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EP.21.100
March 29, 2021

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN SENATE
COMMITTEE ON EDUCATIONAL POLICY
(Final; Information)

EP.21.100 Report of Administrative Approvals through March 29, 2021

Senate committees are authorized to act for and in the name of the Senate on minor matters. Below is a listing of the administrative approvals the Senate Committee on Educational Policy approved at its meeting on April 5, 2021. Additional information for each approval is attached.

A. Undergraduate Programs

1) **Computer Engineering, BS** – update the list of required Foundational Mathematics and Science courses to *remove* CHEM 102, General Chemistry I (3 hours), CHEM 103, General Chemistry Lab I (1 hour), and MATH 286, Intro to Differential Eq plus (4 hours) and *add* MATH 257, Linear Algebra with Computational Applications (3) or MATH 416, Abstract Linear Algebra (3 hours) and MATH 285, Intro Differential Equations (3 hours). Total hours of Foundational Mathematics and Sciences decreases from 31 to 29 hours. Technical Electives required increase from 27 to 29 hours, and the following courses are added as options from which students can choose to fulfill these 29 hours of Technical Electives: CHEM 102, General Chemistry I (3 hours), CHEM 103, General Chemistry Lab (1 hour), ATMS 201, General Physical Meteorology (3 hours), CPSC 265, Genetic Engineering Lab (3 hours), and PSYC 204, Intro to Brain and Cognition (3 hours). MATH 415, Applied Liner Algebra (3 or 4 hours) is removed from the list of Technical Electives. These changes better calibrate requirements for this program with the Computer Science program and is in alignment with ABET accreditation requirements. There is no change in total hours required**.**
2) **Electrical Engineering, BS** – update the list of required Foundational Mathematics and Science courses to remove MATH 286, Intro to Differential Eq plus (4 hours) and add MATH 257, Linear Algebra with Computational Applications (3) or MATH 416, Abstract Linear Algebra (3 hours) and MATH 285, Intro Differential Equations (3 hours). Total hours of Foundational Mathematics and Sciences decreases from 31 to 29 hours. Technical Electives required increase from 27 to 29 hours, and the following courses are added as options from which students can choose to fulfill these 29 hours of Technical Electives: CHEM 102, General Chemistry I (3 hours), CHEM 103, General Chemistry Lab (1 hour), ATMS 201, General Physical Meteorology (3 hours), CPSC 265, Genetic Engineering Lab (3 hours), and PSYC 204, Intro to Brain and Cognition (3 hours). MATH 415, Applied Liner Algebra (3 or 4 hours) is removed from the list of Technical Electives. These changes better calibrate requirements for this program with the Computer Science program and is in alignment with ABET accreditation requirements. There is no change in total hours required**.**

B. Graduate Programs

1) **Business Analytics, MS** – in the list of Analytics Electives, from which students are required to take 20-24 hours, *remove* BADM 502, Communicating with Data and Decision Making (2 hours), and BADM 543, Technology Strategy (2 or 4 hours) and *add* BADM 550, Business Practicum (0-4 hours). Change the range

of General Graduate Electives such that students are to select 0 to 4 hours rather than 0 to 8 hours to meet the minimum required 36 hours. There is no change in total hours required.

2) **Corporate Governance & International Business Concentration** – add the MS Management program to a list of programs eligible to pursue this concentration. There are no revisions to the concentration itself and no change in hours required for the concentration or the MS Management degree program.
3) **Information Technology & Control Concentration** – remove BADM 556, Electronic Commerce (4 hours) as a concentration-required course. Add BADM 562, Social Media Strategy (4 hours) to the list of courses from which students are to select to reach the minimum of 12 required for the concentration. There is no change to total hours required.
4) **Supply Chain Management Concentration** – revise the list of courses from which students are to select to reach the minimum of 12 required for the concentration to *remove* BADM 560, Planning and Control Systems (4 hours); BADM 590, Seminar in Business Admin, Section OM (0 to 4 hours); and BADM 590, Seminar in Business Admin, Section SS (0 to 4 hours) and *add* BADM 564, Business Process Improvement (4 hours); BADM 565, Strategic Sourcing (4 hours); and BADM 575, Supply Chain Analytics (4 hours). There is no change to total hours required.
5) **Business Data Analytics Concentration** – revise the requirements to specifically require BADM 554, Enterprise Database Management (4 hours); FIN 510, Big Data Analytics in Finance for Predictive and Causal Analysis (4 hours); and BDI 513, Data Storytelling (4 hours). Remove the choose-from list from which students selected 12 hours from BADM 554 (now specifically required), BADM 557, Business Intelligence (4 hours); BADM 562, Social Media Strategy (4 hours); BADM 571, Digital Business & IT Strategy (4 hours); BADM 573, Decision Analytics (4 hours); and BADM 577, Predictive Data Analytics (4 hours). Remove the note that course substitutions may be approved by the Department of Business Administration. There is no change to total hours required.

10KP0109BS: COMPUTER ENGINEERING, BS

In Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. 1933 Head (b-hajek@illinois.edu; oelze@illinois.edu; erhan@illinois.edu)
3. KP Committee Chair (bsnewell@illinois.edu; danko@illinois.edu; kcp@illinois.edu; jmakela@illinois.edu)
4. KP Dean (candyd@illinois.edu)
5. University Librarian (jpwilkin@illinois.edu)
6. Provost (kmartens@illinois.edu)
7. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
8. Senate (jtempel@illinois.edu)
9. U Senate Conf (none)
10. Board of Trustees (none)
11. IBHE (none)
12. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Wed, 24 Feb 2021 21:58:49 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Wed, 24 Feb 2021 22:01:11 GMT
   E Kudeki (erhan): Approved for 1933 Head
3. Tue, 09 Mar 2021 19:52:05 GMT
   Brooke Newell (bsnewell): Approved for KP Committee Chair
4. Tue, 09 Mar 2021 19:52:23 GMT
   Candy Deaville (candyd): Approved for KP Dean
5. Tue, 09 Mar 2021 20:22:10 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
6. Wed, 10 Mar 2021 21:48:10 GMT
   Kathy Martensen (kmartens): Rollback to KP Dean for Provost
7. Wed, 10 Mar 2021 21:52:31 GMT
   Candy Deaville (candyd): Rollback to KP Committee Chair for KP Dean
8. Thu, 18 Mar 2021 20:23:34 GMT
   Brooke Newell (bsnewell): Approved for KP Committee Chair
9. Thu, 18 Mar 2021 20:29:32 GMT
   Candy Deaville (candyd): Approved for KP Dean
10. Thu, 18 Mar 2021 20:31:31 GMT
    John Wilkin (jpwilkin): Approved for University Librarian
11. Mon, 22 Mar 2021 18:57:44 GMT
    Kathy Martensen (kmartens): Approved for Provost

History

1. Apr 24, 2019 by Deb Forgacs (dforgacs)
2. Aug 12, 2019 by Deb Forgacs (dforgacs)
3. Feb 26, 2020 by Brooke Newell (bsnewell)
4. Mar 31, 2020 by Deb Forgacs (dforgacs)
5. Apr 14, 2020 by Deb Forgacs (dforgacs)

Date Submitted:Tue, 23 Feb 2021 22:09:27 GMT

Viewing:10KP0109BS : Computer Engineering, BS

Changes proposed by: E Kudeki

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*

Administrative approval: Minor revision in Computer Engineering BS curriculum: Updating courses in the Foundational Mathematics and Science requirements and the Technical Electives list.

EP Control Number

EP.21.100

Official Program Name

Computer Engineering, BS

Effective Catalog Term

Fall 2021

Sponsor College

Grainger College of Engineering

Sponsor Department

Electrical and Computer Engineering

Sponsor Name

Erhan Kudeki

Sponsor Email

erhan@illinois.edu

College Contact

Brooke Newell

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Program Description and Justification

Justification for proposal change:

The proposal is for:

1) Replacing MATH 286 by the sequence of (MATH 257 or MATH 416) and MATH 285,
2) Removing CHEM 102/103 as a required course, and
3) Adding CHEM 102/103, ATMS 201, CPSC 265, PSYC 204 as technical electives

With these changes, the credit hours under the Foundational Math and Science section will decrease from 31 to 29 hours, whereby the credit hours under the Technical Electives will increase from 27 to 29 hours. As such, there is a net zero change of overall credit hours.

Justification: The Math department is developing MATH 257 as the eventual replacement for MATH 415, with the same theoretical content, but with an emphasis on using programming to perform matrix operations instead of calculating them on paper. All fields of Electrical and Computer Engineering require linear algebra, and many advanced courses in EE and CE degree programs currently re-teach the same linear algebra concepts. Requiring Math 257 (3 credit hours) instead of the one hour of linear algebra that is part of Math 286 facilitates a higher level of abstraction at the beginning of the semester in a number of higher-level Electrical and Computer Engineering courses.

Removing the requirements for CHEM 102 and 103 in Computer Engineering helps to better harmonize the degree requirements in Computer Engineering and Computer Science. Also this removal helps balance the load between Electrical Engineering and Computer Engineering curricula since Computer Engineering majors were required to take two additional classes (MATH 213/CS 173 and CS 225) in their first two years compared to Electrical Engineering majors under the current curriculum. Interested Computer Engineering majors will still be able to take CHEM 102/103 as technical electives. Further broadening of the ECE technical electives list with the addition of ATMS 201, CPSC 265, PSYC 204 is motivated by providing additional options with potential data science applications for both Computer Engineering and Electrical Engineering majors.

ABET accreditation (https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2019-2020/#GC5) requirement of 30 hours of basic math and sciences will be met by counting one credit hour of the 3 hour discrete math class (MATH 213/CS 173) the Computer Engineering majors are required to take as "basic math".

Corresponding Degree

BS Bachelor of Science

Is this program interdisciplinary?

No

Academic Level

Undergraduate

Will you admit to the concentration directly?

No

Is a concentration required for graduation?

No

CIP Code

140901 - Computer Engineering, General.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Admission Requirements

Is this revision a change to the admission status of the program?

No

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

No impact.

Estimated Annual Number of Degrees Awarded

What is the matriculation term for this program?

Fall

What is the typical time to completion of this program?

4 years

What are the minimum Total Credit Hours required for this program?

128 hours

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

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

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/ acknowledgement from faculty, students, and/or other impacted units as appropriate.

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.

No impact

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.

No impact

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

Yes

Required courses

MATH 285 - Intro Differential Equations

Explain how the inclusion or removal of the courses/subjects listed above impacts the offering departments.

CHEM 102/103 is being removed from the list of required core courses --- it will be a Technical Elective after this revision is approved. See attached letter of support from Chemistry.

MATH 257 will be added to the CE program as a required course to be taken after MATH 220. MATH 416 will be an alternative to MATH 257 requirement. Also MATH 286 will be discontinued and replaced by MATH 285. See attached letter of support from Mathematics.

Attach letters of support from other departments.

Computer Engineering, BS Supporting Doc CHEM Support letter.pdf
Support letter for ECE revision.pdf
Computer Engineering BS Support Doc CPSC LOS.docx
Computer Engineering BS Support Doc ATMS Support Letter.pdf
Computer Engineering BS Support Doc PSYC LOS.docx

Financial Resources

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

No

Are you seeking a change in the tuition rate or differential 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).

CE BS program is ABET Accredited.
The Program Educational Objectives of the CE program presented to ABET is as follows:
The University of Illinois Computer Engineering program will produce graduates having the choice, talents, and knowledge to:
1. Pursue a diverse range of careers as engineers, consultants, and entrepreneurs.
2. Continue their education in leading graduate programs in engineering and interdisciplinary areas to emerge as researchers, experts, and educators.
3. Learn and create new knowledge in ever-changing environments of the 21st century, and communicate their work and ideas to colleagues and the public at large.
4. Practice and inspire high ethical and technical standards, and lead their professional disciplines, organizations, and communities globally.
All four of these objectives require a student to possess all seven of the skills listed as Student Outcomes of our program (see below). The particular career paths listed in the first two objectives are engineers, consultants, entrepreneurs --- reachable directly after the B.S. degree --- as well as researchers, experts, and educators, typically for those graduates who choose to continue their education in some graduate program. Each of these six career choices will critically depend on students acquiring all seven of the particular skills enumerated as Student Outcomes, namely:
1. (Principles) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. (Design) 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. (Communication) an ability to communicate effectively with a range of audiences.
4. (Professionalism) 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. (Teamwork) 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. (Analysis) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. (Learning) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
Student's achievement of these objectives and outcomes are monitored and assessed using using a strategy that depends on Self-Assessment reports written by ECE instructors and course directors as well as student and alumni surveys.

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

Computer Engineering BS Support Doc Side by Side.xlsx

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.

Computer Engineering at The Grainger College of Engineering focuses on the development of vital computing technologies, ranging from chips to computers to networks to programming tools to key algorithms for building exciting applications. Fundamentally, Computer Engineering addresses the problem of building scalable, trustworthy computing systems, and the faculty's interests span a broad spectrum of issues pertinent to this theme. Computer engineering has taken the lead in revolutionizing many science and engineering disciplines with parallel computing, from chips to clouds to planet-scale critical infrastructures, and has defined new standards of security, privacy, and dependability for systems ranging from small circuits to the electric power grids of many nations. Students need a broad and sound set of mathematical and computing skills, and are well-served by a flexible curriculum that enables them to pursue topics of interest among the many subdisciplines in computing.

The computer engineering core curriculum focuses on fundamental computer engineering knowledge: circuits, systems, electromagnetics, computer systems, electronics for information processing and communication, and computer science. The rich set of ECE elective courses permits students to concentrate in any sub-discipline of computer engineering including: hardware systems; cyberphysical systems; foundations and theory; software and languages; algorithms and mathematical tools; trust, reliability, security; networking, mobile and distributed computing; big data analytics and systems; artificial intelligence, robotics, cybernetics.

Statement for Programs of Study Catalog

Graduation Requirements

Minimum Technical GPA (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-TechnicalGPARequirement)**:2.0**
TGPA is required for ECE courses (except ECE 316). SeeTechnical GPA (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-TechnicalGPARequirement)to clarify requirements.

Minimum Overall GPA:2.0
Minimum hours required for graduation:128 hours
General education:Students must complete the Campus General Education (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/)**requirements including the campus general education language requirement.Specific Advanced Composition courses required for this degree are listed below.**

Orientation and Professional Development

Code	Title	Hours
ENG 100	Engineering Orientation[1]	0
Total Hours		0

Foundational Mathematics and Science

Code	Title	Hours
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
MATH 221	Calculus I[2]	4
MATH 257	Linear Algebra with Computational Applications (Linear Algebra)	3
or MATH 416	Abstract Linear Algebra	
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 286	Intro to Differential Eq Plus	4
MATH 285	Intro Differential Equations (Linear Algebra)	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2

PHYS 214	Univ Physics: Quantum Physics	2
Total Hours		29

Computer Engineering Technical Core

Code	Title	Hours
ECE 110	Introduction to Electronics[3]	3
ECE 120	Introduction to Computing	4
ECE 210	Analog Signal Processing	4
ECE 220	Computer Systems & Programming	4
CS 173	Discrete Structures[4]	3
CS 225	Data Structures	4
ECE 313	Probability with Engrg Applic[5]	3
ECE 374	Introduction to Algorithms & Models of Computation	4
ECE 385	Digital Systems Laboratory	3
ECE 391	Computer Systems Engineering	4
Total Hours		36

Technical Electives

Code	Title	Hours
29 hours to be selected from departmentally approved List of Technical Electives below:		
AE 202	Aerospace Flight Mechanics	3
AE 302	Aerospace Flight Mechanics II	3
AE 311	Incompressible Flow	3
AE 312	Compressible Flow	3
AE 321	Mechs of Aerospace Structures	3
AE 352	Aerospace Dynamical Systems	3
AE 353	Aerospace Control Systems	3
AE 402	Orbital Mechanics	3 or 4
AE 403	Spacecraft Attitude Control	3 or 4
AE 410	Computational Aerodynamics	3 or 4
AE 412	Viscous Flow & Heat Transfer	4
AE 416	Applied Aerodynamics	3 or 4
AE 419	Aircraft Flight Mechanics	3 or 4
AE 420	Finite Element Analysis	3 or 4
AE 427	Mechanics of Polymers	3
AE 428	Mechanics of Composites	3
AE 433	Aerospace Propulsion	3 or 4
AE 434	Rocket Propulsion	3 or 4
AE 435	Electric Propulsion	3 or 4
AE 451	Aeroelasticity	3 or 4
AE 460	Aerodynamics & Propulsion Lab	2
Agri. Bio Eng. (ABE): all 300 and 400 level courses except 440. Exceptions for seminars and special topics will be reviewed in Advising Office.		
ASTR 210	Introduction to Astrophysics	3
ASTR 310	Computing in Astronomy	3
ASTR 330	Extraterrestrial Life	3
ASTR 350	The Big Bang, Black Holes, and the End of the Universe	3
ASTR 404	Stellar Astrophysics	3
ASTR 405	Planetary Systems	3
ASTR 406	Galaxies and the Universe	3
ASTR 414	Astronomical Techniques	4
ASTR 450	Astrochemistry	4
ATMS 201	General Physical Meteorology	3

ATMS 301	Atmospheric Thermodynamics	3
ATMS 302	Atmospheric Dynamics I	3
ATMS 303	Synoptic-Dynamic Wea Analysis	4
ATMS 304	Radiative Transfer-Remote Sens	3
ATMS 305	Computing and Data Analysis	3
ATMS 404	Risk Analysis in Earth Science	3 or 4
ATMS 405	Boundary Layer Processes	4
ATMS 406	Tropical Meteorology	4
ATMS 410	Radar Remote Sensing	4
ATMS 411	Satellite Remote Sensing	4
ATMS 420	Atmospheric Chemistry	4
ATMS 421	Earth Systems Modeling	4
ATMS 425	Air Quality Modeling	4
ATMS 447	Climate Change Assessment	3
ATMS 449	Biogeochemical Cycles	4
BIOC 406	Gene Expression & Regulation	3
BIOC 440	Physical Chemistry Principles	4
BIOC 446	Physical Biochemistry	3
BIOC 455	Technqs Biochem & Biotech	4
BIOE 201	Conservation Principles Bioeng	3
BIOE 202	Cell & Tissue Engineering Lab	2
BIOE 302	Modeling Human Physiology	3
BIOE 414	Biomedical Instrumentation	3
BIOE 415	Biomedical Instrumentation Lab	2
BIOE 461	Cellular Biomechanics	4
BIOE 467	Biophotonics	3
BIOE 476	Tissue Engineering	3
BIOE 480	Magnetic Resonance Imaging	3 or 4
Biophysics (BIOP): All 400 level courses except seminars and special topics, which may be reviewed in the Advising Office		
CHBE 221	Principles of CHE	3
CHBE 321	Thermodynamics	4
CHBE 421	Momentum and Heat Transfer	4
CHBE 422	Mass Transfer Operations	4
CHBE 424	Chemical Reaction Engineering	3
CHBE 430	Unit Operations Laboratory	4
CHBE 431	Process Design	4
CHBE 440	Process Control and Dynamics	3
CHBE 451	Transport Phenomena	3
CHBE 452	Chemical Kinetics & Catalysis	3
CHBE 453	Electrochemical Engineering	2 or 3
CHBE 456	Polymer Science & Engineering	3
CHBE 457	Microelectronics Processing	3
CHBE 471	Biochemical Engineering	3 or 4
CHBE 472	Techniques in Biomolecular Eng	3 or 4
CHBE 473	Biomolecular Engineering	3 or 4
CHBE 474	Metabolic Engineering	3 or 4
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
CHEM 104	General Chemistry II	3
CHEM 105	General Chemistry Lab II	1
Chemistry (CHEM): All 200, 300 and 400 level courses except 397, 497, 499, and seminars and special topics, which may be reviewed in the Advising Office		

CEE 310	Transportation Engineering	3
CEE 330	Environmental Engineering	3
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 430	Ecological Quality Engineering	2
CEE 447	Atmospheric Chemistry	4
CEE 491	Decision and Risk Analysis	3 or 4
CPSC 265	Genetic Engineering Lab	3
CS 101	Intro Computing: Engrg & Sci (By Approval)	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 242	Programming Studio	3
CS 357	Numerical Methods I	3
CS 410	Text Information Systems	3 or 4
CS 411	Database Systems	3 or 4
CS 412	Introduction to Data Mining	3 or 4
CS 413	Intro to Combinatorics	3 or 4
CS 414	Multimedia Systems	3 or 4
CS 418	Interactive Computer Graphics	3 or 4
CS 419	Production Computer Graphics	3 or 4
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4
CS 421	Programming Languages & Compilers	3 or 4
CS 422	Programming Language Design	3 or 4
CS 423	Operating Systems Design	3 or 4
CS 424	Real-Time Systems	3 or 4
CS 425	Distributed Systems	3 or 4
CS 426	Compiler Construction	3 or 4
CS 427	Software Engineering I	3 or 4
CS 428	Software Engineering II	3 or 4
CS 429	Software Engineering II, ACP	3
CS 431	Embedded Systems	3 or 4
CS 433	Computer System Organization	3 or 4
CS 436	Computer Networking Laboratory	3 or 4
CS 438	Communication Networks	3 or 4
CS 439	Wireless Networks	3 or 4
CS 440	Artificial Intelligence	3 or 4
CS 445	Computational Photography	3 or 4
CS 446	Machine Learning	3 or 4
CS 447	Natural Language Processing	3 or 4
CS 450	Numerical Analysis	3 or 4
CS 460	Security Laboratory	3 or 4
CS 461	Computer Security I	4
CS 463	Computer Security II	3 or 4
CS 465	User Interface Design	3 or 4
CS 466	Introduction to Bioinformatics	3 or 4
CS 467	Social Visualization	3 or 4
CS 473	Algorithms	4
CS 475	Formal Models of Computation	3 or 4
CS 476	Program Verification	3 or 4
CS 477	Formal Software Development Methods	3 or 4
CS 481	Advanced Topics in Stochastic Processes & Applications	3 or 4

CS 484	Parallel Programming	3 or 4
CS 398	Special Topics (As approved)	1 to 4
CS 498	Special Topics (As approved)	1 to 4
ECE 297	Individual Study	1
ECE 304	Photonic Devices	3
ECE 307	Techniques for Engrg Decisions	3
ECE 310	Digital Signal Processing	3
ECE 311	Digital Signal Processing Lab	1
ECE 314	Probability in Engineering Lab	1
ECE 329	Fields and Waves I	3
ECE 330	Power Ckts & Electromechanics	3
ECE 333	Green Electric Energy	3
ECE 340	Semiconductor Electronics	3
ECE 342	Electronic Circuits	3
ECE 343	Electronic Circuits Laboratory	1
ECE 350	Fields and Waves II	3
ECE 365	Data Science and Engineering	3
ECE 374	Introduction to Algorithms & Models of Computation	4
ECE 380	Biomedical Imaging	3
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 396	Honors Project	1 to 4
ECE 397	Individual Study in ECE	0 to 4
ECE 402	Electronic Music Synthesis	3
ECE 403	Audio Engineering	3
ECE 408	Applied Parallel Programming	4
ECE 411	Computer Organization & Design	4
ECE 412	Microcomputer Laboratory	3
ECE 414	Biomedical Instrumentation	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 416	Biosensors	3
ECE 417	Multimedia Signal Processing	4
ECE 418	Image & Video Processing	4
ECE 419	Security Laboratory	3 or 4
ECE 420	Embedded DSP Laboratory	2
ECE 422	Computer Security I	4
ECE 424	Computer Security II	3 or 4
ECE 425	Intro to VLSI System Design	3
ECE 428	Distributed Systems	3 or 4
ECE 431	Electric Machinery	4
ECE 432	Advanced Electric Machinery	3
ECE 435	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 441	Physcs & Modeling Semicond Dev	3
ECE 443	LEDs and Solar Cells	4
ECE 444	IC Device Theory & Fabrication	4
ECE 445	Senior Design Project Lab	4
ECE 446	Principles of Experimental Research in Electrical Engineering	4
ECE 447	Active Microwave Ckt Design	3
ECE 448	Artificial Intelligence	3 or 4

ECE 451	Adv Microwave Measurements	3
ECE 452	Electromagnetic Fields	3
ECE 453	Wireless Communication Systems	4
ECE 454	Antennas	3
ECE 455	Optical Electronics	3 or 4
ECE 456	Global Nav Satellite Systems	4
ECE 457	Microwave Devices & Circuits	3
ECE 458	Applic of Radio Wave Propag	3
ECE 459	Communications Systems	3
ECE 460	Optical Imaging	4
ECE 461	Digital Communications	3
ECE 462	Logic Synthesis	3
ECE 463	Digital Communications Lab	2
ECE 464	Power Electronics	3
ECE 465	Optical Communications Systems	3
ECE 466	Optical Communications Lab	1
ECE 467	Biophotonics	3
ECE 468	Optical Remote Sensing	3
ECE 469	Power Electronics Laboratory	2
ECE 470	Introduction to Robotics	4
ECE 472	Biomedical Ultrasound Imaging	3
ECE 473	Fund of Engrg Acoustics	3 or 4
ECE 476	Power System Analysis	3
ECE 478	Formal Software Development Methods	3 or 4
ECE 480	Magnetic Resonance Imaging	3 or 4
ECE 481	Nanotechnology	4
ECE 482	Digital IC Design	3
ECE 483	Analog IC Design	3
ECE 485	MEMS Devices & Systems	3
ECE 486	Control Systems	4
ECE 487	Intro Quantum Electr for EEs	3
ECE 488	Compound Semicond & Devices	3
ECE 489	Robot Dynamics and Control	4
ECE 490	Introduction to Optimization	3 or 4
ECE 491	Numerical Analysis	3 or 4
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4
ECE 493	Advanced Engineering Math	3 or 4
ECE 495	Photonic Device Laboratory	3
ECE 496	Senior Research Project	2
ECE 499	Senior Thesis	2
ECE 398	Special Topics in ECE (As approved)	0 to 4
ECE 498	Special Topics in ECE (As approved)	0 to 4
ENG 491	Interdisciplinary Design Proj (CubeSat, Solar Decathlon, Formula SAE, Baja SAE or by approval)	1 to 4
GEOL 107	Physical Geology	4
GEOL 208	History of the Earth System	4
GEOL 333	Earth Materials and the Env	4
GEOL 380	Environmental Geology	4
GEOL 411	Structural Geol and Tectonics	4
GEOL 417	Geol Field Methods, Western US	6
GEOL 432	Mineralogy and Mineral Optics	4
GEOL 436	Petrology and Petrography	4

GEOL 440	Sedimentology and Stratigraphy	4
GEOL 450	Probing the Earth's Interior	3
GEOL 452	Introduction to Geophysics	4
GEOL 460	Geochemistry	3
IE 310	Deterministic Models in Optimization	3
IE 330	Industrial Quality Control	3
IE 360	Facilities Planning and Design	3
IE 361	Production Planning & Control	3
IE 400	Design & Anlys of Experiments	3 or 4
IE 410	Advanced Topics in Stochastic Processes & Applications	3 or 4
IE 411	Optimization of Large Systems	3 or 4
IE 412	OR Models for Mfg Systems	3 or 4
IE 413	Simulation	3 or 4
IE 420	Financial Engineering	3 or 4
IE 430	Economic Found of Quality Syst	3 or 4
IE 431	Design for Six Sigma	3
IB 150	Organismal & Evolutionary Biol	4
IB 202	Physiology	3 or 4
IB 203	Ecology	4
IB 204	Genetics	3 or 4
IB 302	Evolution	4
IB 302	Evolution	4
IB 335	Plant Systematics	4
IB 348	Fish and Wildlife Ecology	3
IB 368	Vertebrate Natural History	4
IB 401	Introduction to Entomology	3 or 4
IB 405	Evolution of Traits and Genomes	3
IB 420	Plant Physiology	3
IB 421	Photosynthesis	3
IB 426	Env and Evol Physl of Animals	3
IB 427	Insect Physiology	4
IB 431	Behavioral Ecology	3
IB 432	Genes and Behavior	3
IB 440	Plants and Global Change	3
IB 443	Evolutionary Ecology	3
IB 444	Insect Ecology	3 or 4
IB 451	Conservation Biology	4
IB 452	Ecosystem Ecology	3
IB 453	Community Ecology	3
IB 461	Ornithology	4
IB 462	Mammalogy	4
IB 463	Ichthyology	4
IB 464	Herpetology	4
IB 467	Principles of Systematics	4
IB 468	Insect Classification and Evol	4
IB 471	General Mycology	4
IB 472	Plant Molecular Biology	1
IB 473	Plant Genomics	1
IB 481	Vector-borne Diseases	4
IB 482	Insect Pest Management	3
IB 483	Insect Pathology	3
IB 485	Environ Toxicology & Health	3

IB 486	Pesticide Toxicology	3 or 4
LING 300	Anat & Physiol Spch Mechanism	4
LING 406	Introduction to Computational Linguistics	3 or 4
LING 407	Logic and Linguistic Analysis	3 or 4
LING 427	Language and the Brain	3 or 4
MSE 280	Engineering Materials	3
Material Science and Engineering (MSE): All 300 and 400 level courses except 304, 460, 461, and seminars/special topics, which may be reviewed by the Advising Office		
MATH 213	Basic Discrete Mathematics	3
MATH 347	Fundamental Mathematics	3
MATH 348	Fundamental Mathematics-ACP	4
MATH 357	Numerical Methods I	3
MATH 402	Non Euclidean Geometry	3 or 4
MATH 403	Euclidean Geometry	3 or 4
MATH 412	Graph Theory	3 or 4
MATH 413	Intro to Combinatorics	3 or 4
MATH 414	Mathematical Logic	3 or 4
MATH 415	Applied Linear Algebra	3 or 4
MATH 416	Abstract Linear Algebra	3 or 4
MATH 417	Intro to Abstract Algebra	3 or 4
MATH 418	Intro to Abstract Algebra II	3 or 4
MATH 423	Differential Geometry	3 or 4
MATH 424	Honors Real Analysis	3
MATH 425	Honors Advanced Analysis	3
MATH 427	Honors Abstract Algebra	3
MATH 428	Honors Topics in Mathematics	3
MATH 432	Set Theory and Topology	3 or 4
MATH 442	Intro Partial Diff Equations	3 or 4
MATH 444	Elementary Real Analysis	3 or 4
MATH 446	Applied Complex Variables	3 or 4
MATH 447	Real Variables	3 or 4
MATH 448	Complex Variables	3 or 4
MATH 450	Numerical Analysis	3 or 4
MATH 453	Elementary Theory of Numbers	3 or 4
MATH 473	Algorithms	4
MATH 475	Formal Models of Computation	3 or 4
MATH 481	Vector and Tensor Analysis	3 or 4
MATH 482	Linear Programming	3 or 4
MATH 484	Nonlinear Programming	3 or 4
MATH 487	Advanced Engineering Math	3 or 4
MATH 489	Dynamics & Differential Eqns	3 or 4
MCB 150	Molec & Cellular Basis of Life	4
MCB 250	Molecular Genetics	3
MCB 251	Exp Techniqs in Molecular Biol	2
MCB 252	Cells, Tissues & Development	3
MCB 253	Exp Techniqs in Cellular Biol	2
MCB 300	Microbiology	3
MCB 301	Experimental Microbiology	3
MCB 314	Introduction to Neurobiology	3
MCB 316	Genetics and Disease	4
MCB 354	Biochem & Phys Basis of Life	3
MCB 400	Cancer Cell Biology	3

MCB 401	Cellular 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 406	Gene Expression & Regulation	3
MCB 408	Immunology	3
MCB 410	Developmental Biology, Stem Cells and Regenerative Medicine	3
MCB 413	Endocrinology	3
MCB 419	Brain, Behavior & Info Process	3
MCB 421	Microbial Genetics	3
MCB 424	Microbial Biochemistry	3
MCB 426	Bacterial Pathogenesis	3
MCB 430	Molecular Microbiology	3
MCB 431	Microbial Physiology	3
MCB 433	Virology & Viral Pathogenesis	3
MCB 435	Evolution of Infectious Disease	3
MCB 446	Physical Biochemistry	3
MCB 480	Eukaryotic Cell Signaling	3
ME 200	Thermodynamics	3
ME 310	Fundamentals of Fluid Dynamics	4
ME 320	Heat Transfer	4
ME 330	Engineering Materials	4
ME 340	Dynamics of Mechanical Systems	3.5
ME 370	Mechanical Design I	3
ME 371	Mechanical Design II	3
ME 400	Energy Conversion Systems	3 or 4
ME 401	Refrigeration and Cryogenics	3 or 4
ME 402	Design of Thermal Systems	3 or 4
ME 403	Internal Combustion Engines	3 or 4
ME 404	Intermediate Thermodynamics	4
ME 410	Intermediate Gas Dynamics	3 or 4
ME 411	Viscous Flow & Heat Transfer	4
ME 412	Numerical Thermo-Fluid Mechs	2 to 4
ME 420	Intermediate Heat Transfer	4
ME 430	Failure of Engrg Materials	3 or 4
ME 431	Mechanical Component Failure	3 or 4
ME 440	Kinem & Dynamics of Mech Syst	3 or 4
ME 445	Introduction to Robotics	4
ME 450	Modeling Materials Processing	3
ME 451	Computer-Aided Mfg Systems	3 or 4
ME 452	Num Control of Mfg Processes	3 or 4
ME 460	Industrial Control Systems	4
ME 461	Computer Cntrl of Mech Systems	3 or 4
ME 471	Finite Element Analysis	3 or 4
ME 472	Introduction to Tribology	3 or 4
ME 485	MEMS Devices & Systems	3
ME 487	MEMS-NEMS Theory & Fabrication	4
MUS 407	Elect Music Techniques I	3
MUS 409	Elec Music Techniques II	2
NEUR 453	Cog Neuroscience of Vision	3 or 4
NPRE 201	Energy Systems	2 or 3
NPRE 247	Modeling Nuclear Energy System	3

NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4
NPRE 421	Plasma and Fusion Science	3
NPRE 423	Plasma Laboratory	2
NPRE 429	Plasma Engineering	3
NPRE 431	Materials in Nuclear Engrg	3
NPRE 432	Nuclear Engrg Materials Lab	2
NPRE 435	Radiological Imaging	3
NPRE 441	Radiation Protection	4
NPRE 442	Radioactive Waste Management	3
NPRE 444	Nuclear Analytical Methods Lab	2 or 3
NPRE 446	Radiation Interact w/Matter I	3
NPRE 447	Radiation Interact w/Matter II	3
NPRE 448	Nuclear Syst Engrg & Design	4
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 457	Safety Anlys Nucl Reactor Syst	3 or 4
NPRE 458	Design in NPRE	4
NPRE 470	Fuel Cells & Hydrogen Sources	3
NPRE 475	Wind Power Systems	3 or 4
PHYS 225	Relativity & Math Applications	2
PHYS 325	Classical Mechanics I	3
PHYS 326	Classical Mechanics II	3
PHYS 401	Classical Physics Lab	3
PHYS 402	Light	3 or 4
PHYS 403	Modern Experimental Physics	4 or 5
PHYS 406	Acoustical Physics of Music	4
PHYS 419	Space, Time, and Matter-ACP	3 or 4
PHYS 420	Space, Time, and Matter	2
PHYS 427	Thermal & Statistical Physics	4
PHYS 460	Condensed Matter Physics	4
PHYS 466	Atomic Scale Simulations	3 or 4
PHYS 470	Subatomic Physics	4
PHYS 485	Atomic Phys & Quantum Theory	3
PHYS 486	Quantum Physics I	4
PHYS 487	Quantum Physics II	4
PSYC 204	Intro to Brain and Cognition	3
SHS 200	General Phonetics	3
SHS 240	Intro Sound & Hearing Science	3
SHS 300	Anat & Physiol Spch Mechanism	4
SHS 301	General Speech Science	4
SHS 320	Development of Spoken Language	3
SHS 450	Intro Audiol & Hear Disorders	4
SHS 470	Neural Bases Spch Lang	4
STAT 420	Methods of Applied Statistics	3 or 4
STAT 424	Analysis of Variance	3 or 4
STAT 428	Statistical Computing	3 or 4
STAT 429	Time Series Analysis	3 or 4
STAT 440	Statistical Data Management	3 or 4
SE 411	Reliability Engineering	3 or 4
SE 420	Digital Control Systems	4
SE 423	Mechatronics	3

SE 424	State Space Design for Control	3
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
TAM 324	Behavior of Materials	4
TAM 335	Introductory Fluid Mechanics	4
TAM 412	Intermediate Dynamics	4
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4
TAM 451	Intermediate Solid Mechanics	4
One course from departmentally approved list of EE Foundations Courses		
ECE 310	Digital Signal Processing	3
ECE 330	Power Ckts & Electromechanics	3
ECE 329	Fields and Waves I	3
ECE 340	Semiconductor Electronics	3
ECE 461	Digital Communications	3
ECE 486	Control Systems	4
Three courses from departmentally approved list of Advanced Computing Electives below:		
CS 357	Numerical Methods I	3
CS 411	Database Systems	3 or 4
CS 412	Introduction to Data Mining	3 or 4
CS 414	Multimedia Systems	3 or 4
CS 418	Interactive Computer Graphics	3 or 4
CS 419	Production Computer Graphics	3 or 4
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4
CS 421	Programming Languages & Compilers	3 or 4
CS 423	Operating Systems Design	3 or 4
CS 424	Real-Time Systems	3 or 4
CS 425	Distributed Systems	3 or 4
CS 426	Compiler Construction	3 or 4
CS 431	Embedded Systems	3 or 4
CS 436	Computer Networking Laboratory	3 or 4
CS 438	Communication Networks	3 or 4
CS 440	Artificial Intelligence	3 or 4
CS 446	Machine Learning	3 or 4
CS 450	Numerical Analysis	3 or 4
CS 461	Computer Security I	4
CS 475	Formal Models of Computation	3 or 4
CS 476	Program Verification	3 or 4
CS 477	Formal Software Development Methods	3 or 4
CS 483	Applied Parallel Programming	4
CS 498	Special Topics (MP. Logic for Computer Science)	1 to 4
CS 498	Special Topics (VR: Virtual Reality)	1 to 4
CS 498	Special Topics (AML: Applied Machine Learning)	1 to 4
ECE 408	Applied Parallel Programming	4
ECE 411	Computer Organization & Design	4
ECE 412	Microcomputer Laboratory	3
ECE 419	Security Laboratory	3 or 4
ECE 422	Computer Security I	4
ECE 424	Computer Security II	3 or 4
ECE 425	Intro to VLSI System Design	3
ECE 428	Distributed Systems	3 or 4

ECE 435	Computer Networking Laboratory	3 or 4
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 448	Artificial Intelligence	3 or 4
ECE 462	Logic Synthesis	3
ECE 470	Introduction to Robotics	4
ECE 478	Formal Software Development Methods	3 or 4
ECE 491	Numerical Analysis	3 or 4
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4
ECE 498	Special Topics in ECE (RC: Smart Phone Computing and Applications)	0 to 4
One course from departmentally approved list below:		
ECE 411	Computer Organization & Design	4
ECE 445	Senior Design Project Lab[6]	4
ECE 496	Senior Research Project (andECE 499- Senior Thesis)[6]	4

Electives

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[7]		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.[8]		12
Total Hours of Curriculum to Graduate		**128**

1 *External transfer students take*ENG 300 *instead.*

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.*

3 *Freshmen take*ECE 110*for 3 credit hours. Lab-only version taken by transfer students (with special permission) is 1 credit hour.*

4 MATH 213*may be substituted.*

5 STAT 410*may be substituted.*

6 *Advanced Composition may be satisfied by completing*ECE 445*or*ECE 496*and*ECE 499*or a course within either the general education or free elective categories which has the Advanced Composition designation.*

7 *The Grainger College of Engineering approved liberal education course list can be found*here *(*https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-GeneralEducation*). Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.*

8 *The Grainger College of Engineering restrictions to free electives can be found*here *(*https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-FreeElectives*).*

EP Documentation

DMI Documentation

Attach Final Approval Notices

ClassSenMinUIUC022020.pdf

Banner/Codebook Name

BS:Computer Engineering -UIUC

Program Code:

10KP0109BS

Degree Code

BS

Major Code

0109

Program Reviewer Comments

Deb Forgacs (dforgacs) (Wed, 07 Oct 2020 17:05:13 GMT): Rollback: requested.
Brooke Newell (bsnewell) (Tue, 13 Oct 2020 17:02:20 GMT): Added CHEM Letter of Support
Brooke Newell (bsnewell) (Thu, 29 Oct 2020 16:37:29 GMT): Rollback: Rolling back proposal per request
Kathy Martensen (kmartens) (Wed, 10 Mar 2021 21:27:41 GMT): Administrative approval: No change to total hours required/restriction of options.
Kathy Martensen (kmartens) (Wed, 10 Mar 2021 21:48:10 GMT): Rollback: Please add letters of support from the departments of ATMS, CPSC, and PSYC for adding their courses as choose-froms in the Tech Electives list. Thanks!
Candy Deaville (candyd) (Wed, 10 Mar 2021 21:52:32 GMT): Rollback: Please add letters of support from the departments of ATMS, CPSC, and PSYC for adding their courses as choose-froms in the Tech Electives list
Kathy Martensen (kmartens) (Mon, 22 Mar 2021 18:54:28 GMT): Administrative approval: No change to total hours required, doesn't restrict students' options.

Key: 248

ILLINOIS

COLLEGE OF LIBERAL ARTS & SCIENCES

Department of Chemistry
1026 Chemistry Annex, MC-712
601 S. Mathews Ave.
Urbana, IL 61801-3602

October 12, 2020

Dear Prof. Hasegawa-Johnson,

The Department of Chemistry thanks you for your note, and for bringing your proposed curriculum changes to our attention. We are now aware that you intend to change your undergraduate Computer Engineering major requirements to eliminate Chem 102 (although students could still take it as an elective). We have no major objections to this proposal and wish you the best as you work toward your curriculum change.

Please let me know if there are any other questions or concerns I can help address.

Sincerely,

Christian R. Ray, PhD
Director of General Chemistry
Assistant Teaching Professor
University of Illinois at Urbana-Champaign
2025 Chemistry Annex
217-244-0297
crray@illinois.edu

ILLINOIS

MATHEMATICS

College of Liberal Arts & Sciences
273 Altgeld Hall, MC-382
1409 W. Green Street
Urbana, IL 61801 USA

February 22, 2021

Erhan Kudeki
Professor and Associate Head for Undergraduate Affairs
Department of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign

Dear Professor Kudeki,

Our department acknowledges and supports the proposed revision of the Electrical Engineering (EE) and Computer Engineering (CE) BS programs, to adopt MATH 257 as a required course for EE and CE majors to be taken after MATH 220/221 and before MATH 285, and to replace MATH 286 with MATH 285. The Department of Mathematics is prepared to accommodate the enrollment shifts among courses which will result from these changes.

In the event that this curricular revision is approved, the Mathematics Department will remove the phrase "Computer Engineering or Electrical Engineering" from the following statement in Course Explorer regarding MATH 285 (which can be found at https://courses.illinois.edu/schedule/2021/spring/MATH/285):

> "not intended for Computer Engineering or Electrical Engineering or Math & CS major(s)."

Sincerely,

Jeremy Tyson
Professor and Chair
Department of Mathematics
University of Illinois at Urbana-Champaign

ILLINOIS

COLLEGE OF LIBERAL ARTS & SCIENCES
Department of Atmospheric Sciences
3070 Natural History Building, MC-104
1301 W. Green St.
Urbana, IL 61801-3070

March 15, 2021

Dear Professor Kudeki,

The Department of Atmospheric Sciences approves listing the class ATMS 201 (General Physical Meteorology) as Technical Elective for Electrical Engineering and Computer Engineering majors.

Sincerely,

Nicole Riemer

Nicole Riemer
Professor and Associate Head
Department of Atmospheric Sciences

On Mar 18, 2021, at 11:14 AM, Aber, Mark S <maber@illinois.edu> wrote:

Dear Erhan,

We are happy to support ECE by welcoming your students into PSYC 204. Best of luck with your curriculum revision.

best,
Mark

From: Kudeki, Erhan <erhan@illinois.edu>
Sent: Thursday, March 11, 2021 4:45 PM
To: Aber, Mark S <maber@illinois.edu>
Cc: Kudeki, Erhan <erhan@illinois.edu>; Newell, Brooke <bsnewell@illinois.edu>
Subject: Support letter request

Dear Mark,

I am writing to let you know that ECE has decided to add PSYC 204, Intro to Brain and Cognition, to its list of Technical Electives applicable to Electrical Engineering and Computer Engineering majors in our undergraduate program.

We have been asked by the College of Engineering to seek a letter of support from Psychology for this change as our curriculum revision proposal, approved by the College Executive Committee, goes up to the University Senate. Please provide us with such a letter of support. I'll be happy to answer any questions you may have about our request.

Thanks and best regards,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

On Mar 18, 2021, at 2:52 PM, Rayburn, A Lane <arayburn@illinois.edu> wrote:

Hi Erhan

Crop Sciences supports adding CPSC 265 to the list of technical electives in ECE.

Just let me know if you need anything else.

Sincerely,

Lane

Dr. A. Lane Rayburn
Professor of Cytogenetics
Director of Undergraduate Studies
Department of Crop Sciences
University of Illinois
AE-120 Turner Hall
1102 S. Goodwin Ave
Urbana, IL 61801
Telephone - 217 333-4374.
http:// https://cropsciences.illinois.edu/people/profile/arayburn

From: Kudeki, Erhan <erhan@illinois.edu>
Sent: Thursday, March 18, 2021 10:47 AM
To: Tranel, Patrick J <tranel@illinois.edu>; Rayburn, A Lane <arayburn@illinois.edu>
Cc: Kudeki, Erhan <erhan@illinois.edu>
Subject: Re: Support letter request

Thanks Pat, I'm ashamed of my cut and paste error :-)

Lane, we will be needing the crop sciences support letter. We will be adding CPSC 265 to our very broad list of Technical Electives in ECE. Let me know if you have any questions.

Regards,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

<image001.png>

On Mar 18, 2021, at 9:23 AM, Tranel, Patrick J <tranel@illinois.edu> wrote:

Erhan,

Sorry. I scanned your email before and deleted it because this is out of my jurisdiction, and because your email stated you needed a letter from atmospheric sciences, not crop sciences. After a closer read, I've passed your email on to our teaching coordinator, Lane Rayburn, who handles these.

Pat

PATRICK J TRANEL
Ainsworth Professor and Associate Head

University of Illinois at Urbana-Champaign
College of Agricultural, Consumer and Environmental Sciences
Department of Crop Sciences
320 ERML
1201 W Gregory Dr | M/C 051
Urbana, IL 61801
217.333.1531 | tranel@illinois.edu
cropsciences.illinois.edu

<image001.png>

From: "Kudeki, Erhan" <erhan@illinois.edu>
Date: Thursday, March 18, 2021 at 9:03 AM
To: Patrick Tranel <tranel@illinois.edu>
Cc: "Kudeki, Erhan" <erhan@illinois.edu>, "Newell, Brooke" <bsnewell@illinois.edu>
Subject: Re: Support letter request

Hi Patrick, a gentle reminder, thx,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

On Mar 11, 2021, at 4:45 PM, Kudeki, Erhan <erhan@illinois.edu> wrote:

Dear Patrick,

I am writing to let you know that ECE has decided to add CPSC 265, Genetic Engineering Lab, to its list of Technical Electives applicable to Electrical Engineering and Computer Engineering majors in our undergraduate program.

We have been asked by the College of Engineering to seek a letter of support from Atmospheric Sciences for this change as our curriculum revision proposal, approved by the College Executive Committee, goes up to the University Senate. Please provide us with such a letter of support. I'll be happy to answer any questions you may have about our request.

Thanks and best regards,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

Addition
Removal
Revision

CURRENT PROGRAM			REVISED PROGRAM		
Orientation and Professional Development			**Orientation and Professional Development**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
ENG 100	Engineering Orientation [1]	0	ENG 100	Engineering Orientation [1]	0
Total Hours		**0**	**Total Hours**		**0**
Foundational Mathematics and Science			**Foundational Mathematics and Science**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
CHEM 102	General Chemistry I	3			
CHEM 103	General Chemistry Lab I	1			
MATH 221	Calculus I [2]	4	MATH 221	Calculus I [2]	4
MATH 231	Calculus II	3	MATH 231	Calculus II	3
MATH 241	Calculus III	4	MATH 241	Calculus III	4
			MATH 227	Linear Algebra with Computational Applications	3
			MATH 286	Intro to Differential Eq	4
MATH 286	Intro to Differential Eq Plus	4			
PHYS 211	University Physics: Mechanics	4	PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4	PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2	PHYS 213	Univ Physics: Thermal Physics	2
PHYS 214	Univ Physics: Quantum Physics	2	PHYS 214	Univ Physics: Quantum Physics	2
Total Hours		31	**Total Hours**		29
Computer Engineering Technical Core			**Computer Engineering Technical Core**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
ECE 110	Introduction to Electronics [3]	3	ECE 110	Introduction to Electronics [3]	3
ECE 120	Introduction to Computing	4	ECE 120	Introduction to Computing	4
ECE 210	Analog Signal Processing	4	ECE 210	Analog Signal Processing	4
ECE 220	Computer Systems & Programming	4	ECE 220	Computer Systems & Programming	4
CS 173	Discrete Structures [4]	3	CS 173	Discrete Structures [4]	3
CS 225	Data Structures	4	CS 225	Data Structures	4
ECE 313	Probability with Engrg Applic [5]	3	ECE 313	Probability with Engrg Applic [5]	3
ECE 374	Introduction to Algorithms & Models of Computati	4	ECE 374	Introduction to Algorithms & Models of Computat	4
ECE 385	Digital Systems Laboratory	3	ECE 385	Digital Systems Laboratory	3
ECE 391	Computer Systems Engineering	4	ECE 391	Computer Systems Engineering	4
Total Hours		36	**Total Hours**		36
Technical Electives			**Technical Electives**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
27 hours to be selected from departmentally approved List of Technical Elec			**29 hours to be selected from departmentally approved List of Technical Electives below:**		
AE 202	Aerospace Flight Mechanics	3	AE 202	Aerospace Flight Mechanics	3
AE 302	Aerospace Flight Mechanics II	3	AE 302	Aerospace Flight Mechanics II	3
AE 311	Incompressible Flow	3	AE 311	Incompressible Flow	3
AE 312	Compressible Flow	3	AE 312	Compressible Flow	3
AE 321	Mechs of Aerospace Structures	3	AE 321	Mechs of Aerospace Structures	3
AE 352	Aerospace Dynamical Systems	3	AE 352	Aerospace Dynamical Systems	3
AE 353	Aerospace Control Systems	3	AE 353	Aerospace Control Systems	3
AE 402	Orbital Mechanics	3 or 4	AE 402	Orbital Mechanics	3 or 4
AE 403	Spacecraft Attitude Control	3 or 4	AE 403	Spacecraft Attitude Control	3 or 4
AE 410	Computational Aerodynamics	3 or 4	AE 410	Computational Aerodynamics	3 or 4
AE 412	Viscous Flow & Heat Transfer	4	AE 412	Viscous Flow & Heat Transfer	4
AE 416	Applied Aerodynamics	3 or 4	AE 416	Applied Aerodynamics	3 or 4
AE 419	Aircraft Flight Mechanics	3 or 4	AE 419	Aircraft Flight Mechanics	3 or 4
AE 420	Finite Element Analysis	3 or 4	AE 420	Finite Element Analysis	3 or 4
AE 427	Mechanics of Polymers	3	AE 427	Mechanics of Polymers	3
AE 428	Mechanics of Composites	3	AE 428	Mechanics of Composites	3
AE 433	Aerospace Propulsion	3 or 4	AE 433	Aerospace Propulsion	3 or 4
AE 434	Rocket Propulsion	3 or 4	AE 434	Rocket Propulsion	3 or 4
AE 435	Electric Propulsion	3 or 4	AE 435	Electric Propulsion	3 or 4
AE 451	Aeroelasticity	3 or 4	AE 451	Aeroelasticity	3 or 4
AE 460	Aerodynamics & Propulsion Lab	2	AE 460	Aerodynamics & Propulsion Lab	2
Agri. Bio Eng. (ABE): all 300 and 400 level courses except 440. Exceptions for s			Agri. Bio Eng. (ABE): all 300 and 400 level courses except 440. Exceptions for seminars and special topics will be reviewed in Advising Office.		
ASTR 210	Introduction to Astrophysics	3	ASTR 210	Introduction to Astrophysics	3
ASTR 310	Computing in Astronomy	3	ASTR 310	Computing in Astronomy	3
ASTR 330	Extraterrestrial Life	3	ASTR 330	Extraterrestrial Life	3
ASTR 350	The Big Bang, Black Holes, and the End of the U	3	ASTR 350	The Big Bang, Black Holes, and the End of the U	3
ASTR 404	Stellar Astrophysics	3	ASTR 404	Stellar Astrophysics	3
ASTR 405	Planetary Systems	3	ASTR 405	Planetary Systems	3
ASTR 406	Galaxies and the Universe	3	ASTR 406	Galaxies and the Universe	3
ASTR 414	Astronomical Techniques	4	ASTR 414	Astronomical Techniques	4
ASTR 450	Astrochemistry	4	ASTR 450	Astrochemistry	4
			ATMS 201	General Physical Meteorology	3
ATMS 301	Atmospheric Thermodynamics	3	ATMS 301	Atmospheric Thermodynamics	3
ATMS 302	Atmospheric Dynamics I	3	ATMS 302	Atmospheric Dynamics I	3
ATMS 303	Synoptic-Dynamic Wea Analysis	4	ATMS 303	Synoptic-Dynamic Wea Analysis	4
ATMS 304	Radiative Transfer-Remote Sens	3	ATMS 304	Radiative Transfer-Remote Sens	3
ATMS 305	Computing and Data Analysis	3	ATMS 305	Computing and Data Analysis	3
ATMS 404	Risk Analysis in Earth Science	3 or 4	ATMS 404	Risk Analysis in Earth Science	3 or 4
ATMS 405	Boundary Layer Processes	4	ATMS 405	Boundary Layer Processes	4
ATMS 406	Tropical Meteorology	4	ATMS 406	Tropical Meteorology	4
ATMS 410	Radar Remote Sensing	4	ATMS 410	Radar Remote Sensing	4
ATMS 411	Satellite Remote Sensing	4	ATMS 411	Satellite Remote Sensing	4
ATMS 420	Atmospheric Chemistry	4	ATMS 420	Atmospheric Chemistry	4
ATMS 421	Earth Systems Modeling	4	ATMS 421	Earth Systems Modeling	4
ATMS 425	Air Quality Modeling	4	ATMS 425	Air Quality Modeling	4
ATMS 447	Climate Change Assessment	3	ATMS 447	Climate Change Assessment	3
ATMS 449	Biogeochemical Cycles	4	ATMS 449	Biogeochemical Cycles	4
BIOC 406	Gene Expression & Regulation	3	BIOC 406	Gene Expression & Regulation	3
BIOC 440	Physical Chemistry Principles	4	BIOC 440	Physical Chemistry Principles	4
BIOC 446	Physical Biochemistry	3	BIOC 446	Physical Biochemistry	3
BIOC 455	Technqs Biochem & Biotech	4	BIOC 455	Technqs Biochem & Biotech	4
BIOE 201	Conservation Principles Bioeng	3	BIOE 201	Conservation Principles Bioeng	3
BIOE 202	Cell & Tissue Engineering Lab	2	BIOE 202	Cell & Tissue Engineering Lab	2
BIOE 302	Modeling Human Physiology	3	BIOE 302	Modeling Human Physiology	3
BIOE 414	Biomedical Instrumentation	3	BIOE 414	Biomedical Instrumentation	3
BIOE 415	Biomedical Instrumentation Lab	2	BIOE 415	Biomedical Instrumentation Lab	2
BIOE 461	Cellular Biomechanics	4	BIOE 461	Cellular Biomechanics	4
BIOE 467	Biophotonics	3	BIOE 467	Biophotonics	3
BIOE 476	Tissue Engineering	3	BIOE 476	Tissue Engineering	3
BIOE 480	Magnetic Resonance Imaging	3 or 4	BIOE 480	Magnetic Resonance Imaging	3 or 4
Biophysics (BIOP): All 400 level courses except seminars and special topics, wh			Biophysics (BIOP): All 400 level courses except seminars and special topics, which may be reviewed in the Advising Office		
CHBE 221	Principles of CHE	3	CHBE 221	Principles of CHE	3
CHBE 321	Thermodynamics	4	CHBE 321	Thermodynamics	4
CHBE 421	Momentum and Heat Transfer	4	CHBE 421	Momentum and Heat Transfer	4
CHBE 422	Mass Transfer Operations	4	CHBE 422	Mass Transfer Operations	4
CHBE 424	Chemical Reaction Engineering	3	CHBE 424	Chemical Reaction Engineering	3
CHBE 430	Unit Operations Laboratory	4	CHBE 430	Unit Operations Laboratory	4
CHBE 431	Process Design	4	CHBE 431	Process Design	4
CHBE 440	Process Control and Dynamics	3	CHBE 440	Process Control and Dynamics	3
CHBE 451	Transport Phenomena	3	CHBE 451	Transport Phenomena	3
CHBE 452	Chemical Kinetics & Catalysis	3	CHBE 452	Chemical Kinetics & Catalysis	3
CHBE 453	Electrochemical Engineering	2 or 3	CHBE 453	Electrochemical Engineering	2 or 3
CHBE 456	Polymer Science & Engineering	3	CHBE 456	Polymer Science & Engineering	3
CHBE 457	Microelectronics Processing	3	CHBE 457	Microelectronics Processing	3
CHBE 471	Biochemical Engineering	3 or 4	CHBE 471	Biochemical Engineering	3 or 4
CHBE 472	Techniques in Biomolecular Eng	3 or 4	CHBE 472	Techniques in Biomolecular Eng	3 or 4
CHBE 473	Biomolecular Engineering	3 or 4	CHBE 473	Biomolecular Engineering	3 or 4
CHBE 474	Metabolic Engineering	3 or 4	CHBE 474	Metabolic Engineering	3 or 4
			CHEM 102	General Chemistry I	3
			CHEM 103	General Chemistry Lab I	1
CHEM 104	General Chemistry II	3	CHEM 104	General Chemistry II	3
CHEM 105	General Chemistry Lab II	1	CHEM 105	General Chemistry Lab II	1
Chemistry (CHEM): All 200, 300 and 400 level courses except 397, 497, 499, an			Chemistry (CHEM): All 200, 300 and 400 level courses except 397, 497, 499, and seminars and special topics, which may be reviewed in the Advising Office		
CEE 310	Transportation Engineering	3	CEE 310	Transportation Engineering	3
CEE 330	Environmental Engineering	3	CEE 330	Environmental Engineering	3
CEE 408	Railroad Transportation Engrg	3 or 4	CEE 408	Railroad Transportation Engrg	3 or 4
CEE 410	Railway Signaling & Control	3 or 4	CEE 410	Railway Signaling & Control	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4	CEE 416	Traffic Capacity Analysis	3 or 4
CEE 430	Ecological Quality Engineering	2	CEE 430	Ecological Quality Engineering	2
CEE 447	Atmospheric Chemistry	4	CEE 447	Atmospheric Chemistry	4
CEE 491	Decision and Risk Analysis	3 or 4	CEE 491	Decision and Risk Analysis	3 or 4
			CHE 269	Genetic Engineering Lab	3
CS 101	Intro Computing: Engrg & Sci (By Approval)	3	CS 101	Intro Computing: Engrg & Sci (By Approval)	3
CS 173	Discrete Structures	3	CS 173	Discrete Structures	3
CS 225	Data Structures	4	CS 225	Data Structures	4

CS 242	Programming Studio		3	CS 242	Programming Studio		3
CS 357	Numerical Methods I		3	CS 357	Numerical Methods I		3
CS 410	Text Information Systems	3 or 4		CS 410	Text Information Systems	3 or 4	
CS 411	Database Systems	3 or 4		CS 411	Database Systems	3 or 4	
CS 412	Introduction to Data Mining	3 or 4		CS 412	Introduction to Data Mining	3 or 4	
CS 413	Intro to Combinatorics	3 or 4		CS 413	Intro to Combinatorics	3 or 4	
CS 414	Multimedia Systems	3 or 4		CS 414	Multimedia Systems	3 or 4	
CS 418	Interactive Computer Graphics	3 or 4		CS 418	Interactive Computer Graphics	3 or 4	
CS 419	Production Computer Graphics	3 or 4		CS 419	Production Computer Graphics	3 or 4	
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4		CS 420	Parallel Progrmg: Sci & Engrg	3 or 4	
CS 421	Programming Languages & Compilers	3 or 4		CS 421	Programming Languages & Compilers	3 or 4	
CS 422	Programming Language Design	3 or 4		CS 422	Programming Language Design	3 or 4	
CS 423	Operating Systems Design	3 or 4		CS 423	Operating Systems Design	3 or 4	
CS 424	Real-Time Systems	3 or 4		CS 424	Real-Time Systems	3 or 4	
CS 425	Distributed Systems	3 or 4		CS 425	Distributed Systems	3 or 4	
CS 426	Compiler Construction	3 or 4		CS 426	Compiler Construction	3 or 4	
CS 427	Software Engineering I	3 or 4		CS 427	Software Engineering I	3 or 4	
CS 428	Software Engineering II	3 or 4		CS 428	Software Engineering II	3 or 4	
CS 429	Software Engineering II, ACP		3	CS 429	Software Engineering II, ACP		3
CS 431	Embedded Systems	3 or 4		CS 431	Embedded Systems	3 or 4	
CS 433	Computer System Organization	3 or 4		CS 433	Computer System Organization	3 or 4	
CS 436	Computer Networking Laboratory	3 or 4		CS 436	Computer Networking Laboratory	3 or 4	
CS 438	Communication Networks	3 or 4		CS 438	Communication Networks	3 or 4	
CS 439	Wireless Networks	3 or 4		CS 439	Wireless Networks	3 or 4	
CS 440	Artificial Intelligence	3 or 4		CS 440	Artificial Intelligence	3 or 4	
CS 445	Computational Photography	3 or 4		CS 445	Computational Photography	3 or 4	
CS 446	Machine Learning	3 or 4		CS 446	Machine Learning	3 or 4	
CS 447	Natural Language Processing	3 or 4		CS 447	Natural Language Processing	3 or 4	
CS 450	Numerical Analysis	3 or 4		CS 450	Numerical Analysis	3 or 4	
CS 460	Security Laboratory	3 or 4		CS 460	Security Laboratory	3 or 4	
CS 461	Computer Security I		4	CS 461	Computer Security I		4
CS 463	Computer Security II	3 or 4		CS 463	Computer Security II	3 or 4	
CS 465	User Interface Design	3 or 4		CS 465	User Interface Design	3 or 4	
CS 466	Introduction to Bioinformatics	3 or 4		CS 466	Introduction to Bioinformatics	3 or 4	
CS 467	Social Visualization	3 or 4		CS 467	Social Visualization	3 or 4	
CS 473	Algorithms		4	CS 473	Algorithms		4
CS 475	Formal Models of Computation	3 or 4		CS 475	Formal Models of Computation	3 or 4	
CS 476	Program Verification	3 or 4		CS 476	Program Verification	3 or 4	
CS 477	Formal Software Development Methods	3 or 4		CS 477	Formal Software Development Methods	3 or 4	
CS 481	Advanced Topics in Stochastic Processes & App	3 or 4		CS 481	Advanced Topics in Stochastic Processes & App	3 or 4	
CS 484	Parallel Programming	3 or 4		CS 484	Parallel Programming	3 or 4	
CS 398	Special Topics (As approved)	1 to 4		CS 398	Special Topics (As approved)	1 to 4	
CS 498	Special Topics (As approved)	1 to 4		CS 498	Special Topics (As approved)	1 to 4	
ECE 297	Individual Study		1	ECE 297	Individual Study		1
ECE 304	Photonic Devices		3	ECE 304	Photonic Devices		3
ECE 307	Techniques for Engrg Decisions		3	ECE 307	Techniques for Engrg Decisions		3
ECE 310	Digital Signal Processing		3	ECE 310	Digital Signal Processing		3
ECE 311	Digital Signal Processing Lab		1	ECE 311	Digital Signal Processing Lab		1
ECE 314	Probability in Engineering Lab		1	ECE 314	Probability in Engineering Lab		1
ECE 329	Fields and Waves I		3	ECE 329	Fields and Waves I		3
ECE 330	Power Ckts & Electromechanics		3	ECE 330	Power Ckts & Electromechanics		3
ECE 333	Green Electric Energy		3	ECE 333	Green Electric Energy		3
ECE 340	Semiconductor Electronics		3	ECE 340	Semiconductor Electronics		3
ECE 342	Electronic Circuits		3	ECE 342	Electronic Circuits		3
ECE 343	Electronic Circuits Laboratory		1	ECE 343	Electronic Circuits Laboratory		1
ECE 350	Fields and Waves II		3	ECE 350	Fields and Waves II		3
ECE 365	Data Science and Engineering		3	ECE 365	Data Science and Engineering		3
ECE 374	Introduction to Algorithms & Models of Computati		4	ECE 374	Introduction to Algorithms & Models of Computat		4
ECE 380	Biomedical Imaging		3	ECE 380	Biomedical Imaging		3
ECE 391	Computer Systems Engineering		4	ECE 391	Computer Systems Engineering		4
ECE 395	Advanced Digital Projects Lab	2 or 3		ECE 395	Advanced Digital Projects Lab	2 or 3	
ECE 396	Honors Project	1 to 4		ECE 396	Honors Project	1 to 4	
ECE 397	Individual Study in ECE	0 to 4		ECE 397	Individual Study in ECE	0 to 4	
ECE 402	Electronic Music Synthesis		3	ECE 402	Electronic Music Synthesis		3
ECE 403	Audio Engineering		3	ECE 403	Audio Engineering		3
ECE 408	Applied Parallel Programming		4	ECE 408	Applied Parallel Programming		4
ECE 411	Computer Organization & Design		4	ECE 411	Computer Organization & Design		4
ECE 412	Microcomputer Laboratory		3	ECE 412	Microcomputer Laboratory		3
ECE 414	Biomedical Instrumentation		3	ECE 414	Biomedical Instrumentation		3
ECE 415	Biomedical Instrumentation Lab		2	ECE 415	Biomedical Instrumentation Lab		2
ECE 416	Biosensors		3	ECE 416	Biosensors		3
ECE 417	Multimedia Signal Processing		4	ECE 417	Multimedia Signal Processing		4
ECE 418	Image & Video Processing		4	ECE 418	Image & Video Processing		4
ECE 419	Security Laboratory	3 or 4		ECE 419	Security Laboratory	3 or 4	
ECE 420	Embedded DSP Laboratory		2	ECE 420	Embedded DSP Laboratory		2
ECE 422	Computer Security I		4	ECE 422	Computer Security I		4
ECE 424	Computer Security II	3 or 4		ECE 424	Computer Security II	3 or 4	
ECE 425	Intro to VLSI System Design		3	ECE 425	Intro to VLSI System Design		3
ECE 428	Distributed Systems	3 or 4		ECE 428	Distributed Systems	3 or 4	
ECE 431	Electric Machinery		4	ECE 431	Electric Machinery		4
ECE 432	Advanced Electric Machinery		3	ECE 432	Advanced Electric Machinery		3
ECE 435	Computer Networking Laboratory	3 or 4		ECE 435	Computer Networking Laboratory	3 or 4	
ECE 437	Sensors and Instrumentation		3	ECE 437	Sensors and Instrumentation		3
ECE 438	Communication Networks	3 or 4		ECE 438	Communication Networks	3 or 4	
ECE 439	Wireless Networks	3 or 4		ECE 439	Wireless Networks	3 or 4	
ECE 441	Physcs & Modeling Semicond Dev		3	ECE 441	Physcs & Modeling Semicond Dev		3
ECE 443	LEDs and Solar Cells		4	ECE 443	LEDs and Solar Cells		4
ECE 444	IC Device Theory & Fabrication		4	ECE 444	IC Device Theory & Fabrication		4
ECE 445	Senior Design Project Lab		4	ECE 445	Senior Design Project Lab		4
ECE 446	Principles of Experimental Research in Electrical		4	ECE 446	Principles of Experimental Research in Electrical		4
ECE 447	Active Microwave Ckt Design		3	ECE 447	Active Microwave Ckt Design		3
ECE 448	Artificial Intelligence	3 or 4		ECE 448	Artificial Intelligence	3 or 4	
ECE 451	Adv Microwave Measurements		3	ECE 451	Adv Microwave Measurements		3
ECE 452	Electromagnetic Fields		3	ECE 452	Electromagnetic Fields		3
ECE 453	Wireless Communication Systems		4	ECE 453	Wireless Communication Systems		4
ECE 454	Antennas		3	ECE 454	Antennas		3
ECE 455	Optical Electronics	3 or 4		ECE 455	Optical Electronics	3 or 4	
ECE 456	Global Nav Satellite Systems		4	ECE 456	Global Nav Satellite Systems		4
ECE 457	Microwave Devices & Circuits		3	ECE 457	Microwave Devices & Circuits		3
ECE 458	Applic of Radio Wave Propag		3	ECE 458	Applic of Radio Wave Propag		3
ECE 459	Communications Systems		3	ECE 459	Communications Systems		3
ECE 460	Optical Imaging		4	ECE 460	Optical Imaging		4
ECE 461	Digital Communications		3	ECE 461	Digital Communications		3
ECE 462	Logic Synthesis		3	ECE 462	Logic Synthesis		3
ECE 463	Digital Communications Lab		2	ECE 463	Digital Communications Lab		2
ECE 464	Power Electronics		3	ECE 464	Power Electronics		3
ECE 465	Optical Communications Systems		3	ECE 465	Optical Communications Systems		3
ECE 466	Optical Communications Lab		1	ECE 466	Optical Communications Lab		1
ECE 467	Biophotonics		3	ECE 467	Biophotonics		3
ECE 468	Optical Remote Sensing		3	ECE 468	Optical Remote Sensing		3
ECE 469	Power Electronics Laboratory		2	ECE 469	Power Electronics Laboratory		2
ECE 470	Introduction to Robotics		4	ECE 470	Introduction to Robotics		4
ECE 472	Biomedical Ultrasound Imaging		3	ECE 472	Biomedical Ultrasound Imaging		3
ECE 473	Fund of Engrg Acoustics	3 or 4		ECE 473	Fund of Engrg Acoustics	3 or 4	
ECE 476	Power System Analysis		3	ECE 476	Power System Analysis		3
ECE 478	Formal Software Development Methods	3 or 4		ECE 478	Formal Software Development Methods	3 or 4	
ECE 480	Magnetic Resonance Imaging	3 or 4		ECE 480	Magnetic Resonance Imaging	3 or 4	
ECE 481	Nanotechnology		4	ECE 481	Nanotechnology		4
ECE 482	Digital IC Design		3	ECE 482	Digital IC Design		3
ECE 483	Analog IC Design		3	ECE 483	Analog IC Design		3
ECE 485	MEMS Devices & Systems		3	ECE 485	MEMS Devices & Systems		3
ECE 486	Control Systems		4	ECE 486	Control Systems		4
ECE 487	Intro Quantum Electr for EEs		3	ECE 487	Intro Quantum Electr for EEs		3
ECE 488	Compound Semicond & Devices		3	ECE 488	Compound Semicond & Devices		3
ECE 489	Robot Dynamics and Control		4	ECE 489	Robot Dynamics and Control		4
ECE 490	Introduction to Optimization	3 or 4		ECE 490	Introduction to Optimization	3 or 4	
ECE 491	Numerical Analysis	3 or 4		ECE 491	Numerical Analysis	3 or 4	
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4		ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4	
ECE 493	Advanced Engineering Math	3 or 4		ECE 493	Advanced Engineering Math	3 or 4	
ECE 495	Photonic Device Laboratory		3	ECE 495	Photonic Device Laboratory		3
ECE 496	Senior Research Project		2	ECE 496	Senior Research Project		2
ECE 499	Senior Thesis		2	ECE 499	Senior Thesis		2
ECE 398	Special Topics in ECE (As approved)	0 to 4		ECE 398	Special Topics in ECE (As approved)	0 to 4	
ECE 498	Special Topics in ECE (As approved)	0 to 4		ECE 498	Special Topics in ECE (As approved)	0 to 4	
ENG 491	Interdisciplinary Design Proj (CubeSat, Solar Dec	1 to 4		ENG 491	Interdisciplinary Design Proj (CubeSat, Solar Dec	1 to 4	
GEOL 107	Physical Geology		4	GEOL 107	Physical Geology		4
GEOL 208	History of the Earth System		4	GEOL 208	History of the Earth System		4
GEOL 333	Earth Materials and the Env		4	GEOL 333	Earth Materials and the Env		4
GEOL 380	Environmental Geology		4	GEOL 380	Environmental Geology		4
GEOL 411	Structural Geol and Tectonics		4	GEOL 411	Structural Geol and Tectonics		4
GEOL 417	Geol Field Methods, Western US		6	GEOL 417	Geol Field Methods, Western US		6
GEOL 432	Mineralogy and Mineral Optics		4	GEOL 432	Mineralogy and Mineral Optics		4

GEOL 436	Petrology and Petrography		4	GEOL 436	Petrology and Petrography		4
GEOL 440	Sedimentology and Stratigraphy		4	GEOL 440	Sedimentology and Stratigraphy		4
GEOL 450	Probing the Earth's Interior		3	GEOL 450	Probing the Earth's Interior		3
GEOL 452	Introduction to Geophysics		4	GEOL 452	Introduction to Geophysics		4
GEOL 460	Geochemistry		3	GEOL 460	Geochemistry		3
IE 310	Deterministic Models in Optimization		3	IE 310	Deterministic Models in Optimization		3
IE 330	Industrial Quality Control		3	IE 330	Industrial Quality Control		3
IE 360	Facilities Planning and Design		3	IE 360	Facilities Planning and Design		3
IE 361	Production Planning & Control		3	IE 361	Production Planning & Control		3
IE 400	Design & Anlys of Experiments	3 or 4		IE 400	Design & Anlys of Experiments	3 or 4	
IE 410	Advanced Topics in Stochastic Processes & App	3 or 4		IE 410	Advanced Topics in Stochastic Processes & App	3 or 4	
IE 411	Optimization of Large Systems	3 or 4		IE 411	Optimization of Large Systems	3 or 4	
IE 412	OR Models for Mfg Systems	3 or 4		IE 412	OR Models for Mfg Systems	3 or 4	
IE 413	Simulation	3 or 4		IE 413	Simulation	3 or 4	
IE 420	Financial Engineering	3 or 4		IE 420	Financial Engineering	3 or 4	
IE 430	Economic Found of Quality Syst	3 or 4		IE 430	Economic Found of Quality Syst	3 or 4	
IE 431	Design for Six Sigma		3	IE 431	Design for Six Sigma		3
IB 150	Organismal & Evolutionary Biol		4	IB 150	Organismal & Evolutionary Biol		4
IB 202	Physiology	3 or 4		IB 202	Physiology	3 or 4	
IB 203	Ecology		4	IB 203	Ecology		4
IB 204	Genetics	3 or 4		IB 204	Genetics	3 or 4	
IB 302	Evolution		4	IB 302	Evolution		4
IB 302	Evolution		4	IB 302	Evolution		4
IB 335	Plant Systematics		4	IB 335	Plant Systematics		4
IB 348	Fish and Wildlife Ecology		3	IB 348	Fish and Wildlife Ecology		3
IB 368	Vertebrate Natural History		4	IB 368	Vertebrate Natural History		4
IB 401	Introduction to Entomology	3 or 4		IB 401	Introduction to Entomology	3 or 4	
IB 405	Evolution of Traits and Genomes		3	IB 405	Evolution of Traits and Genomes		3
IB 420	Plant Physiology		3	IB 420	Plant Physiology		3
IB 421	Photosynthesis		3	IB 421	Photosynthesis		3
IB 426	Env and Evol Physl of Animals		3	IB 426	Env and Evol Physl of Animals		3
IB 427	Insect Physiology		4	IB 427	Insect Physiology		4
IB 431	Behavioral Ecology		3	IB 431	Behavioral Ecology		3
IB 432	Genes and Behavior		3	IB 432	Genes and Behavior		3
IB 440	Plants and Global Change		3	IB 440	Plants and Global Change		3
IB 443	Evolutionary Ecology		3	IB 443	Evolutionary Ecology		3
IB 444	Insect Ecology	3 or 4		IB 444	Insect Ecology	3 or 4	
IB 451	Conservation Biology		4	IB 451	Conservation Biology		4
IB 452	Ecosystem Ecology		3	IB 452	Ecosystem Ecology		3
IB 453	Community Ecology		3	IB 453	Community Ecology		3
IB 461	Ornithology		4	IB 461	Ornithology		4
IB 462	Mammalogy		4	IB 462	Mammalogy		4
IB 463	Ichthyology		4	IB 463	Ichthyology		4
IB 464	Herpetology		4	IB 464	Herpetology		4
IB 467	Principles of Systematics		4	IB 467	Principles of Systematics		4
IB 468	Insect Classification and Evol		4	IB 468	Insect Classification and Evol		4
IB 471	General Mycology		4	IB 471	General Mycology		4
IB 472	Plant Molecular Biology		1	IB 472	Plant Molecular Biology		1
IB 473	Plant Genomics		1	IB 473	Plant Genomics		1
IB 481	Vector-borne Diseases		4	IB 481	Vector-borne Diseases		4
IB 482	Insect Pest Management		3	IB 482	Insect Pest Management		3
IB 483	Insect Pathology		3	IB 483	Insect Pathology		3
IB 485	Environ Toxicology & Health		3	IB 485	Environ Toxicology & Health		3
IB 486	Pesticide Toxicology	3 or 4		IB 486	Pesticide Toxicology	3 or 4	
LING 300	Anat & Physiol Spch Mechanism		4	LING 300	Anat & Physiol Spch Mechanism		4
LING 406	Introduction to Computational Linguistics	3 or 4		LING 406	Introduction to Computational Linguistics	3 or 4	
LING 407	Logic and Linguistic Analysis	3 or 4		LING 407	Logic and Linguistic Analysis	3 or 4	
LING 427	Language and the Brain	3 or 4		LING 427	Language and the Brain	3 or 4	
MSE 280	Engineering Materials		3	MSE 280	Engineering Materials		3
Material Science and Engineering (MSE): All 300 and 400 level courses except				Material Science and Engineering (MSE): All 300 and 400 level courses except 304, 460, 461, and seminars/special topics, which may be reviewed by the Advising Office			
MATH 213	Basic Discrete Mathematics		3	MATH 213	Basic Discrete Mathematics		3
MATH 347	Fundamental Mathematics		3	MATH 347	Fundamental Mathematics		3
MATH 348	Fundamental Mathematics-ACP		4	MATH 348	Fundamental Mathematics-ACP		4
MATH 357	Numerical Methods I		3	MATH 357	Numerical Methods I		3
MATH 402	Non Euclidean Geometry	3 or 4		MATH 402	Non Euclidean Geometry	3 or 4	
MATH 403	Euclidean Geometry	3 or 4		MATH 403	Euclidean Geometry	3 or 4	
MATH 412	Graph Theory	3 or 4		MATH 412	Graph Theory	3 or 4	
MATH 413	Intro to Combinatorics	3 or 4		MATH 413	Intro to Combinatorics	3 or 4	
MATH 414	Mathematical Logic	3 or 4		MATH 414	Mathematical Logic	3 or 4	
MATH 415	Applied Linear Algebra	3 or 4					
MATH 416	Abstract Linear Algebra	3 or 4		MATH 416	Abstract Linear Algebra	3 or 4	
MATH 417	Intro to Abstract Algebra	3 or 4		MATH 417	Intro to Abstract Algebra	3 or 4	
MATH 418	Intro to Abstract Algebra II	3 or 4		MATH 418	Intro to Abstract Algebra II	3 or 4	
MATH 423	Differential Geometry	3 or 4		MATH 423	Differential Geometry	3 or 4	
MATH 424	Honors Real Analysis		3	MATH 424	Honors Real Analysis		3
MATH 425	Honors Advanced Analysis		3	MATH 425	Honors Advanced Analysis		3
MATH 427	Honors Abstract Algebra		3	MATH 427	Honors Abstract Algebra		3
MATH 428	Honors Topics in Mathematics		3	MATH 428	Honors Topics in Mathematics		3
MATH 432	Set Theory and Topology	3 or 4		MATH 432	Set Theory and Topology	3 or 4	
MATH 442	Intro Partial Diff Equations	3 or 4		MATH 442	Intro Partial Diff Equations	3 or 4	
MATH 444	Elementary Real Analysis	3 or 4		MATH 444	Elementary Real Analysis	3 or 4	
MATH 446	Applied Complex Variables	3 or 4		MATH 446	Applied Complex Variables	3 or 4	
MATH 447	Real Variables	3 or 4		MATH 447	Real Variables	3 or 4	
MATH 448	Complex Variables	3 or 4		MATH 448	Complex Variables	3 or 4	
MATH 450	Numerical Analysis	3 or 4		MATH 450	Numerical Analysis	3 or 4	
MATH 453	Elementary Theory of Numbers	3 or 4		MATH 453	Elementary Theory of Numbers	3 or 4	
MATH 473	Algorithms		4	MATH 473	Algorithms		4
MATH 475	Formal Models of Computation	3 or 4		MATH 475	Formal Models of Computation	3 or 4	
MATH 481	Vector and Tensor Analysis	3 or 4		MATH 481	Vector and Tensor Analysis	3 or 4	
MATH 482	Linear Programming	3 or 4		MATH 482	Linear Programming	3 or 4	
MATH 484	Nonlinear Programming	3 or 4		MATH 484	Nonlinear Programming	3 or 4	
MATH 487	Advanced Engineering Math	3 or 4		MATH 487	Advanced Engineering Math	3 or 4	
MATH 489	Dynamics & Differential Eqns	3 or 4		MATH 489	Dynamics & Differential Eqns	3 or 4	
MCB 150	Molec & Cellular Basis of Life		4	MCB 150	Molec & Cellular Basis of Life		4
MCB 250	Molecular Genetics		3	MCB 250	Molecular Genetics		3
MCB 251	Exp Techniqs in Molecular Biol		2	MCB 251	Exp Techniqs in Molecular Biol		2
MCB 252	Cells, Tissues & Development		3	MCB 252	Cells, Tissues & Development		3
MCB 253	Exp Techniqs in Cellular Biol		2	MCB 253	Exp Techniqs in Cellular Biol		2
MCB 300	Microbiology		3	MCB 300	Microbiology		3
MCB 301	Experimental Microbiology		3	MCB 301	Experimental Microbiology		3
MCB 314	Introduction to Neurobiology		3	MCB 314	Introduction to Neurobiology		3
MCB 316	Genetics and Disease		4	MCB 316	Genetics and Disease		4
MCB 354	Biochem & Phys Basis of Life		3	MCB 354	Biochem & Phys Basis of Life		3
MCB 400	Cancer Cell Biology		3	MCB 400	Cancer Cell Biology		3
MCB 401	Cell & Membrane Physiology		3	MCB 401	Cell & Membrane Physiology		3
MCB 402	Sys & Integrative Physiology		3	MCB 402	Sys & Integrative Physiology		3
MCB 403	Cell & Membrane Physiology Lab	1 or 2		MCB 403	Cell & Membrane Physiology Lab	1 or 2	
MCB 404	Sys & Integrative Physiol Lab	1 to 2		MCB 404	Sys & Integrative Physiol Lab	1 to 2	
MCB 406	Gene Expression & Regulation		3	MCB 406	Gene Expression & Regulation		3
MCB 408	Immunology		3	MCB 408	Immunology		3
MCB 410	Developmental Biology, Stem Cells and Regener		3	MCB 410	Developmental Biology, Stem Cells and Regener		3
MCB 413	Endocrinology		3	MCB 413	Endocrinology		3
MCB 419	Brain, Behavior & Info Process		3	MCB 419	Brain, Behavior & Info Process		3
MCB 421	Microbial Genetics		3	MCB 421	Microbial Genetics		3
MCB 424	Microbial Biochemistry		3	MCB 424	Microbial Biochemistry		3
MCB 426	Bacterial Pathogenesis		3	MCB 426	Bacterial Pathogenesis		3
MCB 430	Molecular Microbiology		3	MCB 430	Molecular Microbiology		3
MCB 431	Microbial Physiology		3	MCB 431	Microbial Physiology		3
MCB 433	Virology & Viral Pathogenesis		3	MCB 433	Virology & Viral Pathogenesis		3
MCB 435	Evolution of Infectious Disease		3	MCB 435	Evolution of Infectious Disease		3
MCB 446	Physical Biochemistry		3	MCB 446	Physical Biochemistry		3
MCB 480	Eukaryotic Cell Signaling		3	MCB 480	Eukaryotic Cell Signaling		3
ME 200	Thermodynamics		3	ME 200	Thermodynamics		3
ME 310	Fundamentals of Fluid Dynamics		4	ME 310	Fundamentals of Fluid Dynamics		4
ME 320	Heat Transfer		4	ME 320	Heat Transfer		4
ME 330	Engineering Materials		4	ME 330	Engineering Materials		4
ME 340	Dynamics of Mechanical Systems		3.5	ME 340	Dynamics of Mechanical Systems		3.5
ME 370	Mechanical Design I		3	ME 370	Mechanical Design I		3
ME 371	Mechanical Design II		3	ME 371	Mechanical Design II		3
ME 400	Energy Conversion Systems	3 or 4		ME 400	Energy Conversion Systems	3 or 4	
ME 401	Refrigeration and Cryogenics	3 or 4		ME 401	Refrigeration and Cryogenics	3 or 4	
ME 402	Design of Thermal Systems	3 or 4		ME 402	Design of Thermal Systems	3 or 4	
ME 403	Internal Combustion Engines	3 or 4		ME 403	Internal Combustion Engines	3 or 4	
ME 404	Intermediate Thermodynamics		4	ME 404	Intermediate Thermodynamics		4
ME 410	Intermediate Gas Dynamics	3 or 4		ME 410	Intermediate Gas Dynamics	3 or 4	
ME 411	Viscous Flow & Heat Transfer		4	ME 411	Viscous Flow & Heat Transfer		4
ME 412	Numerical Thermo-Fluid Mechs	2 to 4		ME 412	Numerical Thermo-Fluid Mechs	2 to 4	
ME 420	Intermediate Heat Transfer		4	ME 420	Intermediate Heat Transfer		4
ME 430	Failure of Engrg Materials	3 or 4		ME 430	Failure of Engrg Materials	3 or 4	
ME 431	Mechanical Component Failure	3 or 4		ME 431	Mechanical Component Failure	3 or 4	
ME 440	Kinem & Dynamics of Mech Syst	3 or 4		ME 440	Kinem & Dynamics of Mech Syst	3 or 4	
ME 445	Introduction to Robotics		4	ME 445	Introduction to Robotics		4

ME 450	Modeling Materials Processing		3	ME 450	Modeling Materials Processing		3
ME 451	Computer-Aided Mfg Systems	3 or 4		ME 451	Computer-Aided Mfg Systems	3 or 4	
ME 452	Num Control of Mfg Processes	3 or 4		ME 452	Num Control of Mfg Processes	3 or 4	
ME 460	Industrial Control Systems		4	ME 460	Industrial Control Systems		4
ME 461	Computer Cntrl of Mech Systems	3 or 4		ME 461	Computer Cntrl of Mech Systems	3 or 4	
ME 471	Finite Element Analysis	3 or 4		ME 471	Finite Element Analysis	3 or 4	
ME 472	Introduction to Tribology	3 or 4		ME 472	Introduction to Tribology	3 or 4	
ME 485	MEMS Devices & Systems		3	ME 485	MEMS Devices & Systems		3
ME 487	MEMS-NEMS Theory & Fabrication		4	ME 487	MEMS-NEMS Theory & Fabrication		4
MUS 407	Elect Music Techniques I		3	MUS 407	Elect Music Techniques I		3
MUS 409	Elec Music Techniques II		2	MUS 409	Elec Music Techniques II		2
NEUR 453	Cog Neuroscience of Vision	3 or 4		NEUR 453	Cog Neuroscience of Vision	3 or 4	
NPRE 201	Energy Systems	2 or 3		NPRE 201	Energy Systems	2 or 3	
NPRE 247	Modeling Nuclear Energy System		3	NPRE 247	Modeling Nuclear Energy System		3
NPRE 402	Nuclear Power Engineering	3 or 4		NPRE 402	Nuclear Power Engineering	3 or 4	
NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4		NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4	
NPRE 421	Plasma and Fusion Science		3	NPRE 421	Plasma and Fusion Science		3
NPRE 423	Plasma Laboratory		2	NPRE 423	Plasma Laboratory		2
NPRE 429	Plasma Engineering		3	NPRE 429	Plasma Engineering		3
NPRE 431	Materials in Nuclear Engrg		3	NPRE 431	Materials in Nuclear Engrg		3
NPRE 432	Nuclear Engrg Materials Lab		2	NPRE 432	Nuclear Engrg Materials Lab		2
NPRE 435	Radiological Imaging		3	NPRE 435	Radiological Imaging		3
NPRE 441	Radiation Protection		4	NPRE 441	Radiation Protection		4
NPRE 442	Radioactive Waste Management		3	NPRE 442	Radioactive Waste Management		3
NPRE 444	Nuclear Analytical Methods Lab	2 or 3		NPRE 444	Nuclear Analytical Methods Lab	2 or 3	
NPRE 446	Radiation Interact w/Matter I		3	NPRE 446	Radiation Interact w/Matter I		3
NPRE 447	Radiation Interact w/Matter II		3	NPRE 447	Radiation Interact w/Matter II		3
NPRE 448	Nuclear Syst Engrg & Design		4	NPRE 448	Nuclear Syst Engrg & Design		4
NPRE 451	NPRE Laboratory		3	NPRE 451	NPRE Laboratory		3
NPRE 455	Neutron Diffusion & Transport		4	NPRE 455	Neutron Diffusion & Transport		4
NPRE 457	Safety Anlys Nucl Reactor Syst	3 or 4		NPRE 457	Safety Anlys Nucl Reactor Syst	3 or 4	
NPRE 458	Design in NPRE		4	NPRE 458	Design in NPRE		4
NPRE 470	Fuel Cells & Hydrogen Sources		3	NPRE 470	Fuel Cells & Hydrogen Sources		3
NPRE 475	Wind Power Systems	3 or 4		NPRE 475	Wind Power Systems	3 or 4	
PHYS 225	Relativity & Math Applications		2	PHYS 225	Relativity & Math Applications		2
PHYS 325	Classical Mechanics I		3	PHYS 325	Classical Mechanics I		3
PHYS 326	Classical Mechanics II		3	PHYS 326	Classical Mechanics II		3
PHYS 401	Classical Physics Lab		3	PHYS 401	Classical Physics Lab		3
PHYS 402	Light	3 or 4		PHYS 402	Light	3 or 4	
PHYS 403	Modern Experimental Physics	4 or 5		PHYS 403	Modern Experimental Physics	4 or 5	
PHYS 406	Acoustical Physics of Music		4	PHYS 406	Acoustical Physics of Music		4
PHYS 419	Space, Time, and Matter-ACP	3 or 4		PHYS 419	Space, Time, and Matter-ACP	3 or 4	
PHYS 420	Space, Time, and Matter		2	PHYS 420	Space, Time, and Matter		2
PHYS 427	Thermal & Statistical Physics		4	PHYS 427	Thermal & Statistical Physics		4
PHYS 460	Condensed Matter Physics		4	PHYS 460	Condensed Matter Physics		4
PHYS 466	Atomic Scale Simulations	3 or 4		PHYS 466	Atomic Scale Simulations	3 or 4	
PHYS 470	Subatomic Physics		4	PHYS 470	Subatomic Physics		4
PHYS 485	Atomic Phys & Quantum Theory		3	PHYS 485	Atomic Phys & Quantum Theory		3
PHYS 486	Quantum Physics I		4	PHYS 486	Quantum Physics I		4
PHYS 487	Quantum Physics II		4	PHYS 487	Quantum Physics II		4
				TAM 305	Intro to Numerical Computation		4
SHS 200	General Phonetics		3	SHS 200	General Phonetics		3
SHS 240	Intro Sound & Hearing Science		3	SHS 240	Intro Sound & Hearing Science		3
SHS 300	Anat & Physiol Spch Mechanism		4	SHS 300	Anat & Physiol Spch Mechanism		4
SHS 301	General Speech Science		4	SHS 301	General Speech Science		4
SHS 320	Development of Spoken Language		3	SHS 320	Development of Spoken Language		3
SHS 450	Intro Audiol & Hear Disorders		4	SHS 450	Intro Audiol & Hear Disorders		4
SHS 470	Neural Bases Spch Lang		4	SHS 470	Neural Bases Spch Lang		4
STAT 420	Methods of Applied Statistics	3 or 4		STAT 420	Methods of Applied Statistics	3 or 4	
STAT 424	Analysis of Variance	3 or 4		STAT 424	Analysis of Variance	3 or 4	
STAT 428	Statistical Computing	3 or 4		STAT 428	Statistical Computing	3 or 4	
STAT 429	Time Series Analysis	3 or 4		STAT 429	Time Series Analysis	3 or 4	
STAT 440	Statistical Data Management	3 or 4		STAT 440	Statistical Data Management	3 or 4	
SE 411	Reliability Engineering	3 or 4		SE 411	Reliability Engineering	3 or 4	
SE 420	Digital Control Systems		4	SE 420	Digital Control Systems		4
SE 423	Mechatronics		3	SE 423	Mechatronics		3
SE 424	State Space Design for Control		3	SE 424	State Space Design for Control		3
TAM 211	Statics		3	TAM 211	Statics		3
TAM 212	Introductory Dynamics		3	TAM 212	Introductory Dynamics		3
TAM 251	Introductory Solid Mechanics		3	TAM 251	Introductory Solid Mechanics		3
TAM 324	Behavior of Materials		4	TAM 324	Behavior of Materials		4
TAM 335	Introductory Fluid Mechanics		4	TAM 335	Introductory Fluid Mechanics		4
TAM 412	Intermediate Dynamics		4	TAM 412	Intermediate Dynamics		4
TAM 435	Intermediate Fluid Mechanics		4	TAM 435	Intermediate Fluid Mechanics		4
TAM 445	Continuum Mechanics		4	TAM 445	Continuum Mechanics		4
TAM 451	Intermediate Solid Mechanics		4	TAM 451	Intermediate Solid Mechanics		4
One course from departmentally approved list of EE Foundations Courses				**One course from departmentally approved list of EE Foundations Courses**			
ECE 310	Digital Signal Processing		3	ECE 310	Digital Signal Processing		3
ECE 330	Power Ckts & Electromechanics		3	ECE 330	Power Ckts & Electromechanics		3
ECE 329	Fields and Waves I		3	ECE 329	Fields and Waves I		3
ECE 340	Semiconductor Electronics		3	ECE 340	Semiconductor Electronics		3
ECE 461	Digital Communications		3	ECE 461	Digital Communications		3
ECE 486	Control Systems		4	ECE 486	Control Systems		4
Three courses from departmentally approved list of Advanced Computing E				**Three courses from departmentally approved list of Advanced Computing Electives below:**			
CS 357	Numerical Methods I		3	CS 357	Numerical Methods I		3
CS 411	Database Systems	3 or 4		CS 411	Database Systems	3 or 4	
CS 412	Introduction to Data Mining	3 or 4		CS 412	Introduction to Data Mining	3 or 4	
CS 414	Multimedia Systems	3 or 4		CS 414	Multimedia Systems	3 or 4	
CS 418	Interactive Computer Graphics	3 or 4		CS 418	Interactive Computer Graphics	3 or 4	
CS 419	Production Computer Graphics	3 or 4		CS 419	Production Computer Graphics	3 or 4	
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4		CS 420	Parallel Progrmg: Sci & Engrg	3 or 4	
CS 421	Programming Languages & Compilers	3 or 4		CS 421	Programming Languages & Compilers	3 or 4	
CS 423	Operating Systems Design	3 or 4		CS 423	Operating Systems Design	3 or 4	
CS 424	Real-Time Systems	3 or 4		CS 424	Real-Time Systems	3 or 4	
CS 425	Distributed Systems	3 or 4		CS 425	Distributed Systems	3 or 4	
CS 426	Compiler Construction	3 or 4		CS 426	Compiler Construction	3 or 4	
CS 431	Embedded Systems	3 or 4		CS 431	Embedded Systems	3 or 4	
CS 436	Computer Networking Laboratory	3 or 4		CS 436	Computer Networking Laboratory	3 or 4	
CS 438	Communication Networks	3 or 4		CS 438	Communication Networks	3 or 4	
CS 440	Artificial Intelligence	3 or 4		CS 440	Artificial Intelligence	3 or 4	
CS 446	Machine Learning	3 or 4		CS 446	Machine Learning	3 or 4	
CS 450	Numerical Analysis	3 or 4		CS 450	Numerical Analysis	3 or 4	
CS 461	Computer Security I		4	CS 461	Computer Security I		4
CS 475	Formal Models of Computation	3 or 4		CS 475	Formal Models of Computation	3 or 4	
CS 476	Program Verification	3 or 4		CS 476	Program Verification	3 or 4	
CS 477	Formal Software Development Methods	3 or 4		CS 477	Formal Software Development Methods	3 or 4	
CS 483	Applied Parallel Programming		4	CS 483	Applied Parallel Programming		4
CS 498	Special Topics (MP: Logic for Computer Science	1 to 4		CS 498	Special Topics (MP: Logic for Computer Science	1 to 4	
CS 498	Special Topics (VR: Virtual Reality)	1 to 4		CS 498	Special Topics (VR: Virtual Reality)	1 to 4	
CS 498	Special Topics (AML: Applied Machine Learning)	1 to 4		CS 498	Special Topics (AML: Applied Machine Learning)	1 to 4	
ECE 408	Applied Parallel Programming		4	ECE 408	Applied Parallel Programming		4
ECE 411	Computer Organization & Design		4	ECE 411	Computer Organization & Design		4
ECE 412	Microcomputer Laboratory		3	ECE 412	Microcomputer Laboratory		3
ECE 419	Security Laboratory	3 or 4		ECE 419	Security Laboratory	3 or 4	
ECE 422	Computer Security I		4	ECE 422	Computer Security I		4
ECE 424	Computer Security II	3 or 4		ECE 424	Computer Security II	3 or 4	
ECE 425	Intro to VLSI System Design		3	ECE 425	Intro to VLSI System Design		3
ECE 428	Distributed Systems	3 or 4		ECE 428	Distributed Systems	3 or 4	
ECE 435	Computer Networking Laboratory	3 or 4		ECE 435	Computer Networking Laboratory	3 or 4	
ECE 438	Communication Networks	3 or 4		ECE 438	Communication Networks	3 or 4	
ECE 439	Wireless Networks	3 or 4		ECE 439	Wireless Networks	3 or 4	
ECE 448	Artificial Intelligence	3 or 4		ECE 448	Artificial Intelligence	3 or 4	
ECE 462	Logic Synthesis		3	ECE 462	Logic Synthesis		3
ECE 470	Introduction to Robotics		4	ECE 470	Introduction to Robotics		4
ECE 478	Formal Software Development Methods	3 or 4		ECE 478	Formal Software Development Methods	3 or 4	
ECE 491	Numerical Analysis	3 or 4		ECE 491	Numerical Analysis	3 or 4	
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4		ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4	
ECE 498	Special Topics in ECE (RC: Smart Phone Compu	0 to 4		ECE 498	Special Topics in ECE (RC: Smart Phone Comp	0 to 4	
One course from departmentally approved list below:				**One course from departmentally approved list below:**			
ECE 411	Computer Organization & Design		4	ECE 411	Computer Organization & Design		4
ECE 445	Senior Design Project Lab [1]		4	ECE 445	Senior Design Project Lab [1]		4
ECE 496	Senior Research Project (and ECE 499 - Senic		4	ECE 496	Senior Research Project (and ECE 499 - Senic		4

Electives

Course List		
Code	**Title**	**Hours**
The Grainger College of Engineering Liberal Education course li		6
Free electives. Additional unrestricted course work, subjec		**12**
Total Hours of Curriculum to Graduate		**128**

[1] External transfer students take ENG 300 instead.

Electives

Course List		
Code	**Title**	**Hours**
The Grainger College of Engineering Liberal Education course li		6
Free electives. Additional unrestricted course work, subject to c		12
Total Hours of Curriculum to Graduate		**128**

[1] External transfer students take ENG 300 instead.

[2] MATH 220 *may be substituted, with four of the five c*
[3] Freshmen take ECE 110 for 3 credit hours. Lab-only versio
[4] MATH 213 may be substituted. When CS 173 is taken, 1 cr
[5] STAT 410 may be substituted.
[6] *Advanced Composition may be satisfied by completir*
[7] The Grainger College of Engineering approved liberal educ
[8] The Grainger College of Engineering restrictions to free ele

[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.*
[3] Freshmen take ECE 110 for 3 credit hours. Lab-only version taken by transfer students (with special permission) is 1 credit hour.
[4] MATH 213 may be substituted. When CS 173 is taken, 1 credit hour is regarded as a "basic science and math" credit and 2 hours as engineering credit.
[5] STAT 410 may be substituted.
[6] *Advanced Composition may be satisfied by completing* ***ECE 445*** *or* ***ECE 496*** *and* ***ECE 499*** *or a course within either the general education or free elective categories which has the Advanced Composition designation.*
[7] 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.
[8] The Grainger College of Engineering restrictions to free electives can be found here.

UNIVERSITY OF ILLINOIS
Urbana-Champaign ● Chicago ● Springfield

University Senates Conference
378 Henry Administration Building
506 South Wright Street
Urbana, IL 61801

February 26, 2020

Kathy Martensen
Assistant Provost for Educational Programs
206 Swanlund, MC-304

Dear Kathy:

At its meeting on February 20, the University Senates Conference approved the proposed classification of minutes of the Urbana-Champaign Senate meeting of February 10. The Class I items are listed below.

EP.19.69	Establish a Major in Translational Medical Sciences in the Carle Illinois College of Medicine for the Degree of Master of Science
EP.20.34	Establish a Minor in Disability Studies in the Department of Kinesiology and Community Health, College of Applied Health Sciences
EP.20.44	Eliminate the BS MS in Industrial Engineering
EP.20.45	Eliminate the BS MS in Mechanical Engineering
EP.20.46	Revision of Curriculum Requirements for the Ph.D. in Civil Engineering to Add a 96-Credit Hour Option
EP.20.47	Revision of Curriculum Requirements for the Ph.D. in Environmental Engineering to Add a 96-Credit Hour Option
EP.20.48	Revision to the Master of Accounting Science (MAS) Degree Course Requirements
EP.20.49	Revision to Taxation Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements
EP.20.50	Revision to the Data Analytics Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements
EP.20.51	Financial Reporting & Assurance Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements

Telephone (217) 333-3077 ● Fax (217) 244-5763

EP.20.52 Establish Joint Program in the Department of Animal Sciences for the BS/MANSC

EP.20.53 Establish a Joint BS (CS+ANSC)/MANSC Program in the Department of Animal Sciences

EP.20.54 Revise the BALAS in Classics, College of Liberal Arts and Sciences, to Eliminate the Five Ways Students Can Choose a Classics Major (Major in Classics (Without a Concentration) and the Four Concentrations in Greek, Latin, Classics, Classical Civilization, and Classical Archeology. Add Concentrations in Classical Languages and Classical Civilizations as the Only Two Options Students May Pursue a Classics Major

EP.20.55 Revise the BALAS in Classics, College of Liberal Arts and Sciences, Classical Archeology

EP.20.56 Revise the BALAS in Classics, College of Liberal Arts and Sciences, Classical Civilization

EP.20.57 Elimination of the Undergraduate Minor: Classical Archaeology. In Conjunction with the Elimination of Three Other Undergraduate Minors in the Department of Classics: Classical Civilization, Greek, Latin; and the Creation of Two Minors: Classical Civilizations and Classical Languages

EP.20.58 Elimination of the Undergraduate Minor: Greek Minor

EP.20.59 Elimination of the Undergraduate Minor: Classical Civilization

EP.20.60 Elimination of the Undergraduate Minor: Latin Minor

EP.20.61 Creation of a new Undergraduate Minor: Classical Civilizations

EP.20.62 Creation of a new Undergraduate Minor: Classical Languages

EP.20.63 Revise the BALAS in Classics, Classical Civilizations

EP.20.64 Revise the BALAS in Classics, Classical Languages

EP.20.65 Revising EdD Degree Program Course and Exam Requirement

EP.20.66 Revise the Minor in German, Department of Germanic Languages and Literatures

EP.20.67 Revise the BALAS in Classics

EP.20.68 Revise the BALAS in Classics: Latin

EP.20.69 Establish a New Master of Science (M.S.) in Mental Health Counseling in the Department of Educational Psychology, College of Education

EP.20.70 Proposal to Establish a New Bachelor of Science Degree with a Major in Plant Biotechnology (B.S. in Plant Biotech) in the Department of Crop Sciences, College of Agricultural, Consumer and Environmental Sciences

EP.20.71 Revision to the Chemistry Minor

EP.20.72 Urban Studies & Planning: Social Justice

EP.20.75 Remove Art History PhD, Art Education PhD, and Education Policy, Organization, and Leadership MA, EdM, and CAS from a List of Programs Participating in the Writing Studies Floating Concentration

EP.20.76 Create a new Minor in German Business and Commercial Studies

EP.20.77 Computer Science & Philosophy, BSLAS (Revisions to the BSLAS in Computer Science & Philosophy, Department of Philosophy)

EP.20.78 Computer Science Minor

EP.20.79 New Proposal for BFA in Theatre: Arts & Entertainment Technology

EP.20.80 Revising Requirements for BFA in Theatre: Scenic Design

EP.20.81 Revising Requirements for BFA in Theatre: Sound Design & Technology

EP.20.82 Revising Requirements for BFA in Theatre: Lighting Design & Technology

EP.20.83 Revising Requirements for BFA in Theatre: Scenic Technology

EP.20.84 Revising Requirements for BFA in Theatre: Costume Design & Technology

EP.20.85 Revising Requirements for BFA in Theatre: Acting

EP.20.86 Revising Requirements for BFA in Theatre

EP.20.87 Revising Requirements for BFA in Theatre: Theatre Studies

EP.20.88 Revising Requirements for BFA in Theatre: Stage Management

EP.20.89 Revising Requirements in Theatre Minor, UG

EP.20.90 Computer Science & Astronomy, BSLAS (Revise the BSLAS in Computer Science & Astronomy, College of Liberal Arts and Sciences)

EP.20.91 Revising Requirements for BS in Civil Engineering

EP.20.92 Revising Requirements for BS in Computer Engineering

EP.20.93 Revising Requirements for BSAG in Agricultural and Biological Engineering

EP.20.94 Revising Requirements for BS in Agricultural and Biological Engineering

EP.20.95 Revising Requirements for BS in Agricultural & Biological Engineering: Agricultural Engineering

EP.20.96 Revising Requirements for BS in Agricultural & Biological Engineering: Biological Engineering

EP.20.97 Revising Requirements for BS in Computer Science

EP.20.98 Revising Requirements for BS in Electrical Engineering

EP.20.99 Revising Requirements for BS in Engineering Mechanics

EP.20.100 Revising Requirements for BS in Engineering Physics

EP.20.101 Revising Requirements for BS in Systems Engineering & Design

EP.20.102 Revising Requirements for BS in Nuclear, Plasma, and Radiological Engineering

EP.20.103 Revising Requirements for BS in Mechanical Engineering

EP.20.104 Revising Requirements for BS in Materials Science & Engineering

SP.20.09 Proposed Revision to the *Constitution*, Article II, Section 1.b; Article III, Section 1; and Article IV, Section 1

Sincerely,

Connie

Connie Sailor
Administrative Aide

c: Ellen Foran,
Renee Nagy
Julian Parrott
Jenny Roether
Nathan Wilds

10KP0115BS: ELECTRICAL ENGINEERING, BS

In Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. 1933 Head (b-hajek@illinois.edu; oelze@illinois.edu; erhan@illinois.edu)
3. KP Committee Chair (bsnewell@illinois.edu; danko@illinois.edu; kcp@illinois.edu; jmakela@illinois.edu)
4. KP Dean (candyd@illinois.edu)
5. University Librarian (jpwilkin@illinois.edu)
6. Provost (kmartens@illinois.edu)
7. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
8. Senate (jtempel@illinois.edu)
9. U Senate Conf (none)
10. Board of Trustees (none)
11. IBHE (none)
12. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Wed, 24 Feb 2021 21:59:29 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Wed, 24 Feb 2021 22:01:23 GMT
   E Kudeki (erhan): Approved for 1933 Head
3. Tue, 09 Mar 2021 19:48:51 GMT
   Brooke Newell (bsnewell): Approved for KP Committee Chair
4. Tue, 09 Mar 2021 19:51:08 GMT
   Candy Deaville (candyd): Approved for KP Dean
5. Tue, 09 Mar 2021 20:22:25 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
6. Wed, 10 Mar 2021 21:48:25 GMT
   Kathy Martensen (kmartens): Rollback to KP Dean for Provost
7. Wed, 10 Mar 2021 21:52:01 GMT
   Candy Deaville (candyd): Rollback to KP Committee Chair for KP Dean
8. Thu, 18 Mar 2021 20:24:12 GMT
   Brooke Newell (bsnewell): Approved for KP Committee Chair
9. Thu, 18 Mar 2021 20:29:34 GMT
   Candy Deaville (candyd): Approved for KP Dean
10. Thu, 18 Mar 2021 20:31:37 GMT
    John Wilkin (jpwilkin): Approved for University Librarian
11. Mon, 22 Mar 2021 19:01:54 GMT
    Kathy Martensen (kmartens): Approved for Provost

History

1. Apr 23, 2019 by Deb Forgacs (dforgacs)
2. Aug 12, 2019 by Deb Forgacs (dforgacs)
3. Feb 26, 2020 by Brooke Newell (bsnewell)
4. Mar 31, 2020 by Deb Forgacs (dforgacs)
5. Apr 14, 2020 by Deb Forgacs (dforgacs)

Date Submitted:Tue, 23 Feb 2021 22:10:04 GMT

Viewing:10KP0115BS : Electrical Engineering, BS

Changes proposed by: E Kudeki

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*

Administrative approval: Minor revision in Electrical Engineering BS curriculum: Updating courses in the Foundational Mathematics and Science requirements and the Technical Electives list.

EP Control Number

EP.21.100

Official Program Name

Electrical Engineering, BS

Effective Catalog Term

Fall 2021

Sponsor College

Grainger College of Engineering

Sponsor Department

Electrical and Computer Engineering

Sponsor Name

Erhan Kudeki

Sponsor Email

erhan@illinois.edu

College Contact

Brooke Newell

College Contact Email

bsnewell@illinois.edu

Program Description and Justification

Justification for proposal change:

The proposal is for:

1) Replacing MATH 286 by the sequence of (MATH 257 or MATH 416) and MATH 285, and
2) Adding ATMS 201, CPSC 265, PSYC 204 as technical electives

With these changes, the credit hours under the Foundational Math and Science section will increase from 31 to 33 hours, whereby the credit hours under the Technical Electives will reduce from 32 to 30 hours. As such, there is a net zero change of overall credit hours.

Justification: The Math department is developing MATH 257 as the eventual replacement for MATH 415, with the same theoretical content, but with an emphasis on using programming to perform matrix operations instead of calculating them on paper. All fields of Electrical and Computer Engineering require linear algebra, and many advanced courses in EE and CE degree programs currently re-teach the same linear algebra concepts. Requiring Math 257 (3 credit hours) instead of the one hour of linear algebra that is part of Math 286 facilitates a higher level of abstraction at the beginning of the semester in a number of higher-level Electrical and Computer Engineering courses.

The broadening of the ECE technical electives list with the addition of ATMS 201, CPSC 265, PSYC 204 is motivated by providing additional options with potential data science applications for both Computer Engineering and Electrical Engineering majors.

The total number of basic math and science hours for Electrical Engineering majors will remain above the minimum of 30 hours that are required for ABET accreditation (https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2019-2020/#GC5).

Is this program interdisciplinary?

No

Academic Level

Undergraduate

Will you admit to the concentration directly?

No

Is a concentration required for graduation?

No

CIP Code

141001 - Electrical and Electronics Engineering.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Admission Requirements

Desired Effective Admissions Term

Fall 2021

Is this revision a change to the admission status of the program?

No

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

No impact.

Estimated Annual Number of Degrees Awarded

What is the matriculation term for this program?

Fall

What is the typical time to completion of this program?

4 years

What are the minimum Total Credit Hours required for this program?

128 hours

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

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

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/ acknowledgement from faculty, students, and/or other impacted units as appropriate.

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.

No impact

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.

No impact

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

Yes

Required courses

MATH 285 - Intro Differential Equations

Explain how the inclusion or removal of the courses/subjects listed above impacts the offering departments.

MATH 257 will be added to the CE program as a required course to be taken after MATH 220. MATH 416 will be an alternative to MATH 257 requirement. Also MATH 286 will be discontinued and replaced by MATH 285. See attached letter of support from Mathematics.

Attach letters of support from other departments.

Support letter for ECE revision.pdf
Electrical Engineering BS Support Doc CPSC LOS.docx
Electrical Engineering BS Support Doc ATMS Support Letter.pdf
Electrical Engineering BS Support Doc PSYC LOS.docx

Financial Resources

How does the unit intend to financially support this proposal?

No financial impact is expected.

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

No

Are you seeking a change in the tuition rate or differential 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).

EE BS program is ABET Accredited.

The Program Educational Objectives of the EE program presented to ABET is as follows:

The University of Illinois Electrical Engineering program will produce graduates having the choice, talents, and knowledge to:
1. Pursue a diverse range of careers as engineers, consultants, and entrepreneurs.
2. Continue their education in leading graduate programs in engineering and interdisciplinary areas to emerge as researchers, experts, and educators.
3. Learn and create new knowledge in ever-changing environments of the 21st century, and communicate their work and ideas to colleagues and the public at large.
4. Practice and inspire high ethical and technical standards, and lead their professional disciplines, organizations, and communities globally.

All four of these objectives require a student to possess all seven of the skills listed as Student Outcomes of our program (see below). The particular career paths listed in the first two objectives are engineers, consultants, entrepreneurs --- reachable directly after the B.S. degree --- as well as researchers, experts, and educators, typically for those graduates who choose to continue their education in some graduate program. Each of these six career choices will critically depend on students acquiring all seven of the particular skills enumerated as Student Outcomes, namely:

1. (Principles) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. (Design) 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. (Communication) an ability to communicate effectively with a range of audiences.
4. (Professionalism) 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. (Teamwork) 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. (Analysis) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. (Learning) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Student's achievement of these objectives and outcomes are monitored and assessed using using a strategy that depends on Self-Assessment reports written by ECE instructors and course directors as well as student and alumni surveys.

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

EE_rev_sideBYside.xlsx

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.

Electrical engineering is a multifaceted discipline that over the last century has produced an astounding progression of technological innovations that have shaped virtually every aspect of modern life. Electrical engineers need a broad and solid foundation in mathematics and physics to support their education in the engineering principles of analysis, synthesis, design, implementation, and testing of the devices and systems that provide the bedrock of modern energy, communication, sensing, computing, medical, security, and defense infrastructures. Within each subdiscipline one can find application domains that strongly rely on hands-on experimental work or that are based on theoretical, mathematical and computational approaches. The multidisciplinary nature of the electrical engineering education addresses the growing demand for the innovation and design of sensing, communication, computing, and decision-making systems of increasing complexity in consumer, defense, and medical applications.

The curriculum starts with a core of fundamental courses on circuits, electromagnetics, solid-state electronics, and computer systems, leading to a comprehensive array of specialized courses and laboratories in all of the important areas of modern electrical engineering.

Statement for Programs of Study Catalog

Graduation Requirements

Minimum Technical GPA (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-TechnicalGPARequirement)**:2.0**
TGPA is required for ECE courses (except ECE 316). SeeTechnical GPA (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-TechnicalGPARequirement)to clarify requirements.

Minimum Overall GPA:2.0
Minimum hours required for graduation:128 hours
General education:Students must complete the Campus General Education (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/)**requirements including the campus general education language requirement.Specific Advanced Composition courses required for this degree are listed below.**

Orientation and Professional Development

Code	Title	Hours
ENG 100	Engineering Orientation[1]	0
Total Hours		0

Foundational Mathematics and Science

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 257	Linear Algebra with Computational Applications (Linear Algebra)	3
or MATH 416	Abstract Linear Algebra	
MATH 241	Calculus III	4
MATH 286	Intro to Differential Eq Plus	4
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2
PHYS 214	Univ Physics: Quantum Physics	2
Total Hours		33

Electrical Engineering Technical Core

Code	Title	Hours
ECE 110	Introduction to Electronics[3]	3
ECE 120	Introduction to Computing	4
ECE 220	Computer Systems & Programming	4

ECE 210	Analog Signal Processing	4
ECE 313	Probability with Engrg Applic[4]	3
ECE 329	Fields and Waves I	3
ECE 340	Semiconductor Electronics	3
ECE 385	Digital Systems Laboratory	3
ECE 445	Senior Design Project Lab[5,6]	4
Total Hours		31

Technical Electives

Code	Title	Hours
30 hours, to include:		
Non-ECE courses from list below:		6
AE 202	Aerospace Flight Mechanics	3
AE 302	Aerospace Flight Mechanics II	3
AE 311	Incompressible Flow	3
AE 312	Compressible Flow	3
AE 321	Mechs of Aerospace Structures	3
AE 352	Aerospace Dynamical Systems	3
AE 353	Aerospace Control Systems	3
AE 402	Orbital Mechanics	3 or 4
AE 403	Spacecraft Attitude Control	3 or 4
AE 410	Computational Aerodynamics	3 or 4
AE 412	Viscous Flow & Heat Transfer	4
AE 416	Applied Aerodynamics	3 or 4
AE 419	Aircraft Flight Mechanics	3 or 4
AE 420	Finite Element Analysis	3 or 4
AE 427	Mechanics of Polymers	3
AE 428	Mechanics of Composites	3
AE 433	Aerospace Propulsion	3 or 4
AE 434	Rocket Propulsion	3 or 4
AE 435	Electric Propulsion	3 or 4
AE 451	Aeroelasticity	3 or 4
AE 460	Aerodynamics & Propulsion Lab	2
Ag and Bio Eng. - All 300 and 400 level courses exceptABE 440. Except seminars and special topics courses, which may be reviewed in the Advising Office		
ASTR 210	Introduction to Astrophysics	3
ASTR 310	Computing in Astronomy	3
ASTR 330	Extraterrestrial Life	3
ASTR 350	The Big Bang, Black Holes, and the End of the Universe	3
ASTR 404	Stellar Astrophysics	3
ASTR 405	Planetary Systems	3
ASTR 406	Galaxies and the Universe	3
ASTR 414	Astronomical Techniques	4
ASTR 450	Astrochemistry	4
ATMS 201	General Physical Meteorology	3
ATMS 301	Atmospheric Thermodynamics	3
ATMS 302	Atmospheric Dynamics I	3
ATMS 303	Synoptic-Dynamic Wea Analysis	4
ATMS 304	Radiative Transfer-Remote Sens	3
ATMS 305	Computing and Data Analysis	3
ATMS 404	Risk Analysis in Earth Science	3 or 4
ATMS 405	Boundary Layer Processes	4

ATMS 406	Tropical Meteorology	4
ATMS 410	Radar Remote Sensing	4
ATMS 411	Satellite Remote Sensing	4
ATMS 420	Atmospheric Chemistry	4
ATMS 421	Earth Systems Modeling	4
ATMS 425	Air Quality Modeling	4
ATMS 447	Climate Change Assessment	3
ATMS 449	Biogeochemical Cycles	4
BIOC 406	Gene Expression & Regulation	3
BIOC 440	Physical Chemistry Principles	4
BIOC 446	Physical Biochemistry	3
BIOC 455	Technqs Biochem & Biotech	4
BIOE 201	Conservation Principles Bioeng	3
BIOE 202	Cell & Tissue Engineering Lab	2
BIOE 302	Modeling Human Physiology	3
BIOE 414	Biomedical Instrumentation	3
BIOE 415	Biomedical Instrumentation Lab	2
BIOE 461	Cellular Biomechanics	4
BIOE 467	Biophotonics	3
BIOE 476	Tissue Engineering	3
BIOE 480	Magnetic Resonance Imaging	3 or 4
Biophysics (BIOP): All 400 level courses except seminars and special topics courses, which may be reviewed in the Advising Office.		
CHBE 221	Principles of CHE	3
CHBE 321	Thermodynamics	4
CHBE 421	Momentum and Heat Transfer	4
CHBE 422	Mass Transfer Operations	4
CHBE 424	Chemical Reaction Engineering	3
CHBE 430	Unit Operations Laboratory	4
CHBE 431	Process Design	4
CHBE 440	Process Control and Dynamics	3
CHBE 451	Transport Phenomena	3
CHBE 452	Chemical Kinetics & Catalysis	3
CHBE 453	Electrochemical Engineering	2 or 3
CHBE 456	Polymer Science & Engineering	3
CHBE 457	Microelectronics Processing	3
CHBE 471	Biochemical Engineering	3 or 4
CHBE 472	Techniques in Biomolecular Eng	3 or 4
CHBE 473	Biomolecular Engineering	3 or 4
CHBE 474	Metabolic Engineering	3 or 4
CHEM 104	General Chemistry II	3
CHEM 105	General Chemistry Lab II	1
Chemistry (CHEM): All 200, 300 and 400 level except 397, 497, and 499. Exceptions also include seminars and special topics, which may be reviewed in the Advising Office.		
CEE 310	Transportation Engineering	3
CEE 330	Environmental Engineering	3
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 430	Ecological Quality Engineering	2
CEE 447	Atmospheric Chemistry	4
CEE 491	Decision and Risk Analysis	3 or 4

CPSC 265	Genetic Engineering Lab	3
CS 101	Intro Computing: Engrg & Sci (By Approval)	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 242	Programming Studio	3
CS 357	Numerical Methods I	3
CS 410	Text Information Systems	3 or 4
CS 411	Database Systems	3 or 4
CS 412	Introduction to Data Mining	3 or 4
CS 413	Intro to Combinatorics	3 or 4
CS 414	Multimedia Systems	3 or 4
CS 418	Interactive Computer Graphics	3 or 4
CS 419	Production Computer Graphics	3 or 4
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4
CS 421	Programming Languages & Compilers	3 or 4
CS 422	Programming Language Design	3 or 4
CS 423	Operating Systems Design	3 or 4
CS 424	Real-Time Systems	3 or 4
CS 425	Distributed Systems	3 or 4
CS 426	Compiler Construction	3 or 4
CS 427	Software Engineering I	3 or 4
CS 428	Software Engineering II	3 or 4
CS 429	Software Engineering II, ACP	3
CS 431	Embedded Systems	3 or 4
CS 433	Computer System Organization	3 or 4
CS 436	Computer Networking Laboratory	3 or 4
CS 438	Communication Networks	3 or 4
CS 439	Wireless Networks	3 or 4
CS 440	Artificial Intelligence	3 or 4
CS 445	Computational Photography	3 or 4
CS 446	Machine Learning	3 or 4
CS 447	Natural Language Processing	3 or 4
CS 450	Numerical Analysis	3 or 4
CS 460	Security Laboratory	3 or 4
CS 461	Computer Security I	4
CS 463	Computer Security II	3 or 4
CS 465	User Interface Design	3 or 4
CS 466	Introduction to Bioinformatics	3 or 4
CS 467	Social Visualization	3 or 4
CS 473	Algorithms	4
CS 475	Formal Models of Computation	3 or 4
CS 476	Program Verification	3 or 4
CS 477	Formal Software Development Methods	3 or 4
CS 481	Advanced Topics in Stochastic Processes & Applications	3 or 4
CS 484	Parallel Programming	3 or 4
CS 398	Special Topics (As Approved)	1 to 4
CS 498	Special Topics (As Approved)	1 to 4
ECE 297	Individual Study	1
ECE 304	Photonic Devices	3
ECE 307	Techniques for Engrg Decisions	3
ECE 310	Digital Signal Processing	3
ECE 311	Digital Signal Processing Lab	1

ECE 314	Probability in Engineering Lab	1
ECE 329	Fields and Waves I	3
ECE 330	Power Ckts & Electromechanics	3
ECE 333	Green Electric Energy	3
ECE 340	Semiconductor Electronics	3
ECE 342	Electronic Circuits	3
ECE 343	Electronic Circuits Laboratory	1
ECE 350	Fields and Waves II	3
ECE 365	Data Science and Engineering	3
ECE 374	Introduction to Algorithms & Models of Computation	4
ECE 380	Biomedical Imaging	3
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 396	Honors Project	1 to 4
ECE 397	Individual Study in ECE	0 to 4
ECE 402	Electronic Music Synthesis	3
ECE 403	Audio Engineering	3
ECE 408	Applied Parallel Programming	4
ECE 411	Computer Organization & Design	4
ECE 412	Microcomputer Laboratory	3
ECE 414	Biomedical Instrumentation	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 416	Biosensors	3
ECE 417	Multimedia Signal Processing	4
ECE 418	Image & Video Processing	4
ECE 419	Security Laboratory	3 or 4
ECE 420	Embedded DSP Laboratory	2
ECE 422	Computer Security I	4
ECE 424	Computer Security II	3 or 4
ECE 425	Intro to VLSI System Design	3
ECE 428	Distributed Systems	3 or 4
ECE 431	Electric Machinery	4
ECE 432	Advanced Electric Machinery	3
ECE 435	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 441	Physcs & Modeling Semicond Dev	3
ECE 443	LEDs and Solar Cells	4
ECE 444	IC Device Theory & Fabrication	4
ECE 445	Senior Design Project Lab	4
ECE 446	Principles of Experimental Research in Electrical Engineering	4
ECE 447	Active Microwave Ckt Design	3
ECE 448	Artificial Intelligence	3 or 4
ECE 451	Adv Microwave Measurements	3
ECE 452	Electromagnetic Fields	3
ECE 453	Wireless Communication Systems	4
ECE 454	Antennas	3
ECE 455	Optical Electronics	3 or 4
ECE 456	Global Nav Satellite Systems	4
ECE 457	Microwave Devices & Circuits	3
ECE 458	Applic of Radio Wave Propag	3

ECE 459	Communications Systems	3
ECE 460	Optical Imaging	4
ECE 461	Digital Communications	3
ECE 462	Logic Synthesis	3
ECE 463	Digital Communications Lab	2
ECE 464	Power Electronics	3
ECE 465	Optical Communications Systems	3
ECE 466	Optical Communications Lab	1
ECE 467	Biophotonics	3
ECE 468	Optical Remote Sensing	3
ECE 469	Power Electronics Laboratory	2
ECE 470	Introduction to Robotics	4
ECE 472	Biomedical Ultrasound Imaging	3
ECE 473	Fund of Engrg Acoustics	3 or 4
ECE 476	Power System Analysis	3
ECE 478	Formal Software Development Methods	3 or 4
ECE 480	Magnetic Resonance Imaging	3 or 4
ECE 481	Nanotechnology	4
ECE 482	Digital IC Design	3
ECE 483	Analog IC Design	3
ECE 485	MEMS Devices & Systems	3
ECE 486	Control Systems	4
ECE 487	Intro Quantum Electr for EEs	3
ECE 488	Compound Semicond & Devices	3
ECE 489	Robot Dynamics and Control	4
ECE 490	Introduction to Optimization	3 or 4
ECE 491	Numerical Analysis	3 or 4
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4
ECE 493	Advanced Engineering Math	3 or 4
ECE 495	Photonic Device Laboratory	3
ECE 496	Senior Research Project	2
ECE 499	Senior Thesis	2
ECE 398	Special Topics in ECE (As approved)	0 to 4
ECE 498	Special Topics in ECE (As approved)	0 to 4
ENG 491	Interdisciplinary Design Proj (CubeSat, Solar Decathlon, Formula SAE, Baja SAE, or by Approval.)	1 to 4
GEOL 107	Physical Geology	4
GEOL 208	History of the Earth System	4
GEOL 333	Earth Materials and the Env	4
GEOL 380	Environmental Geology	4
GEOL 411	Structural Geol and Tectonics	4
GEOL 417	Geol Field Methods, Western US	6
GEOL 432	Mineralogy and Mineral Optics	4
GEOL 436	Petrology and Petrography	4
GEOL 440	Sedimentology and Stratigraphy	4
GEOL 450	Probing the Earth's Interior	3
GEOL 452	Introduction to Geophysics	4
GEOL 460	Geochemistry	3
IE 310	Deterministic Models in Optimization	3
IE 330	Industrial Quality Control	3
IE 360	Facilities Planning and Design	3
IE 361	Production Planning & Control	3

IE 400	Design & Anlys of Experiments	3 or 4
IE 410	Advanced Topics in Stochastic Processes & Applications	3 or 4
IE 411	Optimization of Large Systems	3 or 4
IE 412	OR Models for Mfg Systems	3 or 4
IE 413	Simulation	3 or 4
IE 420	Financial Engineering	3 or 4
IE 430	Economic Found of Quality Syst	3 or 4
IE 431	Design for Six Sigma	3
IB 150	Organismal & Evolutionary Biol	4
IB 202	Physiology	3 or 4
IB 203	Ecology	4
IB 204	Genetics	3 or 4
IB 302	Evolution	4
IB 335	Plant Systematics	4
IB 348	Fish and Wildlife Ecology	3
IB 368	Vertebrate Natural History	4
IB 401	Introduction to Entomology	3 or 4
IB 405	Evolution of Traits and Genomes	3
IB 420	Plant Physiology	3
IB 421	Photosynthesis	3
IB 426	Env and Evol Physl of Animals	3
IB 427	Insect Physiology	4
IB 431	Behavioral Ecology	3
IB 432	Genes and Behavior	3
IB 440	Plants and Global Change	3
IB 443	Evolutionary Ecology	3
IB 444	Insect Ecology	3 or 4
IB 451	Conservation Biology	4
IB 452	Ecosystem Ecology	3
IB 453	Community Ecology	3
IB 461	Ornithology	4
IB 462	Mammalogy	4
IB 463	Ichthyology	4
IB 464	Herpetology	4
IB 467	Principles of Systematics	4
IB 468	Insect Classification and Evol	4
IB 471	General Mycology	4
IB 472	Plant Molecular Biology	1
IB 473	Plant Genomics	1
IB 481	Vector-borne Diseases	4
IB 482	Insect Pest Management	3
IB 483	Insect Pathology	3
IB 485	Environ Toxicology & Health	3
IB 486	Pesticide Toxicology	3 or 4
LING 300	Anat & Physiol Spch Mechanism	4
LING 406	Introduction to Computational Linguistics	3 or 4
LING 407	Logic and Linguistic Analysis	3 or 4
LING 427	Language and the Brain	3 or 4
MSE 280	Engineering Materials	3
Material Science and Eng. (MSE): All 300 and 400 level courses except 304, 460, and 461. Exceptions of seminar and special topics courses can be reviewed in the Advising Office.		
MATH 213	Basic Discrete Mathematics	3

MATH 347	Fundamental Mathematics	3
MATH 348	Fundamental Mathematics-ACP	4
MATH 357	Numerical Methods I	3
MATH 402	Non Euclidean Geometry	3 or 4
MATH 403	Euclidean Geometry	3 or 4
MATH 412	Graph Theory	3 or 4
MATH 413	Intro to Combinatorics	3 or 4
MATH 414	Mathematical Logic	3 or 4
MATH 415	Applied Linear Algebra	3 or 4
MATH 416	Abstract Linear Algebra	3 or 4
MATH 417	Intro to Abstract Algebra	3 or 4
MATH 418	Intro to Abstract Algebra II	3 or 4
MATH 423	Differential Geometry	3 or 4
MATH 424	Honors Real Analysis	3
MATH 425	Honors Advanced Analysis	3
MATH 427	Honors Abstract Algebra	3
MATH 428	Honors Topics in Mathematics	3
MATH 432	Set Theory and Topology	3 or 4
MATH 442	Intro Partial Diff Equations	3 or 4
MATH 444	Elementary Real Analysis	3 or 4
MATH 446	Applied Complex Variables	3 or 4
MATH 447	Real Variables	3 or 4
MATH 448	Complex Variables	3 or 4
MATH 450	Numerical Analysis	3 or 4
MATH 453	Elementary Theory of Numbers	3 or 4
MATH 473	Algorithms	4
MATH 475	Formal Models of Computation	3 or 4
MATH 481	Vector and Tensor Analysis	3 or 4
MATH 482	Linear Programming	3 or 4
MATH 484	Nonlinear Programming	3 or 4
MATH 487	Advanced Engineering Math	3 or 4
MATH 489	Dynamics & Differential Eqns	3 or 4
MCB 150	Molec & Cellular Basis of Life	4
MCB 250	Molecular Genetics	3
MCB 251	Exp Techniqs in Molecular Biol	2
MCB 252	Cells, Tissues & Development	3
MCB 253	Exp Techniqs in Cellular Biol	2
MCB 300	Microbiology	3
MCB 301	Experimental Microbiology	3
MCB 314	Introduction to Neurobiology	3
MCB 316	Genetics and Disease	4
MCB 354	Biochem & Phys Basis of Life	3
MCB 400	Cancer Cell Biology	3
MCB 401	Cellular 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 406	Gene Expression & Regulation	3
MCB 408	Immunology	3
MCB 410	Developmental Biology, Stem Cells and Regenerative Medicine	3
MCB 413	Endocrinology	3
MCB 419	Brain, Behavior & Info Process	3

MCB 421	Microbial Genetics	3
MCB 424	Microbial Biochemistry	3
MCB 426	Bacterial Pathogenesis	3
MCB 430	Molecular Microbiology	3
MCB 431	Microbial Physiology	3
MCB 433	Virology & Viral Pathogenesis	3
MCB 435	Evolution of Infectious Disease	3
MCB 446	Physical Biochemistry	3
MCB 480	Eukaryotic Cell Signaling	3
ME 200	Thermodynamics	3
ME 310	Fundamentals of Fluid Dynamics	4
ME 320	Heat Transfer	4
ME 330	Engineering Materials	4
ME 340	Dynamics of Mechanical Systems	3.5
ME 370	Mechanical Design I	3
ME 371	Mechanical Design II	3
ME 400	Energy Conversion Systems	3 or 4
ME 401	Refrigeration and Cryogenics	3 or 4
ME 402	Design of Thermal Systems	3 or 4
ME 403	Internal Combustion Engines	3 or 4
ME 404	Intermediate Thermodynamics	4
ME 410	Intermediate Gas Dynamics	3 or 4
ME 411	Viscous Flow & Heat Transfer	4
ME 412	Numerical Thermo-Fluid Mechs	2 to 4
ME 420	Intermediate Heat Transfer	4
ME 430	Failure of Engrg Materials	3 or 4
ME 431	Mechanical Component Failure	3 or 4
ME 440	Kinem & Dynamics of Mech Syst	3 or 4
ME 445	Introduction to Robotics	4
ME 450	Modeling Materials Processing	3
ME 451	Computer-Aided Mfg Systems	3 or 4
ME 452	Num Control of Mfg Processes	3 or 4
ME 460	Industrial Control Systems	4
ME 461	Computer Cntrl of Mech Systems	3 or 4
ME 471	Finite Element Analysis	3 or 4
ME 472	Introduction to Tribology	3 or 4
ME 485	MEMS Devices & Systems	3
ME 487	MEMS-NEMS Theory & Fabrication	4
MUS 407	Elect Music Techniques I	3
MUS 409	Elec Music Techniques II	2
NEUR 453	Cog Neuroscience of Vision	3 or 4
NPRE 201	Energy Systems	2 or 3
NPRE 247	Modeling Nuclear Energy System	3
NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4
NPRE 421	Plasma and Fusion Science	3
NPRE 423	Plasma Laboratory	2
NPRE 429	Plasma Engineering	3
NPRE 431	Materials in Nuclear Engrg	3
NPRE 432	Nuclear Engrg Materials Lab	2
NPRE 435	Radiological Imaging	3
NPRE 441	Radiation Protection	4

NPRE 442	Radioactive Waste Management	3
NPRE 444	Nuclear Analytical Methods Lab	2 or 3
NPRE 446	Radiation Interact w/Matter I	3
NPRE 447	Radiation Interact w/Matter II	3
NPRE 448	Nuclear Syst Engrg & Design	4
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 457	Safety Anlys Nucl Reactor Syst	3 or 4
NPRE 458	Design in NPRE	4
NPRE 470	Fuel Cells & Hydrogen Sources	3
NPRE 475	Wind Power Systems	3 or 4
PHYS 225	Relativity & Math Applications	2
PHYS 325	Classical Mechanics I	3
PHYS 326	Classical Mechanics II	3
PHYS 401	Classical Physics Lab	3
PHYS 402	Light	3 or 4
PHYS 403	Modern Experimental Physics	4 or 5
PHYS 406	Acoustical Physics of Music	4
PHYS 419	Space, Time, and Matter-ACP	3 or 4
PHYS 420	Space, Time, and Matter	2
PHYS 427	Thermal & Statistical Physics	4
PHYS 460	Condensed Matter Physics	4
PHYS 466	Atomic Scale Simulations	3 or 4
PHYS 470	Subatomic Physics	4
PHYS 485	Atomic Phys & Quantum Theory	3
PHYS 486	Quantum Physics I	4
PHYS 487	Quantum Physics II	4
PSYC 204	Intro to Brain and Cognition	3
SHS 200	General Phonetics	3
SHS 240	Intro Sound & Hearing Science	3
SHS 300	Anat & Physiol Spch Mechanism	4
SHS 301	General Speech Science	4
SHS 320	Development of Spoken Language	3
SHS 450	Intro Audiol & Hear Disorders	4
SHS 470	Neural Bases Spch Lang	4
STAT 420	Methods of Applied Statistics	3 or 4
STAT 424	Analysis of Variance	3 or 4
STAT 428	Statistical Computing	3 or 4
STAT 429	Time Series Analysis	3 or 4
STAT 440	Statistical Data Management	3 or 4
SE 411	Reliability Engineering	3 or 4
SE 420	Digital Control Systems	4
SE 423	Mechatronics	3
SE 424	State Space Design for Control	3
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
TAM 324	Behavior of Materials	4
TAM 335	Introductory Fluid Mechanics	4
TAM 412	Intermediate Dynamics	4
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4

TAM 451	Intermediate Solid Mechanics	4
ECE Courses to include:		
Select three from the following list of Advanced Core ECE electives:		
ECE 391	Computer Systems Engineering	
or CS 225	Data Structures	
ECE 310	Digital Signal Processing	
ECE 330	Power Ckts & Electromechanics	
ECE 342	Electronic Circuits	
ECE 350	Fields and Waves II	
Select three ECE labs identified below. At least one must be hardware labs		
Hardware Labs:		
ECE 343	Electronic Circuits Laboratory	1
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 402	Electronic Music Synthesis	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 420	Embedded DSP Laboratory	2
ECE 431	Electric Machinery	4
CS 436	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 443	LEDs and Solar Cells	4
ECE 444	IC Device Theory & Fabrication	4
ECE 446	Principles of Experimental Research in Electrical Engineering	4
ECE 447	Active Microwave Ckt Design	3
ECE 451	Adv Microwave Measurements	3
ECE 453	Wireless Communication Systems	4
ECE 456	Global Nav Satellite Systems	4
ECE 460	Optical Imaging	4
ECE 463	Digital Communications Lab	2
ECE 466	Optical Communications Lab	1
ECE 468	Optical Remote Sensing	3
ECE 469	Power Electronics Laboratory	2
ECE 470	Introduction to Robotics	4
ECE 481	Nanotechnology	4
ECE 486	Control Systems	4
ECE 489	Robot Dynamics and Control	4
ECE 495	Photonic Device Laboratory	3
Software Labs:		
ECE 311	Digital Signal Processing Lab	1
ECE 314	Probability in Engineering Lab	1
ECE 365	Data Science and Engineering	3
ECE 411	Computer Organization & Design	4

Electives

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[7]		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.[8]		12
Total Hours of Curriculum to Graduate		**128**

1 *External transfer students take*ENG 300 *instead.*

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.*

3 *Freshmen take*ECE 110*for 3 credit hours. Lab-only version taken by transfer students (with special permission) is 1 credit hour.*

4 STAT 410*may be substituted.*

5 ECE 496*AND*ECE 499*may be substituted.*

6 *Advanced Composition may be satisfied by completing*ECE 445*, or a course in either the general education or free elective categories which has the Advanced Composition designation.*

7 *The Grainger College of Engineering approved liberal education course list can be found*here *(*https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-GeneralEducationElectives*). Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.*

8 *The Grainger College of Engineering restrictions to free electives can be found*here *(*https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-FreeElectives*).*

EP Documentation

DMI Documentation

Attach Final Approval Notices

ClassSenMinUIUC022020.pdf

Banner/Codebook Name

BS:Electrical Engineerng -UIUC

Program Code:

10KP0115BS

Degree Code

BS

Major Code

0115

Program Reviewer Comments

Deb Forgacs (dforgacs) (Thu, 01 Oct 2020 22:23:40 GMT): Rollback: requested.
Deb Forgacs (dforgacs) (Wed, 07 Oct 2020 17:05:28 GMT): Rollback: requested.
Brooke Newell (bsnewell) (Thu, 29 Oct 2020 16:37:48 GMT): Rollback: Rolling back proposal per request
Kathy Martensen (kmartens) (Wed, 10 Mar 2021 21:48:25 GMT): Rollback: Please add letters of support from the departments of ATMS, CPSC, and PSYC for adding their courses as choose-froms in the Tech Electives list. Thanks!
Candy Deaville (candyd) (Wed, 10 Mar 2021 21:52:01 GMT): Rollback: Please add letters of support from the departments of ATMS, CPSC, and PSYC for adding their courses as choose-froms in the Tech Electives list
Kathy Martensen (kmartens) (Mon, 22 Mar 2021 18:58:58 GMT): Administrative approval: No change to total hours required/doesn't restrict students' options.

Key: 116

Addition
Removal
Revision

CURRENT PROGRAM			REVISED PROGRAM		
Orientation and Professional Development			**Orientation and Professional Development**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
ENG 100	Engineering Orientation [1]	0	ENG 100	Engineering Orientation [1]	0
Total Hours		**0**	**Total Hours**		**0**

Foundational Mathematics and Science			**Foundational Mathematics and Science**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
CHEM 102	General Chemistry I	3	CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1	CHEM 103	General Chemistry Lab I	1
MATH 221	Calculus I [2]	4	MATH 221	Calculus I [2]	4
MATH 231	Calculus II	3	MATH 231	Calculus II	3
MATH 241	Calculus III	4	MATH 241	Calculus III	4
			MATH 257	Linear Algebra with Computational Applications	3
			MATH 285	Intro to Differential Eq	3
MATH 286	Intro to Differential Eq Plus	4			
PHYS 211	University Physics: Mechanics	4	PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4	PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2	PHYS 213	Univ Physics: Thermal Physics	2
PHYS 214	Univ Physics: Quantum Physics	2	PHYS 214	Univ Physics: Quantum Physics	2
Total Hours		**31**	**Total Hours**		**33**

Electrical Engineering Technical Core			**Electrical Engineering Technical Core**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
ECE 110	Introduction to Electronics [3]	3	ECE 110	Introduction to Electronics [3]	3
ECE 120	Introduction to Computing	4	ECE 120	Introduction to Computing	4
ECE 220	Computer Systems & Programming	4	ECE 220	Computer Systems & Programming	4
ECE 210	Analog Signal Processing	4	ECE 210	Analog Signal Processing	4
ECE 313	Probability with Engrg Applic [4]	3	ECE 313	Probability with Engrg Applic [4]	3
ECE 329	Fields and Waves I	3	ECE 329	Fields and Waves I	3
ECE 340	Semiconductor Electronics	3	ECE 340	Semiconductor Electronics	3
ECE 385	Digital Systems Laboratory	3	ECE 385	Digital Systems Laboratory	3
ECE 445	Senior Design Project Lab [5,6]	4	ECE 445	Senior Design Project Lab [5,6]	4
Total Hours		31	**Total Hours**		31

Technical Electives			**Technical Electives**		
Course List			Course List		
Code	**Title**	**Hours**	**Code**	**Title**	**Hours**
32 hours, to include:			**30 hours, to include:**		
Non-ECE courses from list below:		**6**	Non-ECE courses from list below:		6
AE 202	Aerospace Flight Mechanics	3	AE 202	Aerospace Flight Mechanics	3
AE 302	Aerospace Flight Mechanics II	3	AE 302	Aerospace Flight Mechanics II	3
AE 311	Incompressible Flow	3	AE 311	Incompressible Flow	3
AE 312	Compressible Flow	3	AE 312	Compressible Flow	3
AE 321	Mechs of Aerospace Structures	3	AE 321	Mechs of Aerospace Structures	3
AE 352	Aerospace Dynamical Systems	3	AE 352	Aerospace Dynamical Systems	3
AE 353	Aerospace Control Systems	3	AE 353	Aerospace Control Systems	3
AE 402	Orbital Mechanics	3 or 4	AE 402	Orbital Mechanics	3 or 4
AE 403	Spacecraft Attitude Control	3 or 4	AE 403	Spacecraft Attitude Control	3 or 4
AE 410	Computational Aerodynamics	3 or 4	AE 410	Computational Aerodynamics	3 or 4
AE 412	Viscous Flow & Heat Transfer	4	AE 412	Viscous Flow & Heat Transfer	4
AE 416	Applied Aerodynamics	3 or 4	AE 416	Applied Aerodynamics	3 or 4
AE 419	Aircraft Flight Mechanics	3 or 4	AE 419	Aircraft Flight Mechanics	3 or 4
AE 420	Finite Element Analysis	3 or 4	AE 420	Finite Element Analysis	3 or 4
AE 427	Mechanics of Polymers	3	AE 427	Mechanics of Polymers	3
AE 428	Mechanics of Composites	3	AE 428	Mechanics of Composites	3
AE 433	Aerospace Propulsion	3 or 4	AE 433	Aerospace Propulsion	3 or 4
AE 434	Rocket Propulsion	3 or 4	AE 434	Rocket Propulsion	3 or 4
AE 435	Electric Propulsion	3 or 4	AE 435	Electric Propulsion	3 or 4
AE 451	Aeroelasticity	3 or 4	AE 451	Aeroelasticity	3 or 4
AE 460	Aerodynamics & Propulsion Lab	2	AE 460	Aerodynamics & Propulsion Lab	2
Ag and Bio Eng. - All 300 and 400 level courses except ABE 440. Except s			Ag and Bio Eng. - All 300 and 400 level courses except ABE 440. Except seminars and special topics courses, which may be reviewed in the Advising Office		
ASTR 210	Introduction to Astrophysics	3	ASTR 210	Introduction to Astrophysics	3
ASTR 310	Computing in Astronomy	3	ASTR 310	Computing in Astronomy	3
ASTR 330	Extraterrestrial Life	3	ASTR 330	Extraterrestrial Life	3
ASTR 350	The Big Bang, Black Holes, and the End of the U	3	ASTR 350	The Big Bang, Black Holes, and the End of the U	3
ASTR 404	Stellar Astrophysics	3	ASTR 404	Stellar Astrophysics	3
ASTR 405	Planetary Systems	3	ASTR 405	Planetary Systems	3
ASTR 406	Galaxies and the Universe	3	ASTR 406	Galaxies and the Universe	3
ASTR 414	Astronomical Techniques	4	ASTR 414	Astronomical Techniques	4
ASTR 450	Astrochemistry	4	ASTR 450	Astrochemistry	4
			ATMS 201	General Physical Meteorology	3
ATMS 301	Atmospheric Thermodynamics	3	ATMS 301	Atmospheric Thermodynamics	3
ATMS 302	Atmospheric Dynamics I	3	ATMS 302	Atmospheric Dynamics I	3
ATMS 303	Synoptic-Dynamic Wea Analysis	4	ATMS 303	Synoptic-Dynamic Wea Analysis	4
ATMS 304	Radiative Transfer-Remote Sens	3	ATMS 304	Radiative Transfer-Remote Sens	3
ATMS 305	Computing and Data Analysis	3	ATMS 305	Computing and Data Analysis	3
ATMS 404	Risk Analysis in Earth Science	3 or 4	ATMS 404	Risk Analysis in Earth Science	3 or 4
ATMS 405	Boundary Layer Processes	4	ATMS 405	Boundary Layer Processes	4
ATMS 406	Tropical Meteorology	4	ATMS 406	Tropical Meteorology	4
ATMS 410	Radar Remote Sensing	4	ATMS 410	Radar Remote Sensing	4
ATMS 411	Satellite Remote Sensing	4	ATMS 411	Satellite Remote Sensing	4
ATMS 420	Atmospheric Chemistry	4	ATMS 420	Atmospheric Chemistry	4
ATMS 421	Earth Systems Modeling	4	ATMS 421	Earth Systems Modeling	4
ATMS 425	Air Quality Modeling	4	ATMS 425	Air Quality Modeling	4
ATMS 447	Climate Change Assessment	3	ATMS 447	Climate Change Assessment	3
ATMS 449	Biogeochemical Cycles	4	ATMS 449	Biogeochemical Cycles	4
BIOC 406	Gene Expression & Regulation	3	BIOC 406	Gene Expression & Regulation	3
BIOC 440	Physical Chemistry Principles	4	BIOC 440	Physical Chemistry Principles	4
BIOC 446	Physical Biochemistry	3	BIOC 446	Physical Biochemistry	3
BIOC 455	Technqs Biochem & Biotech	4	BIOC 455	Technqs Biochem & Biotech	4
BIOE 201	Conservation Principles Bioeng	3	BIOE 201	Conservation Principles Bioeng	3
BIOE 202	Cell & Tissue Engineering Lab	2	BIOE 202	Cell & Tissue Engineering Lab	2
BIOE 302	Modeling Human Physiology	3	BIOE 302	Modeling Human Physiology	3
BIOE 414	Biomedical Instrumentation	3	BIOE 414	Biomedical Instrumentation	3
BIOE 415	Biomedical Instrumentation Lab	2	BIOE 415	Biomedical Instrumentation Lab	2
BIOE 461	Cellular Biomechanics	4	BIOE 461	Cellular Biomechanics	4
BIOE 467	Biophotonics	3	BIOE 467	Biophotonics	3
BIOE 476	Tissue Engineering	3	BIOE 476	Tissue Engineering	3
BIOE 480	Magnetic Resonance Imaging	3 or 4	BIOE 480	Magnetic Resonance Imaging	3 or 4
Biophysics (BIOP): All 400 level courses except seminars and special topics cou			Biophysics (BIOP): All 400 level courses except seminars and special topics courses, which may be reviewed in the Advising Office.		
CHBE 221	Principles of CHE	3	CHBE 221	Principles of CHE	3
CHBE 321	Thermodynamics	4	CHBE 321	Thermodynamics	4
CHBE 421	Momentum and Heat Transfer	4	CHBE 421	Momentum and Heat Transfer	4
CHBE 422	Mass Transfer Operations	4	CHBE 422	Mass Transfer Operations	4
CHBE 424	Chemical Reaction Engineering	3	CHBE 424	Chemical Reaction Engineering	3
CHBE 430	Unit Operations Laboratory	4	CHBE 430	Unit Operations Laboratory	4
CHBE 431	Process Design	4	CHBE 431	Process Design	4
CHBE 440	Process Control and Dynamics	3	CHBE 440	Process Control and Dynamics	3
CHBE 451	Transport Phenomena	3	CHBE 451	Transport Phenomena	3
CHBE 452	Chemical Kinetics & Catalysis	3	CHBE 452	Chemical Kinetics & Catalysis	3
CHBE 453	Electrochemical Engineering	2 or 3	CHBE 453	Electrochemical Engineering	2 or 3
CHBE 456	Polymer Science & Engineering	3	CHBE 456	Polymer Science & Engineering	3
CHBE 457	Microelectronics Processing	3	CHBE 457	Microelectronics Processing	3
CHBE 471	Biochemical Engineering	3 or 4	CHBE 471	Biochemical Engineering	3 or 4
CHBE 472	Techniques in Biomolecular Eng	3 or 4	CHBE 472	Techniques in Biomolecular Eng	3 or 4
CHBE 473	Biomolecular Engineering	3 or 4	CHBE 473	Biomolecular Engineering	3 or 4
CHBE 474	Metabolic Engineering	3 or 4	CHBE 474	Metabolic Engineering	3 or 4
CHEM 104	General Chemistry II	3	CHEM 104	General Chemistry II	3
CHEM 105	General Chemistry Lab II	1	CHEM 105	General Chemistry Lab II	1
Chemistry (CHEM): All 200, 300 and 400 level except 397, 497, and 499. Excepti			Chemistry (CHEM): All 200, 300 and 400 level except 397, 497, and 499. Exceptions also include seminars and special topics, which may be reviewed in the Advising Office.		
CEE 310	Transportation Engineering	3	CEE 310	Transportation Engineering	3
CEE 330	Environmental Engineering	3	CEE 330	Environmental Engineering	3
CEE 408	Railroad Transportation Engrg	3 or 4	CEE 408	Railroad Transportation Engrg	3 or 4
CEE 410	Railway Signaling & Control	3 or 4	CEE 410	Railway Signaling & Control	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4	CEE 416	Traffic Capacity Analysis	3 or 4
CEE 430	Ecological Quality Engineering	2	CEE 430	Ecological Quality Engineering	2
CEE 447	Atmospheric Chemistry	4	CEE 447	Atmospheric Chemistry	4
CEE 491	Decision and Risk Analysis	3 or 4	CEE 491	Decision and Risk Analysis	3 or 4
			CPSC 265	Genetic Engineering Lab	3
CS 101	Intro Computing: Engrg & Sci (By Approval)	3	CS 101	Intro Computing: Engrg & Sci (By Approval)	3
CS 173	Discrete Structures	3	CS 173	Discrete Structures	3
CS 225	Data Structures	4	CS 225	Data Structures	4
CS 242	Programming Studio	3	CS 242	Programming Studio	3
CS 357	Numerical Methods I	3	CS 357	Numerical Methods I	3

CS 410	Text Information Systems	3 or 4		CS 410	Text Information Systems	3 or 4	
CS 411	Database Systems	3 or 4		CS 411	Database Systems	3 or 4	
CS 412	Introduction to Data Mining	3 or 4		CS 412	Introduction to Data Mining	3 or 4	
CS 413	Intro to Combinatorics	3 or 4		CS 413	Intro to Combinatorics	3 or 4	
CS 414	Multimedia Systems	3 or 4		CS 414	Multimedia Systems	3 or 4	
CS 418	Interactive Computer Graphics	3 or 4		CS 418	Interactive Computer Graphics	3 or 4	
CS 419	Production Computer Graphics	3 or 4		CS 419	Production Computer Graphics	3 or 4	
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4		CS 420	Parallel Progrmg: Sci & Engrg	3 or 4	
CS 421	Programming Languages & Compilers	3 or 4		CS 421	Programming Languages & Compilers	3 or 4	
CS 422	Programming Language Design	3 or 4		CS 422	Programming Language Design	3 or 4	
CS 423	Operating Systems Design	3 or 4		CS 423	Operating Systems Design	3 or 4	
CS 424	Real-Time Systems	3 or 4		CS 424	Real-Time Systems	3 or 4	
CS 425	Distributed Systems	3 or 4		CS 425	Distributed Systems	3 or 4	
CS 426	Compiler Construction	3 or 4		CS 426	Compiler Construction	3 or 4	
CS 427	Software Engineering I	3 or 4		CS 427	Software Engineering I	3 or 4	
CS 428	Software Engineering II	3 or 4		CS 428	Software Engineering II	3 or 4	
CS 429	Software Engineering II, ACP		3	CS 429	Software Engineering II, ACP		3
CS 431	Embedded Systems	3 or 4		CS 431	Embedded Systems	3 or 4	
CS 433	Computer System Organization	3 or 4		CS 433	Computer System Organization	3 or 4	
CS 436	Computer Networking Laboratory	3 or 4		CS 436	Computer Networking Laboratory	3 or 4	
CS 438	Communication Networks	3 or 4		CS 438	Communication Networks	3 or 4	
CS 439	Wireless Networks	3 or 4		CS 439	Wireless Networks	3 or 4	
CS 440	Artificial Intelligence	3 or 4		CS 440	Artificial Intelligence	3 or 4	
CS 445	Computational Photography	3 or 4		CS 445	Computational Photography	3 or 4	
CS 446	Machine Learning	3 or 4		CS 446	Machine Learning	3 or 4	
CS 447	Natural Language Processing	3 or 4		CS 447	Natural Language Processing	3 or 4	
CS 450	Numerical Analysis	3 or 4		CS 450	Numerical Analysis	3 or 4	
CS 460	Security Laboratory	3 or 4		CS 460	Security Laboratory	3 or 4	
CS 461	Computer Security I		4	CS 461	Computer Security I		4
CS 463	Computer Security II	3 or 4		CS 463	Computer Security II	3 or 4	
CS 465	User Interface Design	3 or 4		CS 465	User Interface Design	3 or 4	
CS 466	Introduction to Bioinformatics	3 or 4		CS 466	Introduction to Bioinformatics	3 or 4	
CS 467	Social Visualization	3 or 4		CS 467	Social Visualization	3 or 4	
CS 473	Algorithms		4	CS 473	Algorithms		4
CS 475	Formal Models of Computation	3 or 4		CS 475	Formal Models of Computation	3 or 4	
CS 476	Program Verification	3 or 4		CS 476	Program Verification	3 or 4	
CS 477	Formal Software Development Methods	3 or 4		CS 477	Formal Software Development Methods	3 or 4	
CS 481	Advanced Topics in Stochastic Processes & App	3 or 4		CS 481	Advanced Topics in Stochastic Processes & App	3 or 4	
CS 484	Parallel Programming	3 or 4		CS 484	Parallel Programming	3 or 4	
CS 398	Special Topics (As Approved)	1 to 4		CS 398	Special Topics (As Approved)	1 to 4	
CS 498	Special Topics (As Approved)	1 to 4		CS 498	Special Topics (As Approved)	1 to 4	
ECE 297	Individual Study		1	ECE 297	Individual Study		1
ECE 304	Photonic Devices		3	ECE 304	Photonic Devices		3
ECE 307	Techniques for Engrg Decisions		3	ECE 307	Techniques for Engrg Decisions		3
ECE 310	Digital Signal Processing		3	ECE 310	Digital Signal Processing		3
ECE 311	Digital Signal Processing Lab		1	ECE 311	Digital Signal Processing Lab		1
ECE 314	Probability in Engineering Lab		1	ECE 314	Probability in Engineering Lab		1
ECE 329	Fields and Waves I		3	ECE 329	Fields and Waves I		3
ECE 330	Power Ckts & Electromechanics		3	ECE 330	Power Ckts & Electromechanics		3
ECE 333	Green Electric Energy		3	ECE 333	Green Electric Energy		3
ECE 340	Semiconductor Electronics		3	ECE 340	Semiconductor Electronics		3
ECE 342	Electronic Circuits		3	ECE 342	Electronic Circuits		3
ECE 343	Electronic Circuits Laboratory		1	ECE 343	Electronic Circuits Laboratory		1
ECE 350	Fields and Waves II		3	ECE 350	Fields and Waves II		3
ECE 365	Data Science and Engineering		3	ECE 365	Data Science and Engineering		3
ECE 374	Introduction to Algorithms & Models of Computati		4	ECE 374	Introduction to Algorithms & Models of Computat		4
ECE 380	Biomedical Imaging		3	ECE 380	Biomedical Imaging		3
ECE 391	Computer Systems Engineering		4	ECE 391	Computer Systems Engineering		4
ECE 395	Advanced Digital Projects Lab	2 or 3		ECE 395	Advanced Digital Projects Lab	2 or 3	
ECE 396	Honors Project	1 to 4		ECE 396	Honors Project	1 to 4	
ECE 397	Individual Study in ECE	0 to 4		ECE 397	Individual Study in ECE	0 to 4	
ECE 402	Electronic Music Synthesis		3	ECE 402	Electronic Music Synthesis		3
ECE 403	Audio Engineering		3	ECE 403	Audio Engineering		3
ECE 408	Applied Parallel Programming		4	ECE 408	Applied Parallel Programming		4
ECE 411	Computer Organization & Design		4	ECE 411	Computer Organization & Design		4
ECE 412	Microcomputer Laboratory		3	ECE 412	Microcomputer Laboratory		3
ECE 414	Biomedical Instrumentation		3	ECE 414	Biomedical Instrumentation		3
ECE 415	Biomedical Instrumentation Lab		2	ECE 415	Biomedical Instrumentation Lab		2
ECE 416	Biosensors		3	ECE 416	Biosensors		3
ECE 417	Multimedia Signal Processing		4	ECE 417	Multimedia Signal Processing		4
ECE 418	Image & Video Processing		4	ECE 418	Image & Video Processing		4
ECE 419	Security Laboratory	3 or 4		ECE 419	Security Laboratory	3 or 4	
ECE 420	Embedded DSP Laboratory		2	ECE 420	Embedded DSP Laboratory		2
ECE 422	Computer Security I		4	ECE 422	Computer Security I		4
ECE 424	Computer Security II	3 or 4		ECE 424	Computer Security II	3 or 4	
ECE 425	Intro to VLSI System Design		3	ECE 425	Intro to VLSI System Design		3
ECE 428	Distributed Systems	3 or 4		ECE 428	Distributed Systems	3 or 4	
ECE 431	Electric Machinery		4	ECE 431	Electric Machinery		4
ECE 432	Advanced Electric Machinery		3	ECE 432	Advanced Electric Machinery		3
ECE 435	Computer Networking Laboratory	3 or 4		ECE 435	Computer Networking Laboratory	3 or 4	
ECE 437	Sensors and Instrumentation		3	ECE 437	Sensors and Instrumentation		3
ECE 438	Communication Networks	3 or 4		ECE 438	Communication Networks	3 or 4	
ECE 439	Wireless Networks	3 or 4		ECE 439	Wireless Networks	3 or 4	
ECE 441	Physcs & Modeling Semicond Dev		3	ECE 441	Physcs & Modeling Semicond Dev		3
ECE 443	LEDs and Solar Cells		4	ECE 443	LEDs and Solar Cells		4
ECE 444	IC Device Theory & Fabrication		4	ECE 444	IC Device Theory & Fabrication		4
ECE 445	Senior Design Project Lab		4	ECE 445	Senior Design Project Lab		4
ECE 446	Principles of Experimental Research in Electrical		4	ECE 446	Principles of Experimental Research in Electrical		4
ECE 447	Active Microwave Ckt Design		3	ECE 447	Active Microwave Ckt Design		3
ECE 448	Artificial Intelligence	3 or 4		ECE 448	Artificial Intelligence	3 or 4	
ECE 451	Adv Microwave Measurements		3	ECE 451	Adv Microwave Measurements		3
ECE 452	Electromagnetic Fields		3	ECE 452	Electromagnetic Fields		3
ECE 453	Wireless Communication Systems		4	ECE 453	Wireless Communication Systems		4
ECE 454	Antennas		3	ECE 454	Antennas		3
ECE 455	Optical Electronics	3 or 4		ECE 455	Optical Electronics	3 or 4	
ECE 456	Global Nav Satellite Systems		4	ECE 456	Global Nav Satellite Systems		4
ECE 457	Microwave Devices & Circuits		3	ECE 457	Microwave Devices & Circuits		3
ECE 458	Applic of Radio Wave Propag		3	ECE 458	Applic of Radio Wave Propag		3
ECE 459	Communications Systems		3	ECE 459	Communications Systems		3
ECE 460	Optical Imaging		4	ECE 460	Optical Imaging		4
ECE 461	Digital Communications		3	ECE 461	Digital Communications		3
ECE 462	Logic Synthesis		3	ECE 462	Logic Synthesis		3
ECE 463	Digital Communications Lab		2	ECE 463	Digital Communications Lab		2
ECE 464	Power Electronics		3	ECE 464	Power Electronics		3
ECE 465	Optical Communications Systems		3	ECE 465	Optical Communications Systems		3
ECE 466	Optical Communications Lab		1	ECE 466	Optical Communications Lab		1
ECE 467	Biophotonics		3	ECE 467	Biophotonics		3
ECE 468	Optical Remote Sensing		3	ECE 468	Optical Remote Sensing		3
ECE 469	Power Electronics Laboratory		2	ECE 469	Power Electronics Laboratory		2
ECE 470	Introduction to Robotics		4	ECE 470	Introduction to Robotics		4
ECE 472	Biomedical Ultrasound Imaging		3	ECE 472	Biomedical Ultrasound Imaging		3
ECE 473	Fund of Engrg Acoustics	3 or 4		ECE 473	Fund of Engrg Acoustics	3 or 4	
ECE 476	Power System Analysis		3	ECE 476	Power System Analysis		3
ECE 478	Formal Software Development Methods	3 or 4		ECE 478	Formal Software Development Methods	3 or 4	
ECE 480	Magnetic Resonance Imaging	3 or 4		ECE 480	Magnetic Resonance Imaging	3 or 4	
ECE 481	Nanotechnology		4	ECE 481	Nanotechnology		4
ECE 482	Digital IC Design		3	ECE 482	Digital IC Design		3
ECE 483	Analog IC Design		3	ECE 483	Analog IC Design		3
ECE 485	MEMS Devices & Systems		3	ECE 485	MEMS Devices & Systems		3
ECE 486	Control Systems		4	ECE 486	Control Systems		4
ECE 487	Intro Quantum Electr for EEs		3	ECE 487	Intro Quantum Electr for EEs		3
ECE 488	Compound Semicond & Devices		3	ECE 488	Compound Semicond & Devices		3
ECE 489	Robot Dynamics and Control		4	ECE 489	Robot Dynamics and Control		4
ECE 490	Introduction to Optimization	3 or 4		ECE 490	Introduction to Optimization	3 or 4	
ECE 491	Numerical Analysis	3 or 4		ECE 491	Numerical Analysis	3 or 4	
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4		ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4	
ECE 493	Advanced Engineering Math	3 or 4		ECE 493	Advanced Engineering Math	3 or 4	
ECE 495	Photonic Device Laboratory		3	ECE 495	Photonic Device Laboratory		3
ECE 496	Senior Research Project		2	ECE 496	Senior Research Project		2
ECE 499	Senior Thesis		2	ECE 499	Senior Thesis		2
ECE 398	Special Topics in ECE (As approved)	0 to 4		ECE 398	Special Topics in ECE (As approved)	0 to 4	
ECE 498	Special Topics in ECE (As approved)	0 to 4		ECE 498	Special Topics in ECE (As approved)	0 to 4	
ENG 491	Interdisciplinary Design Proj (CubeSat, Solar Dec	1 to 4		ENG 491	Interdisciplinary Design Proj (CubeSat, Solar Dec	1 to 4	
GEOL 107	Physical Geology		4	GEOL 107	Physical Geology		4
GEOL 208	History of the Earth System		4	GEOL 208	History of the Earth System		4
GEOL 333	Earth Materials and the Env		4	GEOL 333	Earth Materials and the Env		4
GEOL 380	Environmental Geology		4	GEOL 380	Environmental Geology		4
GEOL 411	Structural Geol and Tectonics		4	GEOL 411	Structural Geol and Tectonics		4
GEOL 417	Geol Field Methods, Western US		6	GEOL 417	Geol Field Methods, Western US		6
GEOL 432	Mineralogy and Mineral Optics		4	GEOL 432	Mineralogy and Mineral Optics		4
GEOL 436	Petrology and Petrography		4	GEOL 436	Petrology and Petrography		4
GEOL 440	Sedimentology and Stratigraphy		4	GEOL 440	Sedimentology and Stratigraphy		4

GEOL 450	Probing the Earth's Interior		3	GEOL 450	Probing the Earth's Interior		3
GEOL 452	Introduction to Geophysics		4	GEOL 452	Introduction to Geophysics		4
GEOL 460	Geochemistry		3	GEOL 460	Geochemistry		3
IE 310	Deterministic Models in Optimization		3	IE 310	Deterministic Models in Optimization		3
IE 330	Industrial Quality Control		3	IE 330	Industrial Quality Control		3
IE 360	Facilities Planning and Design		3	IE 360	Facilities Planning and Design		3
IE 361	Production Planning & Control		3	IE 361	Production Planning & Control		3
IE 400	Design & Anlys of Experiments	3 or 4		IE 400	Design & Anlys of Experiments	3 or 4	
IE 410	Advanced Topics in Stochastic Processes & App	3 or 4		IE 410	Advanced Topics in Stochastic Processes & App	3 or 4	
IE 411	Optimization of Large Systems	3 or 4		IE 411	Optimization of Large Systems	3 or 4	
IE 412	OR Models for Mfg Systems	3 or 4		IE 412	OR Models for Mfg Systems	3 or 4	
IE 413	Simulation	3 or 4		IE 413	Simulation	3 or 4	
IE 420	Financial Engineering	3 or 4		IE 420	Financial Engineering	3 or 4	
IE 430	Economic Found of Quality Syst	3 or 4		IE 430	Economic Found of Quality Syst	3 or 4	
IE 431	Design for Six Sigma		3	IE 431	Design for Six Sigma		3
IB 150	Organismal & Evolutionary Biol		4	IB 150	Organismal & Evolutionary Biol		4
IB 202	Physiology	3 or 4		IB 202	Physiology	3 or 4	
IB 203	Ecology		4	IB 203	Ecology		4
IB 204	Genetics	3 or 4		IB 204	Genetics	3 or 4	
IB 302	Evolution		4	IB 302	Evolution		4
IB 335	Plant Systematics		4	IB 335	Plant Systematics		4
IB 348	Fish and Wildlife Ecology		3	IB 348	Fish and Wildlife Ecology		3
IB 368	Vertebrate Natural History		4	IB 368	Vertebrate Natural History		4
IB 401	Introduction to Entomology	3 or 4		IB 401	Introduction to Entomology	3 or 4	
IB 405	Evolution of Traits and Genomes		3	IB 405	Evolution of Traits and Genomes		3
IB 420	Plant Physiology		3	IB 420	Plant Physiology		3
IB 421	Photosynthesis		3	IB 421	Photosynthesis		3
IB 426	Env and Evol Physl of Animals		3	IB 426	Env and Evol Physl of Animals		3
IB 427	Insect Physiology		4	IB 427	Insect Physiology		4
IB 431	Behavioral Ecology		3	IB 431	Behavioral Ecology		3
IB 432	Genes and Behavior		3	IB 432	Genes and Behavior		3
IB 440	Plants and Global Change		3	IB 440	Plants and Global Change		3
IB 443	Evolutionary Ecology		3	IB 443	Evolutionary Ecology		3
IB 444	Insect Ecology	3 or 4		IB 444	Insect Ecology	3 or 4	
IB 451	Conservation Biology		4	IB 451	Conservation Biology		4
IB 452	Ecosystem Ecology		3	IB 452	Ecosystem Ecology		3
IB 453	Community Ecology		3	IB 453	Community Ecology		3
IB 461	Ornithology		4	IB 461	Ornithology		4
IB 462	Mammalogy		4	IB 462	Mammalogy		4
IB 463	Ichthyology		4	IB 463	Ichthyology		4
IB 464	Herpetology		4	IB 464	Herpetology		4
IB 467	Principles of Systematics		4	IB 467	Principles of Systematics		4
IB 468	Insect Classification and Evol		4	IB 468	Insect Classification and Evol		4
IB 471	General Mycology		4	IB 471	General Mycology		4
IB 472	Plant Molecular Biology		1	IB 472	Plant Molecular Biology		1
IB 473	Plant Genomics		1	IB 473	Plant Genomics		1
IB 481	Vector-borne Diseases		4	IB 481	Vector-borne Diseases		4
IB 482	Insect Pest Management		3	IB 482	Insect Pest Management		3
IB 483	Insect Pathology		3	IB 483	Insect Pathology		3
IB 485	Environ Toxicology & Health		3	IB 485	Environ Toxicology & Health		3
IB 486	Pesticide Toxicology	3 or 4		IB 486	Pesticide Toxicology	3 or 4	
LING 300	Anat & Physiol Spch Mechanism		4	LING 300	Anat & Physiol Spch Mechanism		4
LING 406	Introduction to Computational Linguistics	3 or 4		LING 406	Introduction to Computational Linguistics	3 or 4	
LING 407	Logic and Linguistic Analysis	3 or 4		LING 407	Logic and Linguistic Analysis	3 or 4	
LING 427	Language and the Brain	3 or 4		LING 427	Language and the Brain	3 or 4	
MSE 280	Engineering Materials		3	MSE 280	Engineering Materials		3
Material Science and Eng. (MSE): All 300 and 400 level courses except 304, 460, and 461. Exceptions of seminar and special topics courses can be reviewed in the Advising Office.				Material Science and Eng. (MSE): All 300 and 400 level courses except 304, 460, and 461. Exceptions of seminar and special topics courses can be reviewed in the Advising Office.			
MATH 213	Basic Discrete Mathematics		3	MATH 213	Basic Discrete Mathematics		3
MATH 347	Fundamental Mathematics		3	MATH 347	Fundamental Mathematics		3
MATH 348	Fundamental Mathematics-ACP		4	MATH 348	Fundamental Mathematics-ACP		4
MATH 357	Numerical Methods I		3	MATH 357	Numerical Methods I		3
MATH 402	Non Euclidean Geometry	3 or 4		MATH 402	Non Euclidean Geometry	3 or 4	
MATH 403	Euclidean Geometry	3 or 4		MATH 403	Euclidean Geometry	3 or 4	
MATH 412	Graph Theory	3 or 4		MATH 412	Graph Theory	3 or 4	
MATH 413	Intro to Combinatorics	3 or 4		MATH 413	Intro to Combinatorics	3 or 4	
MATH 414	Mathematical Logic	3 or 4		MATH 414	Mathematical Logic	3 or 4	
MATH 415	Applied Linear Algebra	3 or 4					
MATH 416	Abstract Linear Algebra	3 or 4		MATH 416	Abstract Linear Algebra	3 or 4	
MATH 417	Intro to Abstract Algebra	3 or 4		MATH 417	Intro to Abstract Algebra	3 or 4	
MATH 418	Intro to Abstract Algebra II	3 or 4		MATH 418	Intro to Abstract Algebra II	3 or 4	
MATH 423	Differential Geometry	3 or 4		MATH 423	Differential Geometry	3 or 4	
MATH 424	Honors Real Analysis		3	MATH 424	Honors Real Analysis		3
MATH 425	Honors Advanced Analysis		3	MATH 425	Honors Advanced Analysis		3
MATH 427	Honors Abstract Algebra		3	MATH 427	Honors Abstract Algebra		3
MATH 428	Honors Topics in Mathematics		3	MATH 428	Honors Topics in Mathematics		3
MATH 432	Set Theory and Topology	3 or 4		MATH 432	Set Theory and Topology	3 or 4	
MATH 442	Intro Partial Diff Equations	3 or 4		MATH 442	Intro Partial Diff Equations	3 or 4	
MATH 444	Elementary Real Analysis	3 or 4		MATH 444	Elementary Real Analysis	3 or 4	
MATH 446	Applied Complex Variables	3 or 4		MATH 446	Applied Complex Variables	3 or 4	
MATH 447	Real Variables	3 or 4		MATH 447	Real Variables	3 or 4	
MATH 448	Complex Variables	3 or 4		MATH 448	Complex Variables	3 or 4	
MATH 450	Numerical Analysis	3 or 4		MATH 450	Numerical Analysis	3 or 4	
MATH 453	Elementary Theory of Numbers	3 or 4		MATH 453	Elementary Theory of Numbers	3 or 4	
MATH 473	Algorithms		4	MATH 473	Algorithms		4
MATH 475	Formal Models of Computation	3 or 4		MATH 475	Formal Models of Computation	3 or 4	
MATH 481	Vector and Tensor Analysis	3 or 4		MATH 481	Vector and Tensor Analysis	3 or 4	
MATH 482	Linear Programming	3 or 4		MATH 482	Linear Programming	3 or 4	
MATH 484	Nonlinear Programming	3 or 4		MATH 484	Nonlinear Programming	3 or 4	
MATH 487	Advanced Engineering Math	3 or 4		MATH 487	Advanced Engineering Math	3 or 4	
MATH 489	Dynamics & Differential Eqns	3 or 4		MATH 489	Dynamics & Differential Eqns	3 or 4	
MCB 150	Molec & Cellular Basis of Life		4	MCB 150	Molec & Cellular Basis of Life		4
MCB 250	Molecular Genetics		3	MCB 250	Molecular Genetics		3
MCB 251	Exp Techniqs in Molecular Biol		2	MCB 251	Exp Techniqs in Molecular Biol		2
MCB 252	Cells, Tissues & Development		3	MCB 252	Cells, Tissues & Development		3
MCB 253	Exp Techniqs in Cellular Biol		2	MCB 253	Exp Techniqs in Cellular Biol		2
MCB 300	Microbiology		3	MCB 300	Microbiology		3
MCB 301	Experimental Microbiology		3	MCB 301	Experimental Microbiology		3
MCB 314	Introduction to Neurobiology		3	MCB 314	Introduction to Neurobiology		3
MCB 316	Genetics and Disease		4	MCB 316	Genetics and Disease		4
MCB 354	Biochem & Phys Basis of Life		3	MCB 354	Biochem & Phys Basis of Life		3
MCB 400	Cancer Cell Biology		3	MCB 400	Cancer Cell Biology		3
MCB 401	Cell & Membrane Physiology		3	MCB 401	Cell & Membrane Physiology		3
MCB 402	Sys & Integrative Physiology		3	MCB 402	Sys & Integrative Physiology		3
MCB 403	Cell & Membrane Physiology Lab	1 or 2		MCB 403	Cell & Membrane Physiology Lab	1 or 2	
MCB 404	Sys & Integrative Physiol Lab	1 to 2		MCB 404	Sys & Integrative Physiol Lab	1 to 2	
MCB 406	Gene Expression & Regulation		3	MCB 406	Gene Expression & Regulation		3
MCB 408	Immunology		3	MCB 408	Immunology		3
MCB 410	Developmental Biology, Stem Cells and Regener		3	MCB 410	Developmental Biology, Stem Cells and Regener		3
MCB 413	Endocrinology		3	MCB 413	Endocrinology		3
MCB 419	Brain, Behavior & Info Process		3	MCB 419	Brain, Behavior & Info Process		3
MCB 421	Microbial Genetics		3	MCB 421	Microbial Genetics		3
MCB 424	Microbial Biochemistry		3	MCB 424	Microbial Biochemistry		3
MCB 426	Bacterial Pathogenesis		3	MCB 426	Bacterial Pathogenesis		3
MCB 430	Molecular Microbiology		3	MCB 430	Molecular Microbiology		3
MCB 431	Microbial Physiology		3	MCB 431	Microbial Physiology		3
MCB 433	Virology & Viral Pathogenesis		3	MCB 433	Virology & Viral Pathogenesis		3
MCB 435	Evolution of Infectious Disease		3	MCB 435	Evolution of Infectious Disease		3
MCB 446	Physical Biochemistry		3	MCB 446	Physical Biochemistry		3
MCB 480	Eukaryotic Cell Signaling		3	MCB 480	Eukaryotic Cell Signaling		3
ME 200	Thermodynamics		3	ME 200	Thermodynamics		3
ME 310	Fundamentals of Fluid Dynamics		4	ME 310	Fundamentals of Fluid Dynamics		4
ME 320	Heat Transfer		4	ME 320	Heat Transfer		4
ME 330	Engineering Materials		4	ME 330	Engineering Materials		4
ME 340	Dynamics of Mechanical Systems		3.5	ME 340	Dynamics of Mechanical Systems		3.5
ME 370	Mechanical Design I		3	ME 370	Mechanical Design I		3
ME 371	Mechanical Design II		3	ME 371	Mechanical Design II		3
ME 400	Energy Conversion Systems	3 or 4		ME 400	Energy Conversion Systems	3 or 4	
ME 401	Refrigeration and Cryogenics	3 or 4		ME 401	Refrigeration and Cryogenics	3 or 4	
ME 402	Design of Thermal Systems	3 or 4		ME 402	Design of Thermal Systems	3 or 4	
ME 403	Internal Combustion Engines	3 or 4		ME 403	Internal Combustion Engines	3 or 4	
ME 404	Intermediate Thermodynamics		4	ME 404	Intermediate Thermodynamics		4
ME 410	Intermediate Gas Dynamics	3 or 4		ME 410	Intermediate Gas Dynamics	3 or 4	
ME 411	Viscous Flow & Heat Transfer		4	ME 411	Viscous Flow & Heat Transfer		4
ME 412	Numerical Thermo-Fluid Mechs	2 to 4		ME 412	Numerical Thermo-Fluid Mechs	2 to 4	
ME 420	Intermediate Heat Transfer		4	ME 420	Intermediate Heat Transfer		4
ME 430	Failure of Engrg Materials	3 or 4		ME 430	Failure of Engrg Materials	3 or 4	
ME 431	Mechanical Component Failure	3 or 4		ME 431	Mechanical Component Failure	3 or 4	
ME 440	Kinem & Dynamics of Mech Syst	3 or 4		ME 440	Kinem & Dynamics of Mech Syst	3 or 4	
ME 445	Introduction to Robotics		4	ME 445	Introduction to Robotics		4
ME 450	Modeling Materials Processing		3	ME 450	Modeling Materials Processing		3
ME 451	Computer-Aided Mfg Systems	3 or 4		ME 451	Computer-Aided Mfg Systems	3 or 4	
ME 452	Num Control of Mfg Processes	3 or 4		ME 452	Num Control of Mfg Processes	3 or 4	

ME 460	Industrial Control Systems	4
ME 461	Computer Cntrl of Mech Systems	3 or 4
ME 471	Finite Element Analysis	3 or 4
ME 472	Introduction to Tribology	3 or 4
ME 485	MEMS Devices & Systems	3
ME 487	MEMS-NEMS Theory & Fabrication	4
MUS 407	Elect Music Techniques I	3
MUS 409	Elec Music Techniques II	2
NEUR 453	Cog Neuroscience of Vision	3 or 4
NPRE 201	Energy Systems	2 or 3
NPRE 247	Modeling Nuclear Energy System	3
NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4
NPRE 421	Plasma and Fusion Science	3
NPRE 423	Plasma Laboratory	2
NPRE 429	Plasma Engineering	3
NPRE 431	Materials in Nuclear Engrg	3
NPRE 432	Nuclear Engrg Materials Lab	2
NPRE 435	Radiological Imaging	3
NPRE 441	Radiation Protection	4
NPRE 442	Radioactive Waste Management	3
NPRE 444	Nuclear Analytical Methods Lab	2 or 3
NPRE 446	Radiation Interact w/Matter I	3
NPRE 447	Radiation Interact w/Matter II	3
NPRE 448	Nuclear Syst Engrg & Design	4
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 457	Safety Anlys Nucl Reactor Syst	3 or 4
NPRE 458	Design in NPRE	4
NPRE 470	Fuel Cells & Hydrogen Sources	3
NPRE 475	Wind Power Systems	3 or 4
PHYS 225	Relativity & Math Applications	2
PHYS 325	Classical Mechanics I	3
PHYS 326	Classical Mechanics II	3
PHYS 401	Classical Physics Lab	3
PHYS 402	Light	3 or 4
PHYS 403	Modern Experimental Physics	4 or 5
PHYS 406	Acoustical Physics of Music	4
PHYS 419	Space, Time, and Matter-ACP	3 or 4
PHYS 420	Space, Time, and Matter	2
PHYS 427	Thermal & Statistical Physics	4
PHYS 460	Condensed Matter Physics	4
PHYS 466	Atomic Scale Simulations	3 or 4
PHYS 470	Subatomic Physics	4
PHYS 485	Atomic Phys & Quantum Theory	3
PHYS 486	Quantum Physics I	4
PHYS 487	Quantum Physics II	4
SHS 200	General Phonetics	3
SHS 240	Intro Sound & Hearing Science	3
SHS 300	Anat & Physiol Spch Mechanism	4
SHS 301	General Speech Science	4
SHS 320	Development of Spoken Language	3
SHS 450	Intro Audiol & Hear Disorders	4
SHS 470	Neural Bases Spch Lang	4
STAT 420	Methods of Applied Statistics	3 or 4
STAT 424	Analysis of Variance	3 or 4
STAT 428	Statistical Computing	3 or 4
STAT 429	Time Series Analysis	3 or 4
STAT 440	Statistical Data Management	3 or 4
SE 411	Reliability Engineering	3 or 4
SE 420	Digital Control Systems	4
SE 423	Mechatronics	3
SE 424	State Space Design for Control	3
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
TAM 324	Behavior of Materials	4
TAM 335	Introductory Fluid Mechanics	4
TAM 412	Intermediate Dynamics	4
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4
TAM 451	Intermediate Solid Mechanics	4
ECE Courses to include:		
Select three from the following list of Advanced Core ECE electives:		
ECE 391	Computer Systems Engineering	
or CS 225	Data Structures	
ECE 310	Digital Signal Processing	
ECE 330	Power Ckts & Electromechanics	
ECE 342	Electronic Circuits	
ECE 350	Fields and Waves II	
Select three ECE labs identified below. At least one must be hardware labs		
Hardware Labs:		
ECE 343	Electronic Circuits Laboratory	1
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 402	Electronic Music Synthesis	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 420	Embedded DSP Laboratory	2
ECE 431	Electric Machinery	4
CS 436	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 443	LEDs and Solar Cells	4
ECE 444	IC Device Theory & Fabrication	4
ECE 446	Principles of Experimental Research in Electrical	4
ECE 447	Active Microwave Ckt Design	3
ECE 451	Adv Microwave Measurements	3
ECE 453	Wireless Communication Systems	4
ECE 456	Global Nav Satellite Systems	4
ECE 460	Optical Imaging	4
ECE 463	Digital Communications Lab	2
ECE 466	Optical Communications Lab	1
ECE 468	Optical Remote Sensing	3
ECE 469	Power Electronics Laboratory	2
ECE 470	Introduction to Robotics	4
ECE 481	Nanotechnology	4
ECE 486	Control Systems	4
ECE 489	Robot Dynamics and Control	4
ECE 495	Photonic Device Laboratory	3
Software Labs:		
ECE 311	Digital Signal Processing Lab	1
ECE 314	Probability in Engineering Lab	1
ECE 365	Data Science and Engineering	3
ECE 411	Computer Organization & Design	4

Electives

Course List

Code	Title	Hours
The Grainger College of Engineering Liberal Education course lis		6
Free electives. Additional unrestricted course work, subject to ce		12
Total Hours of Curriculum to Graduate		**128**

ME 460	Industrial Control Systems	4
ME 461	Computer Cntrl of Mech Systems	3 or 4
ME 471	Finite Element Analysis	3 or 4
ME 472	Introduction to Tribology	3 or 4
ME 485	MEMS Devices & Systems	3
ME 487	MEMS-NEMS Theory & Fabrication	4
MUS 407	Elect Music Techniques I	3
MUS 409	Elec Music Techniques II	2
NEUR 453	Cog Neuroscience of Vision	3 or 4
NPRE 201	Energy Systems	2 or 3
NPRE 247	Modeling Nuclear Energy System	3
NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4
NPRE 421	Plasma and Fusion Science	3
NPRE 423	Plasma Laboratory	2
NPRE 429	Plasma Engineering	3
NPRE 431	Materials in Nuclear Engrg	3
NPRE 432	Nuclear Engrg Materials Lab	2
NPRE 435	Radiological Imaging	3
NPRE 441	Radiation Protection	4
NPRE 442	Radioactive Waste Management	3
NPRE 444	Nuclear Analytical Methods Lab	2 or 3
NPRE 446	Radiation Interact w/Matter I	3
NPRE 447	Radiation Interact w/Matter II	3
NPRE 448	Nuclear Syst Engrg & Design	4
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 457	Safety Anlys Nucl Reactor Syst	3 or 4
NPRE 458	Design in NPRE	4
NPRE 470	Fuel Cells & Hydrogen Sources	3
NPRE 475	Wind Power Systems	3 or 4
PHYS 225	Relativity & Math Applications	2
PHYS 325	Classical Mechanics I	3
PHYS 326	Classical Mechanics II	3
PHYS 401	Classical Physics Lab	3
PHYS 402	Light	3 or 4
PHYS 403	Modern Experimental Physics	4 or 5
PHYS 406	Acoustical Physics of Music	4
PHYS 419	Space, Time, and Matter-ACP	3 or 4
PHYS 420	Space, Time, and Matter	2
PHYS 427	Thermal & Statistical Physics	4
PHYS 460	Condensed Matter Physics	4
PHYS 466	Atomic Scale Simulations	3 or 4
PHYS 470	Subatomic Physics	4
PHYS 485	Atomic Phys & Quantum Theory	3
PHYS 486	Quantum Physics I	4
PHYS 487	Quantum Physics II	4
SHS 200	General Phonetics	3
SHS 240	Intro Sound & Hearing Science	3
SHS 300	Anat & Physiol Spch Mechanism	4
SHS 301	General Speech Science	4
SHS 320	Development of Spoken Language	3
SHS 450	Intro Audiol & Hear Disorders	4
SHS 470	Neural Bases Spch Lang	4
STAT 420	Methods of Applied Statistics	3 or 4
STAT 424	Analysis of Variance	3 or 4
STAT 428	Statistical Computing	3 or 4
STAT 429	Time Series Analysis	3 or 4
STAT 440	Statistical Data Management	3 or 4
SE 411	Reliability Engineering	3 or 4
SE 420	Digital Control Systems	4
SE 423	Mechatronics	3
SE 424	State Space Design for Control	3
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
TAM 324	Behavior of Materials	4
TAM 335	Introductory Fluid Mechanics	4
TAM 412	Intermediate Dynamics	4
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4
TAM 451	Intermediate Solid Mechanics	4
ECE Courses to include:		
Select three from the following list of Advanced Core ECE electives:		
ECE 391	Computer Systems Engineering	
or CS 225	Data Structures	
ECE 310	Digital Signal Processing	
ECE 330	Power Ckts & Electromechanics	
ECE 342	Electronic Circuits	
ECE 350	Fields and Waves II	
Select three ECE labs identified below. At least one must be hardware labs		
Hardware Labs:		
ECE 343	Electronic Circuits Laboratory	1
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 402	Electronic Music Synthesis	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 420	Embedded DSP Laboratory	2
ECE 431	Electric Machinery	4
CS 436	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 443	LEDs and Solar Cells	4
ECE 444	IC Device Theory & Fabrication	4
ECE 446	Principles of Experimental Research in Electrical	4
ECE 447	Active Microwave Ckt Design	3
ECE 451	Adv Microwave Measurements	3
ECE 453	Wireless Communication Systems	4
ECE 456	Global Nav Satellite Systems	4
ECE 460	Optical Imaging	4
ECE 463	Digital Communications Lab	2
ECE 466	Optical Communications Lab	1
ECE 468	Optical Remote Sensing	3
ECE 469	Power Electronics Laboratory	2
ECE 470	Introduction to Robotics	4
ECE 481	Nanotechnology	4
ECE 486	Control Systems	4
ECE 489	Robot Dynamics and Control	4
ECE 495	Photonic Device Laboratory	3
Software Labs:		
ECE 311	Digital Signal Processing Lab	1
ECE 314	Probability in Engineering Lab	1
ECE 365	Data Science and Engineering	3
ECE 411	Computer Organization & Design	4

Electives

Course List

Code	Title	Hours
The Grainger College of Engineering Liberal Education course li		6
Free electives. Additional unrestricted course work, subject to ce		12
Total Hours of Curriculum to Graduate		**128**

[1] External transfer students take ENG 300 instead..

[2] MATH 220 *may be substituted, with four of the five c.*

[3] Freshmen take ECE 110 for 3 credit hours. Lab-only versio

[4] STAT 410 may be substituted.

[6] ECE 496 *AND* ECE 499 *may be substituted.*

[8] Advanced Composition may be satisfied by completing ECI

[7] The Grainger College of Engineering approved liberal educ

[8] The Grainger College of Engineering restrictions to free ele

[1] External transfer students take ENG 300 instead..

[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.*

[3] Freshmen take ECE 110 for 3 credit hours. Lab-only version taken by transfer students (with special permission) is 1 credit hour.

[4] STAT 410 may be substituted.

[6] ECE 496 *AND* ECE 499 *may be substituted.*

[8] Advanced Composition may be satisfied by completing ECE 445, or a course in either the general education or free elective categories which has the Advanced Composition designation.

[7] 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.

[8] The Grainger College of Engineering restrictions to free electives can be found here.

ILLINOIS

MATHEMATICS

College of Liberal Arts & Sciences
273 Altgeld Hall, MC-382
1409 W. Green Street
Urbana, IL 61801 USA

February 22, 2021

Erhan Kudeki
Professor and Associate Head for Undergraduate Affairs
Department of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign

Dear Professor Kudeki,

Our department acknowledges and supports the proposed revision of the Electrical Engineering (EE) and Computer Engineering (CE) BS programs, to adopt MATH 257 as a required course for EE and CE majors to be taken after MATH 220/221 and before MATH 285, and to replace MATH 286 with MATH 285. The Department of Mathematics is prepared to accommodate the enrollment shifts among courses which will result from these changes.

In the event that this curricular revision is approved, the Mathematics Department will remove the phrase "Computer Engineering or Electrical Engineering" from the following statement in Course Explorer regarding MATH 285 (which can be found at https://courses.illinois.edu/schedule/2021/spring/MATH/285):

> "not intended for Computer Engineering or Electrical Engineering or Math & CS major(s)."

Sincerely,

Jeremy Tyson
Professor and Chair
Department of Mathematics
University of Illinois at Urbana-Champaign

On Mar 18, 2021, at 11:14 AM, Aber, Mark S <maber@illinois.edu> wrote:

Dear Erhan,

We are happy to support ECE by welcoming your students into PSYC 204. Best of luck with your curriculum revision.

best,
Mark

From: Kudeki, Erhan <erhan@illinois.edu>
Sent: Thursday, March 11, 2021 4:45 PM
To: Aber, Mark S <maber@illinois.edu>
Cc: Kudeki, Erhan <erhan@illinois.edu>; Newell, Brooke <bsnewell@illinois.edu>
Subject: Support letter request

Dear Mark,

I am writing to let you know that ECE has decided to add PSYC 204, Intro to Brain and Cognition, to its list of Technical Electives applicable to Electrical Engineering and Computer Engineering majors in our undergraduate program.

We have been asked by the College of Engineering to seek a letter of support from Psychology for this change as our curriculum revision proposal, approved by the College Executive Committee, goes up to the University Senate. Please provide us with such a letter of support. I'll be happy to answer any questions you may have about our request.

Thanks and best regards,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

On Mar 18, 2021, at 2:52 PM, Rayburn, A Lane <arayburn@illinois.edu> wrote:

Hi Erhan

Crop Sciences supports adding CPSC 265 to the list of technical electives in ECE.

Just let me know if you need anything else.

Sincerely,

Lane

Dr. A. Lane Rayburn
Professor of Cytogenetics
Director of Undergraduate Studies
Department of Crop Sciences
University of Illinois
AE-120 Turner Hall
1102 S. Goodwin Ave
Urbana, IL 61801
Telephone - 217 333-4374.
http:// https://cropsciences.illinois.edu/people/profile/arayburn

From: Kudeki, Erhan <erhan@illinois.edu>
Sent: Thursday, March 18, 2021 10:47 AM
To: Tranel, Patrick J <tranel@illinois.edu>; Rayburn, A Lane <arayburn@illinois.edu>
Cc: Kudeki, Erhan <erhan@illinois.edu>
Subject: Re: Support letter request

Thanks Pat, I'm ashamed of my cut and paste error :-)

Lane, we will be needing the crop sciences support letter. We will be adding CPSC 265 to our very broad list of Technical Electives in ECE. Let me know if you have any questions.

Regards,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

<image001.png>

On Mar 18, 2021, at 9:23 AM, Tranel, Patrick J <tranel@illinois.edu> wrote:

Erhan,

Sorry. I scanned your email before and deleted it because this is out of my jurisdiction, and because your email stated you needed a letter from atmospheric sciences, not crop sciences. After a closer read, I've passed your email on to our teaching coordinator, Lane Rayburn, who handles these.

Pat

PATRICK J TRANEL
Ainsworth Professor and Associate Head

University of Illinois at Urbana-Champaign
College of Agricultural, Consumer and Environmental Sciences
Department of Crop Sciences
320 ERML
1201 W Gregory Dr | M/C 051
Urbana, IL 61801
217.333.1531 | tranel@illinois.edu
cropsciences.illinois.edu

<image001.png>

From: "Kudeki, Erhan" <erhan@illinois.edu>
Date: Thursday, March 18, 2021 at 9:03 AM
To: Patrick Tranel <tranel@illinois.edu>
Cc: "Kudeki, Erhan" <erhan@illinois.edu>, "Newell, Brooke" <bsnewell@illinois.edu>
Subject: Re: Support letter request

Hi Patrick, a gentle reminder, thx,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

On Mar 11, 2021, at 4:45 PM, Kudeki, Erhan <erhan@illinois.edu> wrote:

Dear Patrick,

I am writing to let you know that ECE has decided to add CPSC 265, Genetic Engineering Lab, to its list of Technical Electives applicable to Electrical Engineering and Computer Engineering majors in our undergraduate program.

We have been asked by the College of Engineering to seek a letter of support from Atmospheric Sciences for this change as our curriculum revision proposal, approved by the College Executive Committee, goes up to the University Senate. Please provide us with such a letter of support. I'll be happy to answer any questions you may have about our request.

Thanks and best regards,

Erhan

Erhan Kudeki 2172650128 | erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
Electrical and Computer Engineering, The Grainger College of Engineering
2080 ECE Building, 306 North Wright Street, Urbana, IL 61801

ILLINOIS

COLLEGE OF LIBERAL ARTS & SCIENCES
Department of Atmospheric Sciences
3070 Natural History Building, MC-104
1301 W. Green St.
Urbana, IL 61801-3070

March 15, 2021

Dear Professor Kudeki,

The Department of Atmospheric Sciences approves listing the class ATMS 201 (General Physical Meteorology) as Technical Elective for Electrical Engineering and Computer Engineering majors.

Sincerely,

Nicole Riemer

Nicole Riemer
Professor and Associate Head
Department of Atmospheric Sciences

UNIVERSITY OF ILLINOIS
Urbana-Champaign ● Chicago ● Springfield

University Senates Conference
378 Henry Administration Building
506 South Wright Street
Urbana, IL 61801

February 26, 2020

Kathy Martensen
Assistant Provost for Educational Programs
206 Swanlund, MC-304

Dear Kathy:

At its meeting on February 20, the University Senates Conference approved the proposed classification of minutes of the Urbana-Champaign Senate meeting of February 10. The Class I items are listed below.

EP.19.69	Establish a Major in Translational Medical Sciences in the Carle Illinois College of Medicine for the Degree of Master of Science
EP.20.34	Establish a Minor in Disability Studies in the Department of Kinesiology and Community Health, College of Applied Health Sciences
EP.20.44	Eliminate the BS MS in Industrial Engineering
EP.20.45	Eliminate the BS MS in Mechanical Engineering
EP.20.46	Revision of Curriculum Requirements for the Ph.D. in Civil Engineering to Add a 96-Credit Hour Option
EP.20.47	Revision of Curriculum Requirements for the Ph.D. in Environmental Engineering to Add a 96-Credit Hour Option
EP.20.48	Revision to the Master of Accounting Science (MAS) Degree Course Requirements
EP.20.49	Revision to Taxation Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements
EP.20.50	Revision to the Data Analytics Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements
EP.20.51	Financial Reporting & Assurance Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements

Telephone (217) 333-3077 ● Fax (217) 244-5763

EP.20.52 Establish Joint Program in the Department of Animal Sciences for the BS/MANSC

EP.20.53 Establish a Joint BS (CS+ANSC)/MANSC Program in the Department of Animal Sciences

EP.20.54 Revise the BALAS in Classics, College of Liberal Arts and Sciences, to Eliminate the Five Ways Students Can Choose a Classics Major (Major in Classics (Without a Concentration) and the Four Concentrations in Greek, Latin, Classics, Classical Civilization, and Classical Archeology. Add Concentrations in Classical Languages and Classical Civilizations as the Only Two Options Students May Pursue a Classics Major

EP.20.55 Revise the BALAS in Classics, College of Liberal Arts and Sciences, Classical Archeology

EP.20.56 Revise the BALAS in Classics, College of Liberal Arts and Sciences, Classical Civilization

EP.20.57 Elimination of the Undergraduate Minor: Classical Archaeology. In Conjunction with the Elimination of Three Other Undergraduate Minors in the Department of Classics: Classical Civilization, Greek, Latin; and the Creation of Two Minors: Classical Civilizations and Classical Languages

EP.20.58 Elimination of the Undergraduate Minor: Greek Minor

EP.20.59 Elimination of the Undergraduate Minor: Classical Civilization

EP.20.60 Elimination of the Undergraduate Minor: Latin Minor

EP.20.61 Creation of a new Undergraduate Minor: Classical Civilizations

EP.20.62 Creation of a new Undergraduate Minor: Classical Languages

EP.20.63 Revise the BALAS in Classics, Classical Civilizations

EP.20.64 Revise the BALAS in Classics, Classical Languages

EP.20.65 Revising EdD Degree Program Course and Exam Requirement

EP.20.66 Revise the Minor in German, Department of Germanic Languages and Literatures

EP.20.67 Revise the BALAS in Classics

EP.20.68 Revise the BALAS in Classics: Latin

EP.20.69 Establish a New Master of Science (M.S.) in Mental Health Counseling in the Department of Educational Psychology, College of Education

EP.20.70 Proposal to Establish a New Bachelor of Science Degree with a Major in Plant Biotechnology (B.S. in Plant Biotech) in the Department of Crop Sciences, College of Agricultural, Consumer and Environmental Sciences

EP.20.71 Revision to the Chemistry Minor

EP.20.72 Urban Studies & Planning: Social Justice

EP.20.75 Remove Art History PhD, Art Education PhD, and Education Policy, Organization, and Leadership MA, EdM, and CAS from a List of Programs Participating in the Writing Studies Floating Concentration

EP.20.76 Create a new Minor in German Business and Commercial Studies

EP.20.77 Computer Science & Philosophy, BSLAS (Revisions to the BSLAS in Computer Science & Philosophy, Department of Philosophy)

EP.20.78 Computer Science Minor

EP.20.79 New Proposal for BFA in Theatre: Arts & Entertainment Technology

EP.20.80 Revising Requirements for BFA in Theatre: Scenic Design

EP.20.81 Revising Requirements for BFA in Theatre: Sound Design & Technology

EP.20.82 Revising Requirements for BFA in Theatre: Lighting Design & Technology

EP.20.83 Revising Requirements for BFA in Theatre: Scenic Technology

EP.20.84 Revising Requirements for BFA in Theatre: Costume Design & Technology

EP.20.85 Revising Requirements for BFA in Theatre: Acting

EP.20.86 Revising Requirements for BFA in Theatre

EP.20.87 Revising Requirements for BFA in Theatre: Theatre Studies

EP.20.88 Revising Requirements for BFA in Theatre: Stage Management

EP.20.89 Revising Requirements in Theatre Minor, UG

EP.20.90 Computer Science & Astronomy, BSLAS (Revise the BSLAS in Computer Science & Astronomy, College of Liberal Arts and Sciences)

EP.20.91 Revising Requirements for BS in Civil Engineering

EP.20.92 Revising Requirements for BS in Computer Engineering

EP.20.93 Revising Requirements for BSAG in Agricultural and Biological Engineering

EP.20.94 Revising Requirements for BS in Agricultural and Biological Engineering

EP.20.95 Revising Requirements for BS in Agricultural & Biological Engineering: Agricultural Engineering

EP.20.96 Revising Requirements for BS in Agricultural & Biological Engineering: Biological Engineering

EP.20.97 Revising Requirements for BS in Computer Science

EP.20.98 Revising Requirements for BS in Electrical Engineering

EP.20.99 Revising Requirements for BS in Engineering Mechanics

EP.20.100 Revising Requirements for BS in Engineering Physics

EP.20.101 Revising Requirements for BS in Systems Engineering & Design

EP.20.102 Revising Requirements for BS in Nuclear, Plasma, and Radiological Engineering

EP.20.103 Revising Requirements for BS in Mechanical Engineering

EP.20.104 Revising Requirements for BS in Materials Science & Engineering

SP.20.09 Proposed Revision to the *Constitution*, Article II, Section 1.b; Article III, Section 1; and Article IV, Section 1

Sincerely,

Connie

Connie Sailor
Administrative Aide

c: Ellen Foran,
Renee Nagy
Julian Parrott
Jenny Roether
Nathan Wilds

1PKS5964MS: BUSINESS ANALYTICS, MS

In Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. 1902 Committee Chair (mwolter@illinois.edu; jloew@illinois.edu; bfulton@illinois.edu)
3. 1902 Head (cotnes@illinois.edu)
4. KM Grad Committee Chair (jloew@illinois.edu; wbe@illinois.edu)
5. KM Committee Chair (josephm@illinois.edu)
6. KM Dean (peecher@illinois.edu; mlschltz@illinois.edu)
7. University Librarian (jpwilkin@illinois.edu)
8. Grad_College (agrindly@illinois.edu; jch@illinois.edu; lowry@illinois.edu)
9. Provost (kmartens@illinois.edu)
10. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
11. Senate (jtempel@illinois.edu)
12. U Senate Conf (none)
13. Board of Trustees (none)
14. IBHE (none)
15. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Tue, 16 Mar 2021 22:38:34 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Tue, 16 Mar 2021 22:40:09 GMT
   Jeffrey Loewenstein (jloew): Approved for 1902 Committee Chair
3. Tue, 16 Mar 2021 22:56:37 GMT
   Cele Otnes (cotnes): Approved for 1902 Head
4. Wed, 17 Mar 2021 14:21:27 GMT
   Brooke Elliott (wbe): Approved for KM Grad Committee Chair
5. Mon, 22 Mar 2021 22:14:21 GMT
   Joseph Mahoney (josephm): Approved for KM Committee Chair
6. Mon, 22 Mar 2021 22:35:50 GMT
   Mark Peecher (peecher): Approved for KM Dean
7. Mon, 22 Mar 2021 22:44:49 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
8. Wed, 24 Mar 2021 15:40:57 GMT
   Allison McKinney (agrindly): Approved for Grad_College
9. Wed, 24 Mar 2021 23:39:53 GMT
   Kathy Martensen (kmartens): Approved for Provost

History

1. Jan 8, 2021 by Lorena Nicholas (lorenan)
2. Jan 11, 2021 by Deb Forgacs (dforgacs)

Date Submitted:Tue, 16 Mar 2021 14:10:44 GMT

Viewing:1PKS5964MS : Business Analytics, MS

Changes proposed by: Lorena Nicholas

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*

Administrative approval: We are proposing three course changes to the analytics elective options for the MS Business Analytics program.

EP Control Number

EP.100

Official Program Name

Business Analytics, MS

Effective Catalog Term

Fall 2021

Sponsor College

Gies College of Business

Sponsor Department

Business Administration

Sponsor Name

Jeffrey Loewenstein, Associate Dean of Graduate Education; Robert Brunner, Associate Dean for Innovation

Sponsor Email

jloew@illinois.edu; bigdog@illinois.edu

College Contact

Lorena Nicholas

College Contact Email

lorenan@illinois.edu

Program Description and Justification

Justification for proposal change:

We are proposing three course changes to the analytics elective options for the MS Business Analytics program.

Specifically, the BADM 502 course was originally understood as a data visualization course, and so as meeting a program need. However, the course has been developed for non-quantitatively inclined students, and so is not providing the level of data visualization skill appropriate to this program. Consequently, we think it's best to remove it.

The BADM 543 course is a case class that might well be of interest as a general graduate elective option, but it is not an analytics course and so should not have been included as an analytics elective.

The BADM 550 course is a practicum course that we intend to use for students to do analytics projects with companies. Given those projects will be analytics projects, it is appropriate for the course to count as an analytics elective rather than a general elective. Accordingly, it is appropriate to reduce the general electives by the amount taken for the practicum course.

Corresponding Degree

MS Master of Science

Is this program interdisciplinary?

No

Academic Level

Graduate

Will you admit to the concentration directly?

No

Is a concentration required for graduation?

No

CIP Code

30.7102 - 30.7102

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Admission Requirements

Desired Effective Admissions Term

Fall 2021

Is this revision a change to the admission status of the program?

No

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.

All applicants are expected to have a minimum grade point average of at least 3.0 (A = 4.00) for the last two years of undergraduate study and a 3.0 for any previous graduate work completed. The applicant must have completed at least one college level quantitative methods class. All applicants whose native language is not English must submit a minimum Test of English as a Foreign Language (TOEFL) score of at least 103 (iBT), 253 (CBT), or 610 (PBT); or minimum International English Language Testing System (IELTS) academic exam scores of 7.5 overall for full-status admission.

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

Gies College of Business has a complete unit dedicated to servicing graduate programs. The unit is overseen by the Associate Dean of Graduate Education. Additionally, there is a Director of Admissions and Recruiting and a Director of Administration who both supervise the staff teams providing recruiting, admission and student services, including all academic advising and support. The unit is well prepared to incorporate this new program.

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

It will not impact enrollment and degrees awarded.

Estimated Annual Number of Degrees Awarded

Year One Estimate

30

5th Year Estimate (or when fully implemented)

100

What is the matriculation term for this program?

Fall

What is the typical time to completion of this program?

one year

What are the minimum Total Credit Hours required for this program?

36

Delivery Method

Is this program available on campus and online?

No

This program is available:

Blended

Describe the use of this delivery method:

Gies has demonstrated success in delivering on campus and online courses in Business Analytics. We anticipate interest from students in courses offered in both formats. For example, GMAC 2019 survey data indicate that potential students interested in residential Business Analytics graduate degree programs are most interested in a mix of residential and online classes. In addition, we have rapidly expanded our online course offerings in our MBA and Accountancy programs, and have experienced strong enrollments, strong student satisfaction, and are starting to see the career outcome benefits resulting from these efforts. Consequently, we believe offering Business Analytics using courses in both in person and online delivery formats is in the best interests of students.

We are preparing to launch a full-time, residential format in Fall 2021. We include within that planning the development of further online versions of courses for students who seek the added flexibility. After the program is successfully established, we may put forward a proposal for a fully online offering. The MS/IM program, for example, has provided both a residential and a fully online format, and the MCS program finds value in using a fully online format. Thus, we believe it is plausible that we will develop a fully online format as well. Our use of different course and program formats is based on our understanding of how to best meet student needs. We currently see strong interest for a full-time residential program. Should we see demand for a part-time, online program we will propose such a format and develop it.

Budget

Are there budgetary implications for this revision?

No

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?

Yes

Please explain/describe:

The program will require a program director. All other staff functions would be performed by existing Business Graduate Programs staff.

Additional Budget Information

Attached is a projected budget for the first three years. The tuition levels are based on a competitive analysis of similar programs at peer institutions as well as tuition levels in related college programs. Further competitive analyses or college program tuition changes may lead to tuition changes in this program.

a. How will the unit create capacity or surplus to appropriately resource this program? If applicable, what functions or programs will the unit no longer support to create capacity?

Faculty will teach courses on-load or off-load as fits departmental and college resource allocation demands and faculty agreement. We will have sufficient faculty capacity to support the course offerings as a result of existing hiring efforts and changes in our College's overall teaching needs.

Existing advisors are learning to support analytics students, but it is likely that we will need to hire additional advisors with depth in this space. The resources to do so will be drawn from program tuition.

b. Will the unit need to seek campus or other external resources? If so, please provide a summary of the sources and an indication of the approved support.

We are not seeking any additional campus or external resources.

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

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/ acknowledgement from faculty, students, and/or other impacted units as appropriate.

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.

Adding this program will allow our college to make better use of existing faculty talent. We do not anticipate a direct effect on our college's number of faculty. We expect a mix of added course sections for this program and co-enrollments in existing courses currently serving other programs. Consequently, we expect modest increases in class size and, as a result, student-faculty ratios. We do not expect changes in teaching loads.

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.

We do not expect the program to have a noticeable effect on our college's use of library resources, or that this program will place additional demands on the library's collections or staff.

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

Yes

Required courses

BADM 554 - Enterprise Database Management
FIN 510 - Big Data Analytics in Finance
BDI 513 - Data Storytelling

Explain how the inclusion or removal of the courses/subjects listed above impacts the offering departments.

Adding this program will allow our college to make better use of existing faculty talent. We do not anticipate a direct effect on our college's number of faculty. We expect a mix of added course sections for this program and co-enrollments in existing courses currently serving other programs. Consequently, we expect modest increases in class size and, as a result, student-faculty ratios. We do not expect changes in teaching loads.

Financial Resources

How does the unit intend to financially support this proposal?

We have considerable faculty, staff, and infrastructure support to launch this program. We expect that enrollment and so revenue growth will provide the resources for expanding staff and infrastructure support.

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

No

Are you seeking a change in the tuition rate or differential for this program?

Yes

Is this program requesting self-supporting status?

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).

The Gies College of Business has a robust assurance of learning process, as it is required for AACSB accreditation. The College has a dedicated staff member who oversees all AACSB activities, as well as a dedicated eLearning team who work closely with faculty to create program assessment plans for their courses. The College will create an Assurance of Learning plan in line with AACSB and HLC standards as part of the rollout of the program. During the rollout phase, meetings with faculty to discuss program and course success will occur regularly and frequently to ensure that feedback and subsequent adjustments will occur as needed.

Each program has an Academic Director, a faculty member who leads assessment work, participates in Graduate Program Advisory Committee (Grad PAC), and oversees the implementation of any proposed and accepted changes to the program's structure, curriculum, and supporting activities. The current process for graduate programs includes the Academic Director meeting annually with faculty members to review curriculum plans, student feedback, benchmarking trends, and data in support of continuous improvement to ensure learning outcomes and results are aligned to internal and external stakeholder needs. As a result of such meetings, updates/changes, and enhancements are made to the curriculum and extracurricular offerings accordingly.
The assessment information is shared broadly with program, unit, and College leadership through both formal and informal presentations. Recipients of the information include Department Head, Associate Head, Assistant Dean of Graduate Education, members of the Grad PAC, Dean of the College, and faculty who teach in the program. The information is also maintained for inclusion in required AACSB accreditation reporting.

Our approach to program assessment is that it is a multi-level and multi-stage process.

Levels:
1- Course Learning and Course Outcomes: The extent to which students are meeting the learning objectives of every course.
2- Program Outcomes: To what extent students meet the expectations based on the "program graduate profile", as to how will graduates of this program be unique and knowledgeable as a result of having been part of this program
3- Student Satisfaction
4- Stakeholder satisfaction
5- Impact in individuals, academic units and society

Stages:
1- Formative evaluation will be conducted at the end of every course to address the results of
a) Level 1. The sources to be considered will be students' performance, attrition, and course evaluation, At the end of every term there will be a debriefing process to inform changes for upcoming semesters.
b) Level 3

2- Summative evaluation when a cohort completes the program will be conducted to assess
a) Level 2
b) Levels 3 and 4

3- Summative Evaluation over time will be conducted 2 and 3 years after a cohort has completed to assess impact of the program (Level 5). Source of information will include employment, type of employment, alumni income, and continuing education in other Gies programs.

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

MS Analytics side by side comparison for CIM.xlsx

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.

Business Analytics, MS
for the degree of Master of Science in Business Analytics
department catalog page: Business Administration
department website: Business Administration
department faculty: Gies College of Business Directory
overview of college admissions & requirements: Gies Graduate Programs Requirements college website: Gies College of Business
email: grad@business.illinois.edu

The Master of Science (MS) in Business Analytics prepares students to master and apply contemporary analytics approaches to identify and address business problems and opportunities. It can be completed in residence or online. The course work includes foundations in managing, analyzing, and conveying patterns and implications of business data, followed by an array of analytics elective courses that enable students to deepen their skills and understanding in business application areas such as finance, accountancy, and marketing, among others. This is an intensive program for those interested in making decisions and innovating through the use of business analytics approaches.

Degree Requirements
for the degree of Master of Science in Business Analytics (on campus or on-line)
For additional details and requirements, refer to the department's Program Curriculum and the Graduate College Handbook.

Statement for Programs of Study Catalog

The MS in Business Analytics requires a minimum of 36 hours. The program rests on three required courses (12 credit hours) covering foundations of business data management, analysis, and communication. Students need to take at least four analytics elective courses (at least 16 credit hours) that will enable them to deepen their understanding of analytics methods and tools as well as to specialize in existing and emerging application areas. Finally, students are able to take up to two general elective courses (up to 8 credit hours) to provide foundations in application areas. Students with sufficient background may petition the academic director to replace core classes, with analytics electives. Additional analytics elective and general elective graduate course offerings may be approved by a program advisor.

Code	Title	Hours
Core Courses:		
BADM 554	Enterprise Database Management	4
FIN 510	Big Data Analytics in Finance for Predictive and Causal Analysis	4
BDI 513	Data Storytelling	4
Analytics Electives		**20-24**
BADM 502	Communicating with Data and Decision Making	
BADM 543	Technology Strategy	
BADM 550	Business Practicum	
BADM 557	Business Intelligence	
BADM 562	Social Media Strategy	
BADM 571	Digital Business & IT Strategy	
BADM 572	Stat for Mgt Decision Making	

BADM 573	Decision Analytics	
BADM 575	Supply Chain Analytics	
BADM 576	Data Science and Analytics	
BADM 577	Predictive Data Analytics	
BADM 590	Seminar in Business Admin	
FIN 552	Applied Financial Econometrics	
FIN 553	Machine Learning in Finance	
FIN 555	Financial Innovation	
FIN 567	Financial Risk Management	
FIN 580	Special Topics in Finance	
ACCY 512	Data Analytics for Management Accounting	
ACCY 569	Data Driven Decisions in Accounting	
ACCY 570	Data Analytics Foundations for Accountancy	
ACCY 571	Statistical Analyses for Accountancy	
ACCY 575	Data Analytics Applications in Accountancy	
ACCY 576	Data Preparation for Accounting	
ACCY 577	Machine Learning for Accounting	
ACCY 593	Special Research Problems	
General Graduate Electives - Graduate General Electives - up to 8 hours of general graduate electives as needed to meet the minimum number of hours required.		**0 to 8**
General Graduate Electives		**0 to 4**
Total Hours		**36**

Other Requirements

Requirement	Description
Other requirements may overlap	
Minimum 500-level Hours Required Overall	12
Minimum GPA:	3.0
International students with TOEFL scores below 613 (paper-based), 257 (computer-based), or 103 (internet-based), or IELTS score below 7.0, are required to take the English Placement Test (EPT) when they arrive on campus. After taking the EPT, most students are required to take a Business English course sequence. For these students, completion of the ESL course sequence is mandatory but does not count towards the 36 hour degree requirement.	

EP Documentation

DMI Documentation

Banner/Codebook Name

MS:Business Analytics - UIUC

Program Code:

1PKS5964MS

Degree Code

MS

Major Code

5964

Program Reviewer Comments

Deb Forgacs (dforgacs) (Thu, 11 Mar 2021 21:27:35 GMT): Rollback: proposal title
Cele Otnes (cotnes) (Fri, 12 Mar 2021 15:41:31 GMT): Rollback: Lorena:There is much discussion going on between BA and BGP about the electives for this program. And now you have a new MSBA Director. I would like Vishal to discuss these changes with Carlos before approving them, as he will be the first BA Head who will be in place once the program launches. Thanks.
Allison McKinney (agrindly) (Wed, 24 Mar 2021 15:40:43 GMT): Administratively approved by the Graduate College.
Kathy Martensen (kmartens) (Wed, 24 Mar 2021 23:39:50 GMT): Administrative approval: No change to total hours required, does not restrict student options.

Key: 961

5468: CORPORATE GOVERNANCE & INTERNATIONAL BUSINESS - FLOATING

In Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. KM Grad Committee Chair (jloew@illinois.edu; wbe@illinois.edu)
3. KM Committee Chair (josephm@illinois.edu)
4. KM Dean (peecher@illinois.edu; mlschltz@illinois.edu)
5. University Librarian (jpwilkin@illinois.edu)
6. Grad_College (agrindly@illinois.edu; jch@illinois.edu; lowry@illinois.edu)
7. Provost (kmartens@illinois.edu)
8. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
9. Senate (jtempel@illinois.edu)
10. U Senate Conf (none)
11. Board of Trustees (none)
12. IBHE (none)
13. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Fri, 12 Mar 2021 15:18:39 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Wed, 17 Mar 2021 14:21:30 GMT
   Brooke Elliott (wbe): Approved for KM Grad Committee Chair
3. Mon, 22 Mar 2021 22:14:25 GMT
   Joseph Mahoney (josephm): Approved for KM Committee Chair
4. Mon, 22 Mar 2021 22:35:53 GMT
   Mark Peecher (peecher): Approved for KM Dean
5. Mon, 22 Mar 2021 22:45:09 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
6. Wed, 24 Mar 2021 15:41:08 GMT
   Allison McKinney (agrindly): Approved for Grad_College
7. Wed, 24 Mar 2021 23:41:40 GMT
   Kathy Martensen (kmartens): Approved for Provost

History

1. Aug 20, 2019 by Deb Forgacs (dforgacs)
2. Jan 9, 2020 by Deb Forgacs (dforgacs)

Date Submitted:Thu, 11 Mar 2021 21:31:04 GMT

Viewing:5468 : Corporate Governance & International Business - Floating

Changes proposed by: Lorena Nicholas

Proposal Type

Proposal Type:

Concentration (ex. Dietetics)

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*

Administrative approval: We are proposing to add the MS Management program to list of graduate programs in the College that are eligible to pursue this concentration.

EP Control Number

EP.100

Official Program Name

Corporate Governance & International Business - Floating

Effective Catalog Term

Fall 2021

Sponsor College

Gies College of Business

Sponsor Department

Gies BUS Admin

Sponsor Name

Jeffrey Loewenstein

Sponsor Email

jloew@illinois.edu

College Contact

Lorena Nicholas

College Contact Email

lorenan@illinois.edu

Program Description and Justification

Justification for proposal change:

This proposal is to add the MS Management program to the list of programs eligible to pursue this concentration. This will be consistent with other graduate programs in the College that offer this concentration to their students.

Is this program interdisciplinary?

No

Corresponding Program(s):

Corresponding Program(s)
Accountancy, MS (on campus online)
Accountancy, MAS
Business Administration, MBA (Full-Time)
Business Administration, MBA (part-time)
Business Administration, MS
Finance, MS
Management, MS (on-campus online)

Academic Level

Graduate

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

This revision will not negatively impact enrollment and the degrees awarded. By adding the MS Management program there may be an increase in the total number of students pursuing this concentration.

What is the typical time to completion of this program?

one year

What are the minimum Total Credit Hours required for this program?

12

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

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

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/ acknowledgement from faculty, students, and/or other impacted units as appropriate.

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.

There is no impact on faculty resources.

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.

There is no impact on library resources.

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

No

Financial Resources

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

No

Is this program requesting self-supporting status?

No

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).

This concentration and the courses required to complete it will be reviewed regularly as part of our AACSB accreditation process.

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.

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

Statement for Programs of Study Catalog

Code	Title	Hours
Select three of the following:		12
BADM 532	Sustainable Product Design & Enterprise Plan Development - I: Bottom-Up Immersion & Design	
BADM 582	Multinational Management	
BADM 583	Current Topics in Intl Bus	
BADM 584	Global Marketing	
BADM 586	Intl Comparative Management	
BADM 590	Seminar in Business Admin (US Corporate Governance)	
BADM 590	Seminar in Business Admin (Technology and Globalization)	
BADM 590	Seminar in Business Admin (Global Strategy)	
Total Hours		**12**

EP Documentation

DMI Documentation

Banner/Codebook Name

Corp Governance & Int Business

Program Code:

5468

Conc Code

5468

Program Reviewer Comments

Deb Forgacs (dforgacs) (Thu, 11 Mar 2021 21:21:42 GMT): Rollback: proposal title and justification.
Allison McKinney (agrindly) (Wed, 24 Mar 2021 15:41:05 GMT): Administratively approved by the Graduate College.
Kathy Martensen (kmartens) (Wed, 24 Mar 2021 23:41:36 GMT): Administrative approval: No change to total hours required, does not restrict student options.

Key: 839

5469: INFORMATION TECHNOLOGY & CONTROL - FLOATING

In Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. 1902 Committee Chair (mwolter@illinois.edu; jloew@illinois.edu; bfulton@illinois.edu)
3. 1902 Head (cotnes@illinois.edu)
4. KM Grad Committee Chair (jloew@illinois.edu; wbe@illinois.edu)
5. KM Committee Chair (josephm@illinois.edu)
6. KM Dean (peecher@illinois.edu; mlschltz@illinois.edu)
7. University Librarian (jpwilkin@illinois.edu)
8. Grad_College (agrindly@illinois.edu; jch@illinois.edu; lowry@illinois.edu)
9. Provost (kmartens@illinois.edu)
10. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
11. Senate (jtempel@illinois.edu)
12. U Senate Conf (none)
13. Board of Trustees (none)
14. IBHE (none)
15. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Tue, 16 Mar 2021 22:38:38 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Tue, 16 Mar 2021 22:40:12 GMT
   Jeffrey Loewenstein (jloew): Approved for 1902 Committee Chair
3. Tue, 16 Mar 2021 22:56:49 GMT
   Cele Otnes (cotnes): Approved for 1902 Head
4. Wed, 17 Mar 2021 14:21:33 GMT
   Brooke Elliott (wbe): Approved for KM Grad Committee Chair
5. Mon, 22 Mar 2021 22:14:27 GMT
   Joseph Mahoney (josephm): Approved for KM Committee Chair
6. Mon, 22 Mar 2021 22:35:56 GMT
   Mark Peecher (peecher): Approved for KM Dean
7. Mon, 22 Mar 2021 22:45:23 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
8. Wed, 24 Mar 2021 15:41:16 GMT
   Allison McKinney (agrindly): Approved for Grad_College
9. Wed, 24 Mar 2021 23:42:30 GMT
   Kathy Martensen (kmartens): Approved for Provost

History

1. Dec 27, 2018 by Deb Forgacs (dforgacs)
2. Jan 15, 2019 by Deb Forgacs (dforgacs)
3. Aug 8, 2019 by Deb Forgacs (dforgacs)
4. Jan 9, 2020 by Deb Forgacs (dforgacs)

Date Submitted:Tue, 16 Mar 2021 14:10:17 GMT

Viewing:5469 : Information Technology & Control - Floating

Changes proposed by: Lorena Nicholas

Proposal Type

Proposal Type:

Concentration (ex. Dietetics)

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*

Administrative approval: We are proposing an update to the Information Technology and Control concentration requirements. The proposal includes making two courses mandatory as a foundation. Students would then have three other courses to select from to meet the 12 hours required.

EP Control Number

EP.21.100

Official Program Name

Information Technology & Control - Floating

Effective Catalog Term

Fall 2021

Sponsor College

Gies College of Business

Sponsor Department

Business Administration

Sponsor Name

Jeffrey Loewenstein

Sponsor Email

jloew@illinois.edu

College Contact

Lorena Nicholas

College Contact Email

lorenan@illinois.edu

Program Description and Justification

Justification for proposal change:

The concentration is being updated to make previously optional selections mandatory as a foundation, as well as exchange a course no longer actively taught with a newer course that is. The emphasis on BADM 554 and 555 is due to those courses now being considered central and the other courses as extensions. The Social Media Strategy course has become well established and designed to extend the 554 and 555 classes.

While we generally prefer to increase flexibility, area faculty have updated the courses such that they are now better seen as foundation and extensions rather than of equal standing. Normally this would also be accompanied by designating some classes as pre-requisites to others. However, because these are graduate courses in 1-year programs, course schedules do not always make it feasible to allow such timing. Accordingly, the design of the concentration will serve to provide this structuring of what is foundational and what is an elective extension.

Is this program interdisciplinary?

No

Corresponding Program(s):

Corresponding Program(s)
Accountancy, MAS
Accountancy, MS (on campus online)
Business Administration, MBA (Full-Time)
Business Administration, MBA (part-time)
Finance, MS
Technology Management, MS

Academic Level

Graduate

Additional concentration notes (e.g., estimated enrollment, advising plans, etc.)

This revision will not impact enrollment or advising.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

This revision will not impact enrollment and degrees awarded.

What is the typical time to completion of this program?

2 semesters

What are the minimum Total Credit Hours required for this program?

12

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

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

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/ acknowledgement from faculty, students, and/or other impacted units as appropriate.

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.

This will not impact faculty resources.

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.

This will not impact library resources.

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 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?

See attached.

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

No

Is this program requesting self-supporting status?

No

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).

The courses for this concentration will be reviewed regularly as part of AACSB accreditation.

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

ITC concentration side by side for CIM.xlsx

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

Statement for Programs of Study Catalog

Code	Title	Hours
BADM 554	Enterprise Database Management	
BADM 555	Info Sys Development and Mgt	
BADM 556	Electronic Commerce	
Select from the following:		
BADM 557	Business Intelligence	
BADM 559	Enterprise IT Governance	

BADM 562	Social Media Strategy	
Total Hours		**12**

EP Documentation

DMI Documentation

Banner/Codebook Name

Information Technology and Control

Program Code:

5469

Conc Code

5469

Program Reviewer Comments

Deb Forgacs (dforgacs) (Thu, 11 Mar 2021 21:22:14 GMT): Rollback: proposal title.
Cele Otnes (cotnes) (Fri, 12 Mar 2021 15:42:02 GMT): Rollback: Lorena: Same reason for the rollback for all of these courses as mentioned for the first proposal. Thanks.
Allison McKinney (agrindly) (Wed, 24 Mar 2021 15:41:14 GMT): Administratively approved by the Graduate College.
Kathy Martensen (kmartens) (Wed, 24 Mar 2021 23:42:25 GMT): Administrative approval: No change to total hours required, does not restrict student options.

Key: 529

Current:			Proposed:	
BADM 554	Enterprise Database Management		BADM 554	Enterprise Database Management
BADM 555	Info Sys Development and Mgt		BADM 555	Info Sys Development and Mgt
BADM 556	Electronic Commerce			Select from the following:
BADM 557	Dec Support and Knowledge Mgt		BADM 557	Business Intelligence
BADM 559	Enterprise IT Governance		BADM 559	Enterprise IT Governance
			BADM 562	Social Media Strategy

RECEIVED BY SENATE
10/15/2018

EP.19.09
~~September 24, 2018~~
October 15. 2018

UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN SENATE
(Final; Information)

EP.19.09 Report of Administrative Approvals at the September 17, 2018 meeting of the EPC.

Graduate Programs

Graduate Concentration in Information Technology and Control – Add the part-time Master of Business Administration (PMBA) to the list of programs participating in the Graduate Concentration in Information Technology and Control offered by the Department of Business Administration. The concentration requirements would remain unchanged and would be the same for the PMBA as they are for all previously-approved programs that participate in the concentration.

Graduate Concentration in Accountancy – Add the part-time Master of Business Administration (PMBA) to the list of programs participating in the Graduate Concentration in Accountancy offered by the Department of Accountancy. The concentration requirements would remain unchanged and would be the same for the PMBA as they are for all previously-approved programs that participate in the concentration.

Ph.D. in Music Education – 1) Replace MUS 536, Soc-Cultur Inquiry Music Learn (4 hours) with MUS 543, Music Teacher Education (4 hours) as a specifically-required course and 2) Move MUS 536 to the list of Music Education Electives from which students are to select a total of 6 hours. This revision stems from the current faculty's revised goals for the program, which place emphasis on preparing students as educators of music teachers. It does not alter the total number of hours required for the degree.

Doctor of Musical Arts (DMA), Music Composition Concentration; Performance and Literature Concentration; and Vocal Coaching and Accompanying Concentration – In these three concentrations, add MUS 522, Special Topics Seminar (4 hours), to the list of Advanced Musicology courses from which students are to select 8 hours. There is no change to the total hours required for the concentrations or for the degree.

Master of Arts in Spanish, Concentration in Spanish Literatures and Cultures – Revise the "Other Requirements" to replace the requirement of completing three comprehensive exams with the requirement of submitting a research paper.

Current **-- Other Requirements**			***Proposed*** **-- Other Requirements**	
Requirement	**Description**		**Requirement**	**Description**
Other requirements may overlap			Other requirements may overlap	
A concentration is required			A concentration is required	
SPAN 571 is required of all teaching assistants			SPAN 571 is required of all teaching assistants	

Students must also complete three comprehensive exams on areas chosen in consultation with their advisors.			Students must also submit a research paper completed in consultation with their advisors.	
Minimum 500-level Hours Required Overall:	16		Minimum 500-level Hours Required Overall:	16
Minimum GPA:	3.0		Minimum GPA:	3.0

Undergraduate Programs

Bachelor of Science in Animal Sciences, all concentrations – Switch ANSC 306, Equine Science (3 hours) from the "Basic Science" list of courses from which students select 6 hours (all concentrations) to the "Applied Science" list of courses from which students select 6 hours in the Companion Animal and Equine Science Concentration and in the Science, Pre-Veterinary and Medical Concentration and 12 hours in the Food Animal Production and Management Concentration. In the Companion Animal and Equine Science Concentration, the course will remain in the specific course options where a student chooses one group (6 hours) from ANSC 206 and ANSC 306 or ANSC 250 and ANSC 307, and it will remain the case that the course cannot be used to meet more than one requirement.

This change does not alter the number of hours required for any of the concentrations or the total number of hours required for the degree.

~~**Undergraduate Minor in Business** – 1) Eliminate the currently required admission application. Requirements to officially declare the minor will be sophomore standing and completion and submission of the university's Minor Declaration Form. 2) Eliminate restrictions on courses that count toward the minor such that non-business major/minor students will be able to register. Non-business major students who wish to register for courses that are part of the Business Minor will be expected to enroll in online sections of these courses when online sections are available. 3) Revise the prerequisites for Business Minor core courses such that CS 105, Intro Computing: Non-Tech (3 hours), MATH 234, Calculus for Business I (4 hours), and STAT 100, Statistics (3 hours) will no longer be required but instead presented as *recommended* courses. Only ECON 102, Microeconomics (3 hours) remains a prerequisite to the core course FIN 221, Corporate Finance (3 hours). Other prerequisites do continue to apply to certain Business Minor elective courses. Documentation of notification of the Departments of Computer Science, Mathematics, and Statistics is attached.~~

~~None of these changes impact the total number of hours required for the minor.~~

The item struck through above has been submitted as EP.19.10.

5470: SUPPLY CHAIN MANAGEMENT - FLOATING

In Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. 1902 Committee Chair (mwolter@illinois.edu; jloew@illinois.edu; bfulton@illinois.edu)
3. 1902 Head (cotnes@illinois.edu)
4. KM Grad Committee Chair (jloew@illinois.edu; wbe@illinois.edu)
5. KM Committee Chair (josephm@illinois.edu)
6. KM Dean (peecher@illinois.edu; mlschltz@illinois.edu)
7. University Librarian (jpwilkin@illinois.edu)
8. Grad_College (agrindly@illinois.edu; jch@illinois.edu; lowry@illinois.edu)
9. Provost (kmartens@illinois.edu)
10. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
11. Senate (jtempel@illinois.edu)
12. U Senate Conf (none)
13. Board of Trustees (none)
14. IBHE (none)
15. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Tue, 16 Mar 2021 22:38:42 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Tue, 16 Mar 2021 22:40:15 GMT
   Jeffrey Loewenstein (jloew): Approved for 1902 Committee Chair
3. Tue, 16 Mar 2021 22:57:01 GMT
   Cele Otnes (cotnes): Approved for 1902 Head
4. Wed, 17 Mar 2021 14:21:36 GMT
   Brooke Elliott (wbe): Approved for KM Grad Committee Chair
5. Mon, 22 Mar 2021 22:14:30 GMT
   Joseph Mahoney (josephm): Approved for KM Committee Chair
6. Mon, 22 Mar 2021 22:35:58 GMT
   Mark Peecher (peecher): Approved for KM Dean
7. Mon, 22 Mar 2021 22:45:37 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
8. Wed, 24 Mar 2021 15:41:25 GMT
   Allison McKinney (agrindly): Approved for Grad_College
9. Wed, 24 Mar 2021 23:47:27 GMT
   Kathy Martensen (kmartens): Approved for Provost

History

1. Aug 8, 2019 by Deb Forgacs (dforgacs)
2. Jan 9, 2020 by Deb Forgacs (dforgacs)
3. Jun 10, 2020 by Deb Forgacs (dforgacs)

Date Submitted:Tue, 16 Mar 2021 14:11:05 GMT

Viewing:5470 : Supply Chain Management - Floating

Changes proposed by: Lorena Nicholas

Proposal Type

Proposal Type:

Concentration (ex. Dietetics)

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*

Administrative approval: Proposed course list update to the Supply Chain Management concentration The updated list reflects new course numbers for two courses and replacing a course that is no longer actively taught with a more relevant course.

EP Control Number

EP.21.100

Official Program Name

Supply Chain Management - Floating

Effective Catalog Term

Fall 2021

Sponsor College

Gies College of Business

Sponsor Department

Business Administration

Sponsor Name

Jeffrey Loewenstein

Sponsor Email

jloew@illinois.edu

College Contact

Lorena Nicholas

College Contact Email

lorenan@illinois.edu

Program Description and Justification

Justification for proposal change:

We are proposing a modest update to the supply chain management concentration based on course developments in the area. Two special topics courses now has their own course numbers, and so we are updating them. The planning and control systems course is no longer actively taught and instead supply chain analytics has become a reliably taught elective of interest.

Is this program interdisciplinary?

No

Corresponding Program(s):

Corresponding Program(s)
Accountancy, MAS
Business Administration, MBA (Full-Time)
Business Administration, MBA (part-time)
Business Administration, MS
Accountancy, MS (on campus online)
Technology Management, MS

Academic Level

Graduate

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

This should not impact enrollment or degrees awarded

What is the typical time to completion of this program?

2 semesters

What are the minimum Total Credit Hours required for this program?

12

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

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

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/ acknowledgement from faculty, students, and/or other impacted units as appropriate.

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.

This will not impact faculty resources.

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.

This will not impact library resources.

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

No

Financial Resources

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

No

Is this program requesting self-supporting status?

No

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).

This courses for the concentration will be reviewed regularly as part of our AACSB accreditation process.

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

Supply Chain Management concentration side by side March 1.xlsx

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

Statement for Programs of Study Catalog

Code	Title	Hours
BADM 566	Supply Chain Management	2-4
BADM 567	Process Management	2-4
Select from the following:		
BADM 568	Planning and Control Systems	
BADM 564	Business Process Improvement	
BADM 565	Strategic Sourcing	
BADM 575	Supply Chain Analytics	
BADM 589	Project Management	
BADM 590	Seminar in Business Admin (Section OM)	
BADM 590	Seminar in Business Admin (Section SS)	
Total Hours		**12**

EP Documentation

DMI Documentation

Banner/Codebook Name

Supply Chain Management

Program Code:

5470

Conc Code

5470

Program Reviewer Comments

Deb Forgacs (dforgacs) (Thu, 11 Mar 2021 21:20:46 GMT): Rollback: proposal title.
Cele Otnes (cotnes) (Fri, 12 Mar 2021 15:42:21 GMT): Rollback: Lorena -- same reason as before. Thanks.
Allison McKinney (agrindly) (Wed, 24 Mar 2021 15:41:22 GMT): Administratively approved by the Graduate College.
Kathy Martensen (kmartens) (Wed, 24 Mar 2021 23:47:25 GMT): Administrative approval: No change to total hours required, does not restrict student options.

Key: 852

Current			Proposed	
BADM 566	Supply Chain Management		BADM 566	Supply Chain Management
BADM 567	Process Management		BADM 567	Process Management
Select from the following			Select from the following	
			BADM 564	Business Process Improvement
			BADM 565	Strategic Sourcing
			BADM 575	Supply Chain Analytics
BADM 589	Project Management		BADM 589	Project Management
BADM 590	Seminar in BA (Section SS)			
BADM 590	Seminar in BA (Section OM)			
BADM 568	Planning and Control Systems			

5500: BUSINESS DATA ANALYTICS - FLOATING

Completed Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. 1902 Committee Chair (mwolter@illinois.edu; jloew@illinois.edu; bfulton@illinois.edu)
3. 1902 Head (cotnes@illinois.edu)
4. KM Grad Committee Chair (jloew@illinois.edu; wbe@illinois.edu)
5. KM Committee Chair (josephm@illinois.edu)
6. KM Dean (peecher@illinois.edu; mlschltz@illinois.edu)
7. University Librarian (jpwilkin@illinois.edu)
8. Grad_College (agrindly@illinois.edu; jch@illinois.edu; lowry@illinois.edu)
9. Provost (kmartens@illinois.edu)
10. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
11. Senate (jtempel@illinois.edu)
12. U Senate Conf (none)
13. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Wed, 25 Mar 2020 21:43:49 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Wed, 25 Mar 2020 21:45:08 GMT
   Jeffrey Loewenstein (jloew): Approved for 1902 Committee Chair
3. Wed, 25 Mar 2020 22:08:13 GMT
   Cele Otnes (cotnes): Approved for 1902 Head
4. Wed, 25 Mar 2020 22:11:47 GMT
   Jeffrey Loewenstein (jloew): Approved for KM Grad Committee Chair
5. Wed, 25 Mar 2020 22:15:15 GMT
   Michael Dyer (dyer1): Approved for KM Committee Chair
6. Wed, 25 Mar 2020 22:18:50 GMT
   Mark Peecher (peecher): Approved for KM Dean
7. Wed, 25 Mar 2020 22:29:19 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
8. Fri, 27 Mar 2020 19:58:36 GMT
   Allison McKinney (agrindly): Approved for Grad_College
9. Fri, 27 Mar 2020 20:22:44 GMT
   Kathy Martensen (kmartens): Approved for Provost
10. Tue, 31 Mar 2020 16:23:14 GMT
    Barbara Lehman (bjlehman): Approved for Senate EPC
11. Tue, 21 Apr 2020 19:07:43 GMT
    Jennifer Roether (jtempel): Approved for Senate
12. Fri, 01 May 2020 20:37:25 GMT
    Kathy Martensen (kmartens): Approved for U Senate Conf
13. Fri, 12 Jun 2020 16:27:14 GMT
    Emily Stuby (eastuby): Approved for DMI

History

1. Aug 7, 2019 by Deb Forgacs (dforgacs)
2. Jun 12, 2020 by Lorena Nicholas (lorenan)

Date Submitted:Tue, 16 Mar 2021 14:11:22 GMT

Viewing:5500 : Business Data Analytics - Floating

Changes proposed by: Lorena Nicholas

Proposal Type

Proposal Type:

Concentration (ex. Dietetics)

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*

Administrative approval: We are proposing a change to the required courses for the Business Data Analytics concentration. The proposed new required courses are the three required courses for MS Business Analytics program - this change will provide consistency for students pursuing the concentration option and those pursuing the full degree.

EP Control Number

EP.21.100

Official Program Name

Business Data Analytics - Floating

Effective Catalog Term

Fall 2021

Sponsor College

Gies College of Business

Sponsor Department

Business Administration

Sponsor Name

Jeffrey Loewenstein, Associate Dean of Graduate Education

Sponsor Email

jloew@illinois.edu

College Contact

Lorena Nicholas

College Contact Email

lorenan@illinois.edu

Program Description and Justification

Justification for proposal change:

Since the approval of the MS Business Analytics program, faculty have made extensive efforts to enhance and interrelate the three foundational courses for the program, BADM 554, FIN 510, and BDI 513. Given all the investments in these courses being made now and committed to for the future, making this set of three foundational courses not only the starting point for the MS Business Analytics degree but also the analytics concentration for those in other MS programs allows more students to benefit from these course improvements and strengthened foundation. It allows the concentration to be a college offering, consistent with college-wide engagement with analytics. Committing to these courses enables us to offer sections of all three courses fall and spring semester, improving course planning for students. It brings greater clarity as to what the foundational courses are and what the concentration means in terms of student understanding and skill development.

This change will reduce student flexibility for attaining the concentration. We do intend to continue offering nearly all of the currently listed courses as elective options, so this change is not eliminating a collection of courses students might take. Instead, faculty have revisited the courses and adjusted their content based on what they think is foundational and what they think are extensions. The change is to make the foundational courses the concentration and reserve the others as extensions. Focusing the concentration on the three courses will also make it easier for students to complete the concentration because each course will be offered more frequently. It will also provide greater clarity on what the concentration is and provides.

Is this program interdisciplinary?

No

Corresponding Program(s):

Corresponding Program(s)
Business Administration, MBA (Full-Time)
Business Administration, MBA (part-time)
Business Administration, MS
Management, MS (on-campus online)
Technology Management, MS

Academic Level

Graduate

Additional concentration notes (e.g., estimated enrollment, advising plans, etc.)

This proposed change will allow the students more flexibility in selecting courses to meet the requirements of the Business Data Analytics concentration.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

We anticipate the same number of students earning this concentration.

What is the typical time to completion of this program?

one academic year

What are the minimum Total Credit Hours required for this program?

36

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

There are no additional budgetary needs for making these changes to the concentration.

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

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/ acknowledgement from faculty, students, and/or other impacted units as appropriate.

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.

There should be no impact on teaching load for faculty, these courses are already offered as electives for graduate programs in the College.

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.

There should be no impact on library resources from making these changes to the concentration.

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 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?

The classes are already offered and supported by existing faculty; advising is also already supported by staff in the graduate programs office.

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

No

Is this program requesting self-supporting status?

No

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).

The courses for this concentration will be reviewed as part of the overall graduate programs annual review of learning outcomes and AACSB reporting.

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

BDA Concentration Proposed changes for program of study.docx
Side by Side Business Data Analytics.docx
BDA Concentration side by side March 1.xlsx

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.

Business Data Analytics Concentration
for the Graduate Concentration in Business Data Analytics

The concentration in Business Data Analytics is designed to develop managers who understand how to leverage data to innovate and make decisions.

The concentration is open to students enrolled in
Management, MS,
Technology Management, MS,
Business Administration, MS
Business Administration, MBA (full-time)
Business Administration, MBA (part-time)

This concentration requires twelve graduate hours of Business Data Analytics coursework. Successful completion of the concentration assumes certain knowledge of business and prior coursework.
Admission to the concentration requires a Graduate Student Request Form submitted to the Department and Graduate College and enrollment in a Gies College of Business graduate program or other graduate approved for the concentration. Admission is limited, and acceptance is considered based on a student's academic standing and space availability.

Statement for Programs of Study Catalog

Code	Title	Hours
Business Data Analytics Courses		**12**
Choose 12 hours from:		
BADM 554	Enterprise Database Management	4
BADM 557	Business Intelligence	
BADM 562	Social Media Strategy	
BADM 571	Digital Business & IT Strategy	
BADM 573	Decision Analytics	
BADM 575	Supply Chain Analytics	
BADM 577	Predictive Data Analytics	
Course substitutions may be approved by the Department of Business Administration.		
FIN 510	Big Data Analytics in Finance for Predictive and Causal Analysis	4
BDI 513	Data Storytelling	4

Other Requirements

Requirement	Description
Minimum 500-level Hours Required Overall	4
Minimum GPA	2.75

EP Documentation

DMI Documentation

Banner/Codebook Name

Business Data Analytics

Program Code:

5500

Conc Code

5500

Program Reviewer Comments

Deb Forgacs (dforgacs) (Thu, 11 Mar 2021 21:26:29 GMT): Rollback: proposal title
Cele Otnes (cotnes) (Fri, 12 Mar 2021 15:42:40 GMT): Rollback: Lorena: Same reason as before. Thanks.
Allison McKinney (agrindly) (Wed, 24 Mar 2021 15:41:32 GMT): Administratively approved by the Graduate College.
Kathy Martensen (kmartens) (Wed, 24 Mar 2021 23:48:17 GMT): Administrative approval: No change to total hours required, does not restrict student options.

Key: 785

Current			Proposed	
BADM 554	Enterprise Database Management		BADM 554	Enterprise Database Management
BADM 557	Dec Support & Knowledge Mgt			
BADM 562	Social Media Strategy			
BADM 571	Digital Business & IT Strategy			
BADM 573	Decision Analytics			
BADM 575	Supply Chain Analytics			
BADM 577	Predictive Data Analytics			
			FIN 510	Big Data Analytics
			BDI 513	Data Storytelling

Proposal: Business Data Analytics Concentration (EP 20.146.)

Proposed Changes and Justification:
We are proposing to update the list of classes offered to meet the concentration requirements and increase flexibility for students in how they attain the concentration. Students will still need to complete 12 credit hours and the courses must still be approved by the Business Administration Department.

Commented [LJ1]: I don't understand this part. I must be missing something!

The current Business Data Analytics Concentration requires students to enroll in one course in each of three areas of analytics (Customer, Operation and Supply Chain, and Information Systems). The approach to dividing classes into three areas has been confusing and restrictive for students pursing this concentration. It is also limiting now that we have analytics classes in other areas beyond these three. Thus, we are proposing to eliminate the areas and just offer a list of approved courses for earning this concentration.

Current vs. Proposed Comparison

Current Concentration	Proposed Concentration (**changes in bold**)
This concentration is optional for these programs: Business Administration, MBA Business Administration, MS Technology Management, MS	This concentration is optional for these programs: Business Administration, MBA Business Administration, MS Technology Management, MS **Management, MS**
The concentration in Business Data Analytics is designed to develop leaders in various business fields who understand (1) how to leverage data to identify new customer segments and market; (2) how to optimize the supply chain and logistics; and (3) how to collect, manipulate, and visualize data for business decisions. The concentration will develop skills using data as a foundation for sound decision making in business.	The concentration in Business Data Analytics is designed to develop **managers who understand how to leverage data to innovate and make decisions.**
This concentration requires twelve graduate hours of Business Data Analytics related coursework and completion of an analytics-related project in their Practicum or an equivalent course. Successful completion of the concentration assumes certain knowledge of business and prior coursework.	This concentration requires twelve graduate hours of Business Data Analytics **coursework**. Successful completion of the concentration assumes certain knowledge of business and prior coursework. **Admission to the concentration requires a Graduate Student Request Form submitted to the Department and Graduate College and admission to one of the programs approved for the concentration**. **Admission is limited, and acceptance is considered based on a student's academic standing and space availability.**
Required hours: 12	Required hours: 12

Program of Study

Current

Code	Title	Hours
Select four hours of course work from each of the three areas below:		**12**
1. Customer		
BADM 590	Consumer Analytics	
BADM 590	Social Media Analytics	
2. Operation and Supply Chain		
BADM 590	Predictive Data Analytics	
BADM 590	Business Process Improvement	
3. Information Systems		
BADM 554	Enterprise Database Management	
BADM 557	Dec Support and Knowledge Mgt	
BADM 590	Data and Visual Analytics	
In addition, students pursuing this concentration will be required to select an analytics-related project in their Practicum or an equivalent course.		

Proposed

Code	Title	Hours
Chose any combination of courses below that total 12 hours		**12**
BADM 554	Enterprise Database Management	
BADM 557	Decision Support and Knowledge Management	
BADM 562	Social Media Strategy	
BADM 571	Digital Business and IT Strategy	
BADM 573	Decision Analytics	
BADM 575	Supply Chain Analytics	
BADM 577	Predictive Data Analytics	

Course substitutions may be approved by the Department of Business Administration.

Current			Proposed		
Code - Title		**Hours**	**Code**	**Title**	**Hours**
Select four hours of course work from each of the three areas below:		**12**	**Chose any combination of courses below that total 12 hours**		**12**
1. Customer			BADM 554	Enterprise Database Management	
BADM 590 Consumer Analytics			BADM 557	Decision Support and Knowledge Management	
BADM 590 Social Media Analytics			BADM 562	Social Media Strategy	
2. Operation and Supply Chain			BADM 571	Digital Business and IT Strategy	
BADM 590 Predictive Data Analytics			BADM 573	Decision Analytics	
BADM 590 Business Process Improvement			BADM 575	Supply Chain Analytics	
3. Information Systems			BADM 577	Predictive Data Analytics	
BADM 554	Enterprise Database Management		*Course substitutions may be approved by the Department of Business Administration.*		
BADM 557	Dec Support and Knowledge Mgt				
BADM 590	Data and Visual Analytics				
In addition, students pursuing this concentration will be required to select an analytics-related project in their Practicum or an equivalent course.					