APPROVED BY SENATE
02/10/2020

Date Submitted: 01/10/20 8:07 am

Viewing: 10KP5532BS : Systems Engineering & Design, BS

Last approved: 08/12/19 8:36 am

Last edit: 01/22/20 3:07 pm

Changes proposed by: Brooke Newell

Catalog Pages Using this Program	Systems Engineering & Design, BS

In Workflow

1. **U Program Review**
2. **1422 Head**
3. **KP Committee Chair**
4. **KP Dean**
5. **University Librarian**
6. **Provost**
7. **Senate EPC**
8. Senate
9. U Senate Conf
10. Board of Trustees
11. IBHE
12. DMI

Approval Path

1. 01/10/20 9:13 am Deb Forgacs (dforgacs): Approved for U Program Review
2. 01/13/20 2:21 pm Deborah Thurston (thurston): Approved for 1422 Head
3. 01/13/20 3:20 pm Michael Hirschi (mch): Approved for KP Committee Chair
4. 01/13/20 3:35 pm Candy Deaville (candyd): Approved for KP Dean
5. 01/13/20 4:08 pm John Wilkin (jpwilkin): Approved for

University Librarian
6. 01/22/20 12:07 pm
Kathy Martensen (kmartens): Approved for Provost

History

1. Dec 13, 2018 by Deb Forgacs (dforgacs)
2. Dec 13, 2018 by Deb Forgacs (dforgacs)
3. Apr 23, 2019 by Deb Forgacs (dforgacs)
4. Aug 12, 2019 by Deb Forgacs (dforgacs)

Proposal Type

Proposal Type:
Major (ex. Special Education)

This proposal is for a:
Revision

Proposal Title:

if this proposal is one piece of a multi-element change please include the other impacted programs here. *example: A BS revision with multiple concentration revisions*

updating secondary field options. Revising text and tables ~~degree audit update~~ ~~UG Lists.degree audit update.~~

EP Control Number	**EP.20.101_original**
Official Program Name	Systems Engineering & Design, BS
Effective Catalog Term	Fall 2020

Sponsor College	Grainger College of Engineering
Sponsor Department	Industrial and Enterprise Systems Engineering
Sponsor Name	
Sponsor Email	
College Contact	College Contact Email

Program Description and Justification

Justification for proposal change:

Updates for Academic Catalog 2020-21

Corresponding Degree	BS Bachelor of Science

Is this program interdisciplinary?

No

Academic Level	Undergraduate
Will you admit to the concentration directly?	
Is a concentration required for graduation?	
CIP Code	142701 - Systems Engineering.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Admission Requirements

Desired Admissions Term

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

Describe how critical academic functions such as admissions and student advising are managed.

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

None

Estimated Annual Number of Degrees Awarded

Year One Estimate	5th Year Estimate (or when fully implemented)

What is the matriculation term for this program?
Fall

Delivery Method

Is this program available on campus and online? **No**

This program is available:
On Campus

Budget

Are there budgetary implications for this revision? No

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?
No

Additional Budget Information

Attach File(s)

Resource Implications

Facilities

Will the program require new or additional facilities or significant improvements to already existing facilities?

No

Technology

Will the program need additional technology beyond what is currently available for the unit?

No

Non-Technical Resources

Will the program require additional supplies, services or equipment (non-technical)?

No

Resources

Faculty Resources

Please address the impact on faculty resources including any changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc. Describe how the unit will support student advising, including job placement and/or admission to advanced studies.

None

Library Resources

Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.

None

Instructional Resources

Will there be any reduction in other course offerings, programs or concentrations by your department as a result of this new program/proposed change?

No

Does this new program/proposed change result in the replacement of another program?

No

Does the program include other courses/subjects impacted by the creation/revision of this program?

No

Financial Resources

How does the unit intend to financially support this proposal?

Will the unit need to seek campus or other external resources?

No

Attach letters of support

Will an existing tuition rate be used or continue to be used for this program?

Yes

Program Regulation and Assessment

Briefly describe the plan to assess and improve student learning, including the program's learning objectives; when, how, and where these learning objectives will be assessed; what metrics will be used to signify student's achievement of the stated learning objectives; and the process to ensure assessment results are used to improve student learning. (Describe how the program is aligned with or meets licensure, certification, and/or entitlement requirements, if applicable).

Is the career/profession for graduates of this program regulated by the State of Illinois?

No

Program of Study

"Baccalaureate degree requires at least 120 semester credit hours or 180 quarter credit hours and at least 40 semester credit hours (60 quarter credit hours) in upper division courses" (source: https://www.ibhe.org/assets/files/PrivateAdminRules2017.pdf). For proposals for new bachelor's degrees, if this minimum is not explicitly met by specifically-required 300- and/or 400-level courses, please provide information on how the upper-division hours requirement will be satisfied.

All proposals must attach the new or revised version of the Academic Catalog program of study entry. Contact your college office if you have questions.

Revised programs Attach a side-by-side comparison with the existing program AND, if the revision references or adds "chose-from" lists of courses students can select from to fulfill requirements, a listing

of these courses, including the course rubric, number, title, and number of credit hours.

Catalog Page Text

Catalog Page Text: Description of program for the catalog page. This is not official content, it is used to help build the catalog pages for the program. Can be edited in the catalog by the college or department.

Statement for Programs of Study Catalog

Graduation Requirements

Minimum Technical GPA: 2.0

TGPA is required for Engineering and Technical Elective courses and MATH 415. See Technical GPA to clarify requirements.

Minimum Overall GPA: 2.0

Minimum hours required for graduation: 128 hours

General education: Students must complete the Campus General Education requirements including the campus general education language requirement. ~~Overview of Curricular Requirements The curriculum requires 128 hours for graduation and is organized as shownbelow.Orientation and Professional Development These courses introduce the opportunities and resources your college, department, and curriculum can offer you as you work to achieve your careergoals.They also provide the skills to work effectively and successfully in the engineeringprofession.Foundational Mathematics and Science These courses stress the basic mathematical and scientific principles upon which the engineering discipline isbased.Systems Engineering and Design Technical Core These courses stress fundamental concepts and basic laboratory techniques that comprise the common intellectual understanding of systems engineering anddesign.Secondary Field Option Electives These courses enable the student to tailor the studies to one's interests and career goals in both technical and nontechnicalareas.Secondary field options are of twotypes:pre-approved andcustomized.Pre-approved secondary fields have designated titles and a specified list of courses, from which several may beselected.Approval for the substitution of a course for~~

~~one on the specified list may be requested via a petition form submitted to thedepartment.Customized secondary fields may be created to achieve goals in areas not provided by pre-approvedfields.To do this, a suitable title and all the courses must be petitioned for acceptance by thedepartment.~~**One** ~~**Petition approval is based on the merit**~~ **of the SBS** ~~**secondary field and the coherence of the**~~ **courses must be an introductory economics course (ECON 102 or ECON 103).** ~~**within it relative to the student's goals.**~~

Orientation and Professional Development

Course List

Code	Title	Hours
ENG 100	Engineering Orientation 1	0
SE 100	Introduction to ISE	1
SE 290	ISE Undergraduate Seminar	0
Total Hours		1

Foundational Mathematics and Science

Course List

Code	Title	Hours
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
MATH 221	Calculus I 2	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 285	Intro Differential Equations	3
MATH 415	Applied Linear Algebra	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2
Total Hours		31

Systems Engineering and Design Technical Core

Course List

Code	Title	Hours
CS 101	Intro Computing: Engrg & Sci	3
ECE 110	Introduction to Electronics	3
ECE 211	Analog Circuits & Systems	2
IE 300	Analysis of Data	3
IE 310	Deterministic Models in Optimization	3
SE 101	Engineering Graphics & Design	3
SE 261	Business Side of Engineering	1
SE 310	Design of Structures and Mechanisms	3
SE 311	Engineering Design Analysis	3
SE 312	Instrumentation and Test Lab	1
SE 320	Control Systems	4

Code	Title	Hours
SE 424	State Space Design for Control	3
SE 494	Senior Engineering Project I	3
SE 495	Senior Engineering Project II	2
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
TAM 335	Introductory Fluid Mechanics	4
Total Hours		50

Secondary Field Option Electives

Course List

Code	Title	Hours
Secondary field option electives selected from departmentally approved list below or by petition to the department. 3		12
Automotive Engineering		
CS 440	Artificial Intelligence	3 or 4
CS 446	Machine Learning	3 or 4
ECE 431	Electric Machinery	4
ECE 464	Power Electronics	3
ECE 470/AE 482/ME 445	Introduction to Robotics	4
ECE 486	Control Systems	4
ME 320	Heat Transfer	4
ME 360	Signal Processing	3.5
ME 400	Energy Conversion Systems	3 or 4
ME 403	Internal Combustion Engines	3 or 4
ME 460	Industrial Control Systems	4
ME 461	Computer Cntrl of Mech Systems	3 or 4
SE 400	Engineering Law	3 or 4
SE 497	Independent Study (May be taken for up to 3 credit hours, based on automotive Engineering project approved by SFO faculty mentor)	0 to 4
TAM 412	Intermediate Dynamics	4
TAM 416	Introduction to Nonlinear Dynamics and Vibrations	4
In addtion to completing 12 credit hours from the list of approved courses above, students must complete:		
Dynamics/Controls (select at least one course):		
ECE 470/AE 482/ME 445	Introduction to Robotics	4
ECE 486	Control Systems	4
ME 460	Industrial Control Systems	4

Code	Title	Hours
TAM 412	Intermediate Dynamics	4
TAM 416	Introduction to Nonlinear Dynamics and Vibrations	4
Automotive Power Systems (select at least one course):		
ME 400	Energy Conversion Systems	3 or 4
ME 403	Internal Combustion Engines	3 or 4
ECE 431	Electric Machinery	4
ECE 464	Power Electronics	3
Autonomous Systems and Robotics		
CS 225	Data Structures	4
CS 440	Artificial Intelligence	3 or 4
CS 446	Machine Learning	3 or 4
ECE 470	Introduction to Robotics	4
ECE 486	Control Systems	4
ECE 490	Introduction to Optimization	3 or 4
ME 351	Analysis of Mfg Processes	3
ME 461	Computer Cntrl of Mech Systems	3 or 4
SE 400	Engineering Law	3 or 4
SE 411	Reliability Engineering	3 or 4
SE 423	Mechatronics	3
Bioengineering		
BIOE 120	Introduction to Bioengineering	1
BIOE 414	Biomedical Instrumentation	3
or ECE 414	Biomedical Instrumentation	
BIOE 415	Biomedical Instrumentation Lab	2
or ECE 415	Biomedical Instrumentation Lab	
BIOE 498	Special Topics	3
BIOP 401	Introduction to Biophysics	3
CHEM 232	Elementary Organic Chemistry I	3 or 4
CHEM 233	Elementary Organic Chem Lab I	2
IE 340/PSYC 358	Human Factors	4
KIN 355	Biomechanics of Human Movement	3
MCB 150	Molec & Cellular Basis of Life (recommended only if a prerequisite to another listed course)	4
MCB 250	Molecular Genetics (recommended only if a prerequisite to another listed course)	3

Code	Title	Hours
MCB 251	Exp Techniqs in Molecular Biol (recommended only if a prerequisite to another listed course)	2
MCB 401	Cell & Membrane Physiology	3
MCB 402	Sys & Integrative Physiology	3
MCB 403	Cell & Membrane Physiology Lab	1 or 2
MCB 404	Sys & Integrative Physiol Lab	1 to 2
MCB 450	Introductory Biochemistry	3
SE 400	Engineering Law	3 or 4
Business Systems Integration & Consulting		
Core Requirement:		
SE 400	Engineering Law	3 or 4
Group I (At least one course):		
ACCY 200	Fundamentals of Accounting (A basic accounting course is highly recommended)	3
ACCY 201	Accounting and Accountancy I (A basic accounting course is highly recommended)	3
ACCY 202	Accounting and Accountancy II (A basic accounting course is highly recommended)	3
ADV 150	Introduction to Advertising	3
BADM 310	Mgmt and Organizational Beh	3
BADM 311	Leading Individuals and Teams	3
BADM 312	Designing and Managing Orgs	3
BADM 320	Principles of Marketing	3
BADM 445	Small Business Consulting	4
BADM 446	Entrepreneurship: New Venture Creation	4
BTW 250	Principles Bus Comm	3
BTW 261	Principles Tech Comm	3
FIN 221	Corporate Finance	3
FIN 300	Financial Markets	3
IE 420	Financial Engineering	3 or 4
Group II (At least one course)		
BADM 352	Database Design and Management	3
BADM 353	Info Sys Analysis and Design	3
CS 225	Data Structures	4
All other 200-, 300-, 400-level CS courses		
Civil Engineering Structures		
CEE 380	Geotechnical Engineering	3
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 462	Steel Structures II	3 or 4

Code	Title	Hours
CEE 463	Reinforced Concrete II	3 or 4
CEE 465	Design of Structural Systems	3
SE 400	Engineering Law	3 or 4
Computer Science		
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 410	Text Information Systems	3 or 4
CS 411	Database Systems	3 or 4
CS 425	Distributed Systems	3 or 4
CS 438	Communication Networks	3 or 4
All other 200-,300-,400-level CS courses		
SE 400	Engineering Law	3 or 4
Construction		
CEE 300	Behavior of Materials (Credit will not be given for CEE 300, ME 330 and MSE 280 (only one course may be taken out of these three))	4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 380	Geotechnical Engineering	3
CEE 420	Construction Productivity	3 or 4
CEE 421	Construction Planning	3 or 4
CEE 422	Construction Cost Analysis	3 or 4
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 465	Design of Structural Systems	3
ME 330	Engineering Materials (Credit will not be given for CEE 300, ME 330 and MSE 280 (only one course may be taken out of these three))	4
SE 400	Engineering Law	3 or 4
Control Systems		
CS 225	Data Structures	4
ECE 470/AE 482/ME 445	Introduction to Robotics	4
ECE 486	Control Systems	4
ECE 490	Introduction to Optimization	3 or 4

Code	Title	Hours
IE 410	Advanced Topics in Stochastic Processes & Applications	3 or 4
MATH 444	Elementary Real Analysis	3 or 4
MATH 461	Probability Theory	3 or 4
MATH 464	Statistics and Probability II	3 or 4
ME 360	Signal Processing	3.5
ME 460	Industrial Control Systems	4
ME 461	Computer Cntrl of Mech Systems	3 or 4
SE 400	Engineering Law	3 or 4
SE 420	Digital Control Systems	4
SE 422	Robot Dynamics and Control	4
SE 423	Mechatronics	3
Digital Prototyping		
ME 270	Design for Manufacturability	3
ME 451	Computer-Aided Mfg Systems	3 or 4
ME 452	Num Control of Mfg Processes	3 or 4
ME 471/AE 420/CSE 451	Finite Element Analysis	3 or 4
SE 400	Engineering Law	3 or 4
SE 402	Comp-Aided Product Realization	3 or 4
SE 410	**Component Design (SE Design Electives - one course must be taken to fulfill the design elective requirement but additional design electives may then be taken and will count towards this SFO)**	**3**
SE 413	**Engineering Design Optimization (SE Design Electives - one course must be taken to fulfill the design elective requirement but additional design electives may then be taken and will count towards this SFO)**	**3 or 4**
SE 423	**Mechatronics (SE Design Electives - one course must be taken to fulfill the design elective requirement but additional design electives may then be taken and will count towards this SFO)**	**3**
TAM 302	Engineering Design Principles	3
Engineering Administration		
Core Requirement:		
SE 400	Engineering Law	3 or 4

Code	Title	Hours
Elective Options:		
ACCY 200	Fundamentals of Accounting	3
ACCY 201	Accounting and Accountancy I	3
ACCY 202	Accounting and Accountancy II	3
ADV 150	Introduction to Advertising	3
BADM 310	Mgmt and Organizational Beh	3
BADM 311	Leading Individuals and Teams	3
BADM 312	Designing and Managing Orgs	3
BADM 313	Strategic Human Resource Management	3
BADM 375	Operations Management	3
BADM 380	International Business	3
BADM 381	Multinational Management	3
BTW 250	Principles Bus Comm	3
BTW 261	Principles Tech Comm	3
ECON 302	Inter Microeconomic Theory	3
FIN 221	Corporate Finance	3
GEOG 205	Business Location Decisions	3
IE 330	Industrial Quality Control	3
IE 340/PSYC 358	Human Factors	4
IE 361	Production Planning & Control	3
IE 420	Financial Engineering	3 or 4
IE 445	Human Performance and Cognition in Context	3 or 4
PS 321	Principles of Public Policy	3
SE 411	Reliability Engineering	3 or 4

Engineering Marketing

Core Requirement:		
SE 400	Engineering Law	3 or 4
Elective Options:		
ACCY 200	Fundamentals of Accounting	3
ACCY 201	Accounting and Accountancy I	3
ACCY 202	Accounting and Accountancy II	3
ADV 150	Introduction to Advertising	3
BADM 310	Mgmt and Organizational Beh	3
BADM 320	Principles of Marketing	3
BADM 322	Marketing Research	3
BADM 323	Marketing Communications	3
BADM 325	Consumer Behavior	3
BADM 327	Marketing to Business and Govt	3
BADM 380	International Business	3
BADM 382	International Marketing	3
BADM 420	Advanced Marketing Management	3

Code	Title	Hours
BTW 250	Principles Bus Comm	3
BTW 261	Principles Tech Comm	3
PSYC 245	Industrial Org Psych	3
Environmental Quality		
ACE 310	Natural Resource Economics	3
CEE 330	Environmental Engineering	3
CEE 437	Water Quality Engineering	3
CEE 440	Fate Cleanup Environ Pollutant	4
CEE 442	Environmental Engineering Principles, Physical	4
CEE 443	Env Eng Principles, Chemical	4
CEE 444	Env Eng Principles, Biological	4
CEE 445	Air Quality Modeling	4
CEE 446	Air Quality Engineering	4
ENVS 336	Tomorrow's Environment	3
ENVS 431	Environ Toxicology & Health	3
IB 105	Environmental Biology	3
NPRE 241	Intro to Radiation Protection	2
NRES 419	Env and Plant Ecosystems	3
NRES 472	Environmental Psychology	4
SE 400	Engineering Law	3 or 4
Internet of Things		
Core Requirements:		
ECE 385	Digital Systems Laboratory	3
SE 423	Mechatronics	3
Elective Options:		
CS 125	Intro to Computer Science	4
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 233	Computer Architecture	4
CS 241	System Programming	4
ECE 120	Introduction to Computing	4
Manufacturing Engineering		
ME 330	Engineering Materials (Credit will not be given for CEE 300, ME 330 and MSE 280 (only one course may be taken out of these three))	4
SE 400	Engineering Law	3 or 4
SE 423	Mechatronics	3
Other courses from Digital Protoyping and Control Systems SFO		
Nondestructive Testing and Evaluation		
Core Requirement:		
SE 412	Nondestructive Evaluation	3 or 4
Elective Options:		
CEE 300	Behavior of Materials (Credit is not give for CEE 300 and MSE 280)	4

Code	Title	Hours
CS 225	Data Structures	4
CS 440	Artificial Intelligence	3 or 4
CS 446	Machine Learning	3 or 4
ECE 470	Introduction to Robotics	4
ECE 473	Fund of Engrg Acoustics	3 or 4
ME 351	Analysis of Mfg Processes	3
ME 471	Finite Element Analysis	3 or 4
SE 400	Engineering Law	3 or 4
TAM 412	Intermediate Dynamics	4
TAM 456	Experimental Stress Analysis	3
Operations Research		
IE 360	Facilities Planning and Design	3
IE 361	Production Planning & Control	3
MATH 461	Probability Theory	3 or 4
MATH 464	Statistics and Probability II	3 or 4
~~ME 351~~	~~Analysis of Mfg Processes~~	~~3~~
ME 351	Analysis of Mfg Processes	3
ME 451	Computer-Aided Mfg Systems	3 or 4
SE 400	Engineering Law	3 or 4
~~SE 411~~	~~Reliability Engineering~~	~~3 or 4~~
SE 411	Reliability Engineering	3 or 4
Rehabilitation Engineering		
CHEM 232	Elementary Organic Chemistry I	3 or 4
ECE 414	Biomedical Instrumentation	3
ECE 415	Biomedical Instrumentation Lab	2
MCB 150	Molec & Cellular Basis of Life	4
MCB 250	Molecular Genetics	3
MCB 251	Exp Techniqs in Molecular Biol	2
REHB 401	Introduction to Rehabilitation	4
REHB 402	Medical Aspects of Disability	4
SE 400	Engineering Law	3 or 4
Theoretical and Applied Mechanics		

Code	Title	Hours
CEE 300	Behavior of Materials (Credit will not be given for CEE 300, ME 330 and MSE 280 (only one course may be taken out of these three))	4
ME 471	Finite Element Analysis	3 or 4
SE 400	Engineering Law	3 or 4
TAM 412	Intermediate Dynamics	4
TAM 424	Mechanics of Structural Metals	3 or 4
TAM 428	Mechanics of Composites	3
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4
TAM 451	Intermediate Solid Mechanics	4
TAM 456	Experimental Stress Analysis	3

Technical Electives

Course List

Code	Title	Hours
Design elective selected from the departmentally approved list of Design Electives below:		3
SE 410	Component Design	3
SE 420	Digital Control Systems	4
SE 423	Mechatronics	3
SE 413	Engineering Design Optimization	3 or 4
Engineering science elective selected from the departmentally approved list of Engineering Science Electives below:		3
ME 200	Thermodynamics	3
MSE 280	Engineering Materials	3

Electives

Course List

Code	Title	Hours
The Grainger College of Engineering Liberal Education course list, or additional courses from the campus General Education lists for Social and Behavioral Sciences or Humanities and the Arts 4		**6**
Free electives. Additional unrestricted course work, subject to certain exceptions as noted by the College, so that there are at least 128 credit hours earned toward the degree. 5		**6**
Total Hours of Curriculum to Graduate		**128**

1

2 MATH 220 *may be substituted, with four of the five credit hours applying toward the degree.* MATH 220 *is appropriate for students with no background in calculus.*

3The following course substitutions may be used interchangeably to comply with prerequisites of specified courses in some of the secondary fields:
CEE 202, IE 300, STAT 400
CEE 201, IE 310
MSE 406, CEE 300

ECE 486, SE 320, ME 340

4 The Grainger College of Engineering approved liberal education course list can be found here. Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.

5 The Grainger College of Engineering restrictions to free electives can be found here.

~~Pursuit of campus minors, dual degrees, and James Scholar contracts may be integrated with customized secondary field options.Courses taken may be applied to minors, dual degrees, or contracts as well as secondary field options.Pre-approved Secondary Fields Pre-approved secondary fields are listed below.The following course substitutions may be used interchangeably to comply with prerequisites of specified courses in some of the secondary fields:CEE 202, IE 300, STAT 400 CEE 201, IE 310 MSE 406, CEE 300 ECE 486, SE 320, ME 340 Students may petition to the department for inclusion of a course in the secondary fields listed below.The most likely classes to be accepted are non-permanent and experimental offerings relevant to the various fields.Automotive Engineering Bioengineering 3 Business Systems Integration and Consulting Civil Engineering Structures Communications and Computer Systems Computer Science 3 Construction Control Systems Digital Prototyping Engineering Administration Engineering Marketing Environmental Quality Internet of Things (IOT) Manufacturing Engineering 3 Nondestructive Testing and Evaluation Operations Research Quality Control Rehabilitation Engineering Robotics Theoretical and Applied Mechanics Customized Secondary Fields Customized secondary fields differ from pre-approved ones in that no sets of specified courses to choose from have been predefined.For all customized secondary field options, a course list must be constructed and submitted for approval by the department.The following list contains examples of over fifty titles of customized secondary field options which have been approved.The complete list may be found at the department's secondary field website .Additional titles beyond those listed may be proposed.A foreign language (several) An engineering discipline (several) Audio Engineering Economics Entrepreneurship Finance Fluid Dynamics International Business Mathematics Pre-Law Pre-Med Renewable Energy Technical Electives The design elective augments a student's knowledge in one or more sub-disciplines of mechanics and structures, control systems, and decision-making that support a systems approach to engineering.The engineering science elective extends the knowledge of that area.General Education Requirements~~

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~A minimum of six courses is required, as follows:~~		~~18~~
~~ECON 102~~	~~Microeconomic Principles~~	~~3~~
~~or ECON 103~~	~~Macroeconomic Principles~~	
~~Social and Behavioral Sciences~~		~~3~~
~~Humanities & the Arts~~		~~6~~
~~The Grainger College of Engineering Liberal Education course list, or from the campus General Education lists for Social and Behavioral Sciences or Humanities and the Arts~~		~~6~~
~~Cultural Studies: Non-Western Cultures (1 course)~~		
~~Cultural Studies: U.S. Minorities Cultures (1 course)~~		
~~Cultural Studies: Western/Comparative Cultures (1 course)~~		
~~Non-Primary Language Requirement~~		

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~

Code	Title	Hours
Completion of the third semester or equivalent of a non-primary language is required. Completion of three years of a single language in high school satisfies this requirement.		0-9
University Composition These courses teach fundamentals of expository writing.		

Course List

Code	Title	Hours
Choose one:		
RHET 105	Writing and Research	
CMN 111	Oral & Written Comm I	
& CMN 112	and Oral & Written Comm II	
ESL 111	Intro to Academic Writing I	
& ESL 112	and Intro to Academic Writing II	
ESL 115	Principles of Academic Writing	
Advanced Composition (satisfied by completing the combination SE 494 + SE 495 in the Systems Engineering and Design Technical Core)		
Free Electives		

Course List

Code	Title	Hours
Free Electives		
Free electives. Additional unrestricted course work, subject to certain exceptions as noted by the College, so that there are at least 128 credit hours earned toward the degree.		6
Total Hours of Curriculum to Graduate		128

EP Documentation

Attach
Rollback/Approval
Notices

DMI Documentation

Attach Final
Approval Notices

Banner/Codebook
Name
BS:Systems Engr & Design -UIUC

Program Code: 10KP5532BS

Minor Code	Conc Code	Degree Code	BS Major Code
5532			

Senate Approval
Date

Senate Conference Approval Date

BOT Approval Date

IBHE Approval Date

Effective Date:

Attached Document

Justification for this request

Program Reviewer Comments

Deb Forgacs (dforgacs) (01/09/20 1:43 pm): Rollback: .

Key: 118

Proposal	Degree	Footnote 1
EP.20.91	BS in Civil Engineering	External transfer students take ENG 300 instead
EP.20.92	BS in Computer Engineering	External transfer students take ENG 300 instead
EP.20.93	BSAG in Agricultural and Biological Engineering	In addition to the Biological and Natural Sciences Elective hours required for Agricultural and Biological Engineering (6 hours), a further 4 hours of biological sciences must be completed to make up a total of 10 hours.
EP.20.94	BS in Agricultural and Biological Engineering	External transfer students take ENG 300 instead
EP.20.95	BS in Agricultural and Biological Engineering: Agricultural Engineering	The extra hour of credit for this course may be used to help meet free elective requirements
EP.20.96	BS in Agricultural and Biological Engineering: Biological Engineering	May be taken for 4 credit hours; the extra hour may be used to help meet free elective requirements
EP.20.97	BS in Computer Science	External transfer students take ENG 300 instead
EP.20.98	BS in Electrical Engineering	External transfer students take ENG 300 instead
EP.20.99	BS in Engineering Mechanics	External transfer students take ENG 300 instead
EP.20.100	BS in Engineering Physics	External transfer students take ENG 300 instead
EP.20.101	BS in Systems Engineering & Design	External transfer students take ENG 300 instead
EP.20.102	BS in Nuclear, Plasma and Radiological Engineering	External transfer students take ENG 300 instead
EP.20.103	BS in Mechanical Engineering	External transfer students take ENG 300 instead
EP.20.104	BS in Materials Science & Engineering	External transfer students take ENG 300 instead
EP.20.105	BS in Industrial Engineering	External transfer students take ENG 300 instead