14 16
Second Year	Units
	FallSpring
<u>INEG 2001</u> Industrial Engineering Seminar	1
<u>INEG 2103</u> Introduction to Industrial Engineering	3
<u>INEG 2214</u> Computing Methods for Industrial Engineers I	4
INEG 2313 Applied Probability and Statistics for Engineers I	3 -
INEG 2314 STATISTICS FOR INDUSTRIAL ENGINEERS I Course INEG 2314 STATISTICS FOR INDUSTRIAL ENGINEERS I Not Found	4
Math Elective: Choose one of the following	3
<u>MATH 2574</u> Calculus III (ACTS Equivalency = MATH 2603)	
Science Requirement 3,5	3 -
MATH 2574C Calculus III	
MATH 2574H Honors Calculus III	
MATH 2584C Elementary Differential Equations	
MATH 2584H Honors Elementary Differential Equations	
MATH 2603 Discrete Mathematics	
MATH 3083 Linear Algebra	
<u>INEG 2223</u> Computing Methods for Industrial Engineers II	3
INEG 2333 Applied Probability and Statistics for Engineers II	- 3
INEG 2323 PROBABILITY AND STOCHASTIC PROCESSES FOR INDUSTRIAL ENGINEERS Course INEG 2323 PROBABILITY AND STOCHASTIC PROCESSES FOR INDUSTRIAL ENGINEERS Not Found	3
<u>INEG 2413</u> Engineering Economic Analysis	3
INEG 2613 INTRODUCTION TO OPERATIONS RESEARCH Course INEG 2613 INTRODUCTION TO OPERATIONS RESEARCH Not Found	3
<u>ACCT 2403</u> Accounting Fundamentals for Planning and Control	3
MATH 2584 Elementary Differential Equations	- 4
Year Total:	15 15
Third Year	Units
	FallSpring

INEG 3623 Simulation	3	-
INEG 3714 Work Methods and Ergonomics	4	-
Technical Elective4	3	-
MEEG 2303 Introduction to Materials	3	-
Fine Arts Elective (Select a course to satisfy General Education Outcome 3.1) 6	3	-
INEG 3333 STATISTICS FOR INDUSTRIAL ENGINEERS II Course INEG 3333 STATISTICS FOR INDUSTRIAL ENGINEERS II Not Found	3	
INEG 3443 PROJECT MANAGEMENT Course INEG 3443 PROJECT MANAGEMENT Not Found	3	
INEG 3543 FACILITY LOGISTICS Course INEG 3543 FACILITY LOGISTICS Not Found	3	
INEG 3624 SIMULATION Course INEG 3624 SIMULATION Not Found	4	
Select one of the following two options to satisfy General Education Outcome 3.3:1	3	
ECON 2143 Basic Economics: Theory and Practice		
or		
ECON 2013 Principles of Macroeconomics (ACTS Equivalency = ECON 2103)		
& ECON 2023 Principles of Microeconomics (ACTS Equivalency = ECON 2203)		
INEG 3513 Manufacturing Processes	-	3
INEG 3613 Introduction to Operations Research	-	3
Technical Elective4	-	3
MEEG 2003 Statics	-	3
Select one of the following two options to satisfy General Education Outcome 3.3:	-	3
Either:		
ECON 2143 Basic Economics: Theory and Practice		
Or:		
ECON 2013 Principles of Macroeconomics (ACTS Equivalency = ECON 2103)	-	-
& ECON 2023 Principles of Microeconomics (ACTS Equivalency = ECON 2203)		
INEG 3553 PRODUCTION PLANNING AND CONTROL Course INEG 3553 PRODUCTION PLANNING AND CONTROL Not Found	3	
INEG 3533 TRANSPORTATION LOGISTICS Course INEG 3533 TRANSPORTATION LOGISTICS Not Found	3	
INEG 3714 Work Methods and Ergonomics	4	
INEG 3833 INTRODUCTION TO DATABASE CONCEPTS FOR INDUSTRIAL ENGINEERS Course INEG 3833 INTRODUCTION TO DATABASE CONCEPTS FOR INDUSTRIAL ENGINEERS Not Found	3	
Social Science Elective - Choose a course that satisfies General Education Outcomes 3.3 and 4.1.1	3	
Year Total:	16	16
Fourth Year		Units
		Fall/Spring
INEG 4433 Systems Engineering and Management	3	
INEG 4553 Production Planning and Control	3	-
INEG 4911 Industrial Engineering Capstone Experience I	1	-
INEG 4913 INDUSTRIAL ENGINEERING CAPSTONE EXPERIENCE I Course INEG 4913 INDUSTRIAL ENGINEERING CAPSTONE EXPERIENCE I Not Found	3	

ENGINEERING CAPSTONE EXPERIENCE I Not Found

Two Technical Electives	6
Social Sciences Elective – Choose one course from the list below (Satisfies General Education Outcomes 3.3 and 4.1)7	3
Social Sciences Elective - Choose a course that satisfies General Education Outcome 3.3.1	3
INEG 4923 Industrial Engineering Capstone Experience II (Satisfies General Education Outcome 6.1)	3
INEG 4924 INDUSTRIAL ENGINEERING CAPSTONE EXPERIENCE II	4
ENGINEERING CAPSTONE EXPERIENCE II Not Found (Satisfies General Education Outcome 6.1)1	
Two Technical Electives	6
Humanities Elective – Choose one course from the list below (Satisfies General Education Outcomes 3.2 and 5.1)8	3
Social Sciences Elective – Choose one course from the list below (Satisfies General Education Outcome 3.3)9	3
Fine Arts Elective - Choose a course that satisfies General Education Outcome 3.1.1	3
Humanities Elective - Choose a course that satisfies General Education Outcomes 3.2 and 5.1.1	3
Year Total:	15 16

Total Units in Sequence: 123

- 1 Students must complete the [State Minimum Core requirements](#) as outlined in the Catalog of Studies. The courses that meet the state minimum core also fulfill many of the university's [General Education requirements](#), although there are additional considerations to satisfy the general education learning outcomes. Students are encouraged to consult with their academic adviser when making course selections.
- 2 Students who enter the university with credit for [ENGL 1023](#) are not required to complete [ENGL 1033](#). Students who enter the university with exemption from [ENGL 1023](#) are encouraged to take [ENGL 1033](#).
- 3 ~~Students who complete BIOL1543/1541L, CHEM 1123/CHEM 1121L, or GEOS 1113/111L in the first year must satisfy this requirement with PHYS 2074. Otherwise, students may choose from a list of courses that is available on the departmental website."~~
- 4 ~~The purpose of technical electives is to provide students with the opportunity to expand their education within a particular area of interest. The approved list of technical electives is available on the departmental website. At least 12 hours must be selected from INEG courses:~~
- 6 ~~The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 1003; ARHS 1003, COMM 1003, DANC 1003, LARC 1003, MLIT 1003, MLIT 1003H, MLIT 1013, MLIT 1013H, MLIT 1333, THTR 1003, THTR 1013, or THTR 1013H.~~
- 7 ~~The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 1023, COMM 1023, HDFS 1403, HDFS 2413, HIST 1113, HIST 1123, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2013, PLSC 2813, PLSC 2813H, RESM 2853, SOCI 2013, SOCI 2013H, or SOCI 2033.~~
- 8 ~~The Humanities Elective courses which satisfy General Education Outcomes 3.2 and 5.1 include: CLST 1003; CLST 1003H, CLST 1013, HUMN 1124H, PHIL 2003, PHIL 2003C, PHIL 2003H, PHIL 2103, or PHIL 2103C.~~
- 9 ~~The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGEC 1103; AGEC 2103, ANTH 1023, COMM 1023, ECON 2013, ECON 2023, ECON 2143, EDST 2003, HDFS 1403,~~

~~AGEC 2103, ANTH 1023, COMMI 1023, ECON 2013, ECON 2023, ECON 2143, EDST 2003, HDFS 1403, HDFS 2413, HDFS 2603, HIST 1113, HIST 1113H, HIST 1123, HIST 1123H, HIST 2003, HIST 2013, HIST 2093, HUMN 1114H, HUMN 2114H, INST 2013, INST 2813, INST 2813H, PLSC 2003, PLSC 2013, PLSC 2203, PLSC 2813, PLSC 2813H, PSYC 2003, RESM 2853, SOCI 2013, SOCI 2013H, SOCI 2033. Note, courses cannot be counted twice in degree requirements.~~

Are Similar Programs available in the area?

No

Estimated Student 250

Demand for Program

Scheduled Program **2026-2027** ~~2020-~~

Review Date ~~2021~~

Program Goals and Objectives

Program Goals and Objectives

Within 3-5 years of graduation, graduates of the University of Arkansas undergraduate program in industrial engineering will have:

- 1. successfully applied core industrial engineering knowledge and skills for industrial or public sector organizations,**
- 2. successfully pursued advanced professional degrees, graduate studies in industrial engineering, professional development, or engineering certification, and**
- 3. demonstrated ongoing professional and intellectual growth as managers and leaders in industrial engineering, society, and their communities. ~~NA~~**

Learning Outcomes

Learning Outcomes

Learning Outcomes

Upon graduation, students receiving the BSIE possess:

- (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 of public health, safety, and welfare, as well as global, cultural, social, environmental, and 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 judgments, 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, and 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 ~~NA~~

Description and justification of the request

Description of specific change	Justification for this change
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Description of specific change	Justification for this change
<p>Updating probability, statistics, and simulation courses. Expanding INEG 2313 to INEG 2314. Removing INEG 2333. Adding INEG 2323 and INEG 3333. Expanding INEG 3623 to INEG 3624.</p> <p>Redefining MATH requirements. Removing MATH 2574 and MATH 2584. Adding a 3-credit MATH elective.</p> <p>Removing the IE Science Elective.</p> <p>Removing required courses related to manufacturing processes: MEEG 2003, MEEG 2303, INEG 3513.</p> <p>Adding new required courses in project management (INEG 3443), logistics (INEG 3533 and INEG 3543), and databases (INEG 3833).</p> <p>Expanding the capstone experience from 4 to 7 credit hours (INEG 4913 and INEG 4924).</p> <p>Adjusting the level of several courses.</p> <p>Reducing the number of technical elective hours from 18 to 12.</p> <p>Adjusting the location of several courses in the 8-semester plan.</p>	<p>The goal of this program curriculum revision is to modernize the content of the industrial engineering undergraduate curriculum. The last major revision to this program was more than 20 years ago.</p>

Upload attachments

[INEGBS - Curriculum Revision - Ltr of Notification.pdf](#)

[INEGBS - Curriculum Revision - Curriculum.docx](#)

Reviewer Comments

Alice Griffin (agriffin) (10/25/21 2:00 pm): Hyperlinked INEG honors courses in program requirements.

Alice Griffin (agriffin) (10/25/21 3:30 pm): Hyperlinked related pages in the program requirements for items 3, 4, and 5; adjusted formatting for item 5; and added comment for Gen Ed Outcome 6.1 to INEG 4924 with permission from submitter.

Alice Griffin (agriffin) (10/25/21 4:06 pm): Renamed documents to match BOT naming convention.

Lisa Kulczak (lkulcza) (10/29/21 5:19 pm): All courses not found currently in approval process.