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Date Submitted: 12/20/21 10:52 am

# Viewing: 10KP0115BS : Electrical

Electrical Engineering, BS

# **Engineering**, **BS**

Last approved: 11/17/21 11:52 am Last edit: 02/15/22 10:34 am

Changes proposed by: Erhan Kudeki

Catalog Pages Using this Program

Proposal Type:

### In Workflow

- 1. U Program Review
- 2. 1933 Head
- 3. KP Committee Chair
- 4. KP Dean
- 5. University Librarian
- 6. Provost
- 7. Senate EPC
- 8. Senate
- 9. U Senate Conf
- 10. Board of Trustees
- 11. IBHE
- 12. HLC
- 13. DMI

# Approval Path

- 01/05/22 2:35 pm Deb Forgacs (dforgacs): Approved for U Program Review
- 2. 01/05/22 4:56 pm Erhan Kudeki (erhan): Approved for 1933 Head
- 3. 02/03/22 11:39 am Brooke Newell (bsnewell): Approved for KP Committee Chair
- 4. 02/03/22 11:47
  am
  Candy Deaville
  (candyd):
  Approved for KP
  Dean
- 5. 02/03/22 11:54 am John Wilkin

(jpwilkin): Approved for University Librarian 6. 02/03/22 4:15 pm 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)
- 6. Apr 19, 2021 by Erhan Kudeki (erhan)
- 7. Nov 17, 2021 by Erhan Kudeki (erhan)

Major (ex. Special Education)

This proposal is for a: Revision

# Administration Details

Official Program Name	Electrical Engineering, BS
Sponsor College	Grainger College of Engineering
Sponsor Department	Electrical and Computer Engineering

Sponsor Name	Erhan Kudeki	
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jmakela@illinois.ed	<u>u</u> <del>bsnewell@illinois.edu</del>	
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List the role for rollb	acks (which role will edit the proposal on que	stions from EPC, e.g., Dept

List the role for rollbacks (which role will edit the proposal on questions from EPC, e.g., Dept Head or Initiator) and/or any additional stakeholders. *Purpose: List here who will do the editing work if proposal needs rolled back. And any other stakeholders.* 

Brooke Newell, Erhan Kudeki

Does this program have inter-departmental administration?

No

## Proposal Title

Effective Catalog Fall 2022

Term

Provide a brief, concise description (not justification) of your proposal.

Removed Liberal Education Electives (6 hours), updated number of free elective hours (from 12 to 16), moved footnotes (when possible) into the Program of Study Table (to improve accessibility), updated number of technical elective hours (from 30 to 31), and added 5 new technical electives.

List here any related proposals/revisions and their keys. *Example: This BS proposal (key 567) is related to the Concentration A proposal (key 145) and the Concentration B proposal (key 203).* 

**Program Justification** 

#### Why are these changes necessary?

After careful analysis of programs of studies, various requirements, and course selection for students in The Grainger College of Engineering, we have decided to provide additional flexibility to all engineering undergraduate students by increasing the number of free elective hours in all engineering programs. While the actual number of credit hours for free electives varies by program, within the college - 8 programs currently provide only 6 credit hours for free electives while an additional 2 have less than 10 - only 4 programs have more than 10 free elective credits. This lack of free elective credit hours limits students' abilities to efficiently pursue minors, certificates, and other educational opportunities and potentially limits those opportunities only to students coming in with significant AP credit or similar.

The additional free elective credit hours added to the program of study are obtained through the removal of The Grainger College of Engineering's Liberal Education requirement, which required engineering students to take an additional 6 credit hours above-and-beyond the campus' General Education requirement from the Humanities & the Arts, Social & Behavioral Sciences, or a college-curated list of courses. Over time, the Liberal Education requirement has been revised within the college, successively relaxing restrictions and providing additional choice to students (i.e., removal of a sequencing requirement in 1999; addition of the college-curated course list in 2010). Simultaneously, the college-curated list of courses continued to expand to include courses from approximately 120 rubrics across campus (including within The Grainger College of Engineering), gradually removing constraints to allow greater flexibility of choice for students to take advantage of the many opportunities the campus has to offer. Still, in its current form, this additional college-level requirement constrains student choice and interferes with their ability to efficiently pursue minors, certificates, and other educational opportunities across campus unless those opportunities intersect with coursework in the Liberal Education requirement.

Simultaneously, the required engineering orientation course, ENG 100, will be granted 1-credit hour. Previously, this course was a 0-credit course. The allocation of 1-credit appropriately recognizes the time and commitment expected of all students who take this course. In the 1-credit version of ENG 100, content will be added to improve teamwork and interpersonal skills, including topics related to diversity, equity, and inclusion (DEI). The engineering accrediting agency, ABET, will soon be adding DEI requirements for accredited programs. This component of ENG 100 is therefore beneficial to all Grainger Engineering programs and students by providing a common framework on which additional DEI topics can build throughout a student's program of study.

After allocating the 6 hours made available by the removal of the Liberal Education requirement to 1 hour of ENG 100 and 4 additional hours of Free Electives within ECE curricula (EE and CE) the remaining one hour is being added to the Technical Electives category in both EE and CE. This change is justified as follows: Earlier in the year 1 hour of Technical Electives was removed from the EE curriculum (see Apr 19, 2021 proposal) to be used for MATH 257 which was being added to both of EE and CE programs as a required core course. This choice, reducing Technical Elective hours instead of Free Elective hours, was made to protect the breadth of the Free Elective

option. With most recent addition of 4 new Free Elective hours being requested here, a concern with reduced Free Elective hours is no longer relevant and thus restoring the count of Technical Electives in the EE program back to 31 is well justified. Also raising the number of Technical Elective hours from 29 to 30 in the CE program is desirable to retain the balance between EE and CE close in terms of the required Technical elective hours.

Finally 5 new technical elective courses were added in Graduation Requirements section --- these are new courses which were recently reviewed and added to the departmentally approved list of technical electives.

### 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

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

The current Liberal Education requirement is satisfied by a student completing 6 credit hours beyond those required by campus' General Education requirement from Humanities & the Arts, Social & Behavioral Sciences, or a college-curated list of courses (containing courses from over 120 rubrics across campus). An analysis of student course selection in the Liberal Education category indicates 25% of courses are taken in the College of Liberal Arts & Sciences, 20% from the College of Applied Health Sciences, 18% from Gies College of Business, 11% from the College of Agricultural, Consumer and Environmental Sciences, 11% from the College of Fine and Applied Arts, and 9% from The Grainger College of Engineering. Less than 2% of credits are taken in each of the remaining colleges and units across campus.

Although it might stand to reason that removal of the Liberal Education requirement would reduce the amount of credits Grainger Engineering students take outside of their home college, the data do not support that assertion. Specifically, despite the current Liberal Education requirement being set at 6 credit hours, the average number of credit hours completed from the Liberal Education course list upon graduation is 11.9. Through discussions with departmental and college advisors as well as students, students are making course selections not because the course satisfies the Liberal Education requirement, but because they are interested in the coursework offered outside of their home college, are pursing minors and other educational opportunities, and are looking to balance course loads between technical and non- technical courses. Taken together, the data and evidence from advisors and students suggest that students will continue to take the types of courses represented on the Liberal Education course list, even if not specifically required to do so.

Attach letters of<br/>support or<br/>acknowledgementLetters of Acknowledgement - Liberal Education Electives.pdffrom other<br/>departments.

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.

# 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 <u>EE BS bsn.xlsx</u>

No

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 - Overview Tab

Text for Overview tab on the Catalog Page. This is not official content, it is used to help build the new catalog page 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: 2.0

TGPA is required for ECE courses (except <u>ECE 316)</u>. <u>ECE 316</u>. See <u>Technical GPA</u> to clarify requirements.

Minimum Overall GPA: 2.0

# Minimum hours required for graduation: 128 hours

General education: Students must complete the Campus General Education requirements including the campus general education language requirement. Specific Advanced Composition courses required for this degree are listedbelow. ECE 445 or combination of ECE 496 & ECE 499 satisfies a technical core requirement Orientation and the Campus General Education Advanced Composition requirement.

# **Orientation Professional DevelopmentFoundational Mathematics** and Professional Development

	Course List	
Code Tit	le	Hours
<u>ENG 100</u> Gr	ainger Engineering Orientation Seminar (External transfer students take ENG 300	1
ins	tead.)	
Total Hours		1
<b>Founda</b>	tional Mathematics and Science	
	Course List	
Code	Title	Hours
<u>CHEM 102</u>	General Chemistry I	3
<u>CHEM 103</u>	General Chemistry Lab I	1
<u>MATH 221</u>	Calculus I (MATH 220 may be substituted. MATH 220 is appropriate for students v	with no 4
	background in calculus. 4 of 5 credit hours count towards degree.)	
<u>MATH 231</u>	Calculus II	3
<u>MATH 241</u>	Calculus III	4
<u>MATH 257</u>	Linear Algebra with Computational Applications	3
or <u>MATH 41</u>	<u>6</u> Abstract Linear Algebra	
<u>MATH 285</u>	Intro Differential Equations	3
<u>PHYS 211</u>	University Physics: Mechanics	4
<u>PHYS 212</u>	University Physics: Elec & Mag	4
<u>PHYS 213</u>	Univ Physics: Thermal Physics	2
<u>PHYS 214</u>	Univ Physics: Quantum Physics	2
Total Hours		33
Electric	al Engineering Technical Core	
	Course List	
Code Titl	e	Hours
<u>ECE 110</u> Int	ECE 110 Introduction to Electronics 3	
ECE 120 Introduction to Computing 4		4
ECE 220 Cor	ECE 220 Computer Systems & Programming 4	

ECE 210 Analog Signal Processing

ECE 313Probability with Engrg Applic (STAT 410 may be substituted.) 3 ECE 329 Fields and Waves I

ECE 340 Semiconductor Electronics

4

Code Title		Hours
ECE 385 Digita	al Systems Laboratory	3
ECE 445Senic	or Design Project Lab (Combination of <u>ECE 496</u> and <u>ECE 499</u> may be substituted.)	4
Total Hours		31
Technica	l Electives	
	Course List	
Code	Title	Hours
From Departm	entally Approved List of Technical Electives, to include:at least 6 hours of non-EC	<del>E 30</del>
electives, at le	east 20 hours of ECE electives, at least 3 Advanced Core Electives, at least 3 ECE	<del>Labs,</del>
where at least	one must be a Hardware Lab	
From Departm	entally Approved List of Technical Electives, to include:at least 6 hours of non-EC	<u>E 31</u>
<u>electives, at le</u>	east 21 hours of ECE electives, at least 3 Advanced Core Electives, at least 3 ECE	<u>Labs,</u>
where at least	one must be a Hardware Lab	
Non-ECE cours	ses from list below:	6
<u>AE 202</u>	Aerospace Flight Mechanics	3
<u>AE 302</u>	Aerospace Flight Mechanics II	3
<u>AE 311</u>	Incompressible Flow	3
<u>AE 312</u>	Compressible Flow	3
<u>AE 321</u>	Mechs of Aerospace Structures	3
<u>AE 352</u>	Aerospace Dynamical Systems	3
<u>AE 353</u>	Aerospace Control Systems	3
<u>AE 402</u>	Orbital Mechanics	3 or 4
<u>AE 403</u>	Spacecraft Attitude Control	3 or 4
<u>AE 410</u>	Computational Aerodynamics	3 or 4
<u>AE 412</u>	Viscous Flow & Heat Transfer	4
<u>AE 416</u>	Applied Aerodynamics	3 or 4
<u>AE 419</u>	Aircraft Flight Mechanics	3 or 4
<u>AE 420</u>	Finite Element Analysis	3 or 4
<u>AE 428</u>	Mechanics of Composites	3
<u>AE 433</u>	Aerospace Propulsion	3 or 4
<u>AE 434</u>	Rocket Propulsion	3 or 4
<u>AE 435</u>	Electric Propulsion	3 or 4
<u>AE 451</u>	Aeroelasticity	3 or 4
<u>AE 460</u>	Aerodynamics & Propulsion Lab	2
Ag and Bio En	g All 300 and 400 level courses except <u>ABE 440</u> . Except seminars and special to	opics
courses, which	n may be reviewed in the Advising Office	
<u>ASTR 210</u>	Introduction to Astrophysics	3
<u>ASTR 310</u>	Computing in Astronomy	3
<u>ASTR 330</u>	Extraterrestrial Life	3
<u>ASTR 350</u>	The Big Bang, Black Holes, and the End of the Universe	3
<u>ASTR 404</u>	Stellar Astrophysics	3
<u>ASTR 405</u>	Planetary Systems	3
<u>ASTR 406</u>	Galaxies and the Universe	3
<u>ASTR 414</u>	Astronomical Techniques	4
<u>ASTR 450</u>	Astrochemistry	4
<u>ATMS 201</u>	General Physical Meteorology	3
<u>ATMS 301</u>	Atmospheric Thermodynamics	3
<u>ATMS 302</u>	Atmospheric Dynamics I	3

Code	Title	Hours
<u>ATMS 303</u>	Synoptic-Dynamic Wea Analysis	4
<u>ATMS 304</u>	Radiative Transfer-Remote Sens	3
<u>ATMS 305</u>	Computing and Data Analysis	3
<u>ATMS 404</u>	Risk Analysis in Earth Science	3 or 4
<u>ATMS 405</u>	Boundary Layer Processes	4
<u>ATMS 406</u>	Tropical Meteorology	4
<u>ATMS 410</u>	Radar Remote Sensing	4
<u>ATMS 411</u>	Satellite Remote Sensing	4
<u>ATMS 420</u>	Atmospheric Chemistry	4
<u>ATMS 421</u>	Earth Systems Modeling	4
<u>ATMS 447</u>	Climate Change Assessment	3
<u>ATMS 449</u>	Biogeochemical Cycles	4
<u>BIOC 406</u>	Gene Expression & Regulation	3
<u>BIOC 440</u>	Physical Chemistry Principles	4
<u>BIOC 446</u>	Physical Biochemistry	3
<u>BIOC 455</u>	Technqs Biochem & Biotech	4
<u>BIOE 201</u>	Conservation Principles Bioeng	3
<u>BIOE 202</u>	Cell & Tissue Engineering Lab	2
<u>BIOE 302</u>	Modeling Human Physiology	3
<u>BIOE 414</u>	Biomedical Instrumentation	3
<u>BIOE 415</u>	Biomedical Instrumentation Lab	2
<u>BIOE 461</u>	Cellular Biomechanics	4
<u>BIOE 467</u>	Biophotonics	3
<u>BIOE 476</u>	Tissue Engineering	3
<u>BIOE 480</u>	Magnetic Resonance Imaging	3 or 4
<u>BIOE 485</u>	Computational Mathematics for Machine Learning and Imaging	4
Biophysics (BI	OP): All 400 level courses except seminars and special topics courses, which may be	
reviewed in th	e Advising Office.	
<u>CHBE 221</u>	Principles of CHE	3
<u>CHBE 321</u>	Thermodynamics	4
<u>CHBE 421</u>	Momentum and Heat Transfer	4
<u>CHBE 422</u>	Mass Transfer Operations	4
<u>CHBE 424</u>	Chemical Reaction Engineering	3
<u>CHBE 430</u>	Unit Operations Laboratory	4
<u>CHBE 431</u>	Process Design	4
<u>CHBE 440</u>	Process Control and Dynamics	3
<u>CHBE 451</u>	Transport Phenomena	3
<u>CHBE 452</u>	Chemical Kinetics & Catalysis	3
<u>CHBE 453</u>	Electrochemical Engineering	2 or 3
<u>CHBE 456</u>	Polymer Science & Engineering	3
<u>CHBE 457</u>	Microelectronics Processing	3
<u>CHBE 471</u>	Biochemical Engineering	3 or 4
<u>CHBE 472</u>	Techniques in Biomolecular Eng	3 or 4
<u>CHBE 473</u>	Biomolecular Engineering	3 or 4
<u>CHBE 474</u>	Metabolic Engineering	3 or 4
<u>CHEM 104</u>	General Chemistry II	3
<u>CHEM 105</u>	General Chemistry Lab II	1

Code	Title	Hours
Chemistry (CF	IEM): 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.	
<u>CEE 310</u>	Transportation Engineering	3
<u>CEE 330</u>	Environmental Engineering	3
<u>CEE 408</u>	Railroad Transportation Engrg	3 or 4
<u>CEE 410</u>	Railway Signaling & Control	3 or 4
<u>CEE 416</u>	Traffic Capacity Analysis	3 or 4
<u>CEE 430</u>	Ecological Quality Engineering	2
<u>CEE 447</u>	Atmospheric Chemistry	4
<u>CEE 491</u>	Decision and Risk Analysis	3 or 4
<u>CPSC 265</u>	Genetic Engineering Lab	3
<u>CS 101</u>	Intro Computing: Engrg & Sci (By Approval)	3
<u>CS 173</u>	Discrete Structures	3
<u>CS 225</u>	Data Structures	4
<u>CS 242</u>	Programming Studio	3
<u>CS 357</u>	Numerical Methods I	3
<u>CS 410</u>	Text Information Systems	3 or 4
<u>CS 411</u>	Database Systems	3 or 4
<u>CS 412</u>	Introduction to Data Mining	3 or 4
<u>CS 413</u>	Intro to Combinatorics	3 or 4
<u>CS 414</u>	Multimedia Systems	3 or 4
<u>CS 416</u>	Data Visualization	3 or 4
<u>CS 418</u>	Interactive Computer Graphics	3 or 4
<u>CS 419</u>	Production Computer Graphics	3 or 4
<u>CS 420</u>	Parallel Progrmg: Sci & Engrg	3 or 4
<u>CS 421</u>	Programming Languages & Compilers	3 or 4
<u>CS 422</u>	Programming Language Design	3 or 4
<u>CS 423</u>	Operating Systems Design	3 or 4
<u>CS 424</u>	Real-Time Systems	3 or 4
<u>CS 425</u>	Distributed Systems	3 or 4
<u>CS 426</u>	Compiler Construction	3 or 4
<u>CS 427</u>	Software Engineering I	3 or 4
<u>CS 428</u>	Software Engineering II	3 or 4
<u>CS 429</u>	Software Engineering II, ACP	3
<u>CS 431</u>	Embedded Systems	3 or 4
<u>CS 433</u>	Computer System Organization	3 or 4
<u>CS 434</u>	Mobile Computing & Application	<u>3 or 4</u>
<u>CS 435</u>	Cloud Networking	3 or 4
<u>CS 436</u>	Computer Networking Laboratory	3 or 4
<u>CS 437</u>	Topics in Internet of Things	<u>3 or 4</u>
<u>CS 438</u>	Communication Networks	3 or 4
<u>CS 439</u>	Wireless Networks	3 or 4
<u>CS 440</u>	Artificial Intelligence	3 or 4
<u>CS 441</u>	Applied Machine Learning	3 or 4
CS 444	Deep Learning for Computer Vision	<u>3 or</u> 4
<u>CS 445</u>	Computational Photography	3 or 4
<u>CS 446</u>	Machine Learning	3 or 4
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CS 447Natural Language Processing3 or 4CS 450Numerical Analysis3 or 4CS 461Security Laboratory3 or 4CS 463Computer Security I4CS 464User Interface Design4CS 465User Interface Design3 or 4CS 466Introduction to Bioinformatics3 or 4CS 467Social Visualization3 or 4CS 472Algorithms4CS 475Formal Models of Computation3 or 4CS 475Formal Models of Computation3 or 4CS 476Forgan Verification3 or 4CS 477Forgan Verification3 or 4CS 478Special Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 484Parallel Forganaming3 or 4CS 485Special Topics (As Approved)1 to 4ECE 302Individual Study1ECE 304Photonic Devices3ECE 310Digital Signal Processing Lab1ECE 310Digital Signal Processing Lab3ECE 311Digital Signal Processing Lab3ECE 322Individual Study in Engineering3ECE 323Green Electric Energy3ECE 324Electronic Circuits3ECE 325Data Science and Engineering3ECE 326Data Science and Engineering3ECE 327Individual Study in ECE3ECE 328Advanced Digital Processing3ECE 3	Code	Title	Hours
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Security Laboratory3 or 4CS 461Computer Security II4CS 463Computer Security II3 or 4CS 465User Interface Design4CS 465Introduction to Bioinformatics3 or 4CS 475Fornal Models of Computation3 or 4CS 472Algorithms4CS 473Algorithms3 or 4CS 474Formal Models of Computation3 or 4CS 472Formal Software Development Methods3 or 4CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 489Special Topics (As Approved)1 to 4CE 202Individual Study1ECE 304Photonic Devices3ECE 305Digital Signal Processing Lab1ECE 304Probability in Engineering Lab1ECE 305Deve Ckts & Electromic Active Engregications3ECE 304Probability in Engineering Lab3ECE 305Data Science and Engineering3ECE 304Electronic Circuits3ECE 305Data Science and Engineering3ECE 304Electronic Circuits & Electronic Circuits3ECE 305Data Science and Engineering3ECE 305Data Science and Engineering3ECE 304Electronic Circuits & Models of Computation4ECE 305Data Science and Engineering3ECE 305Data Science and Engineering3ECE 305Da	<u>CS 450</u>	Numerical Analysis	3 or 4
CS 461Computer Security I4CS 465Computer Security II3 or 4CS 465User Interface Design4CS 465Introduction to Bioinformatics3 or 4CS 465Social Visualization3 or 4CS 475Formal Models of Computation3 or 4CS 475Formal Models of Computation3 or 4CS 475Formal Software Development Methods3 or 4CS 478Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 485Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4CS 298Special Topics (As Approved)1 to 4CS 291Individual Study1CE 302Techniques for Engrg Decisions3CE 303Techniques for Engrg Decisions3CE 310Digital Signal Processing Lab1CE 331Power Ckts & Electromechanics3CE 332Green Electric Energy3CE 333Green Electric Energy3CE 342Electronic Circuits3CE 343Electronic Circuits3CE 344Ponotel Sudy Stopels of Computers3CE 345Data Science and Engineering4CE 345Data Science and Engineering4CE 345Data Science and Engineering3CE 345Data Science and Engineering3CE 345Data Science and Engineering3CE 345Biomedical	<u>CS 460</u>	Security Laboratory	3 or 4
CS 463Computer Security II3 or 4CS 465User Interface Design4CS 466Introduction to Bioinformatics3 or 4CS 467Social Visualization3 or 4CS 472Algarithms4CS 475Formal Models of Computation3 or 4CS 475Program Verification3 or 4CS 472Formal Software Development Methods3 or 4CS 471Formal Software Development Methods3 or 4CS 484Parallel Programming3 or 4CS 485Special Topics (As Approved)1 to 4CS 297Individual Study1CC 304Photonic Devices3CC 301Digital Signal Processing3CC 311Digital Signal Processing3CC 312Probability in Engineering Lab1CC 303Green Electronic Circuits3CC 304Flectonic Circuits Laboratory1CC 305Fields and Waves II3CC 305Fields and Waves II3CC 305Advanced Diginering3CC 305Advanced Diginering3CC 305Advanced Digineering3CC 305Advanced Digital Projects Lab3CC 305Advanced Digital Projects Lab3CC 305Computer Systems Engineering3CC 305Advanced Digital Projects Lab3CC 305Advanced Digital Projects Lab3CC 305Advanced Digital Projects Lab3CC 305Advanced Digital Proj	<u>CS 461</u>	Computer Security I	4
CS 465Use Interface Design4CS 466Introduction to Bioinformatics3 or 4CS 476Social Visualization3 or 4CS 472Formal Models of Computation3 or 4CS 475Formal Models of Computation3 or 4CS 476Program Verification3 or 4CS 477Formal Software Development Methods3 or 4CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 484Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4CE 297Individual Study1CE 207Techniques for Engrg Decisions3CE 304Photonic Devices3CE 305Digital Signal Processing3CE 311Digital Signal Processing Lab1CE 333Green Electric Energy3CE 334Probability in Engineering Lab1CE 335Fields and Waves II3CE 336Fields and Waves II3CE 337Introduction to Algorithms & Models of Computation4CE 338Biomedical Imaging3CE 339Honors Project1 to 4CE 339Honors Project Lab2 or 3CE 349Advanced Digital Projects Lab2 or 3CE 349Advanced Digital Processing3CE 403Audie Engineering3CE 404Applied Parallel Programming4CE 405Advanced Digital Projects Lab	<u>CS 463</u>	Computer Security II	3 or 4
CS 466Introduction to Bioinformatics3 or 4CS 467Social Visualization3 or 4CS 472Algorithms4CS 475Formal Models of Computation3 or 4CS 476Program Verification3 or 4CS 477Formal Software Development Methods3 or 4CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 498Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4CE 292Individual Study1ECE 304Photonic DevicesCE 304Photonic DevicesCE 310Digital Signal Processing LabECE 311Digital Signal Processing LabECE 332Pore Chruits & ElectromechanicsCE 333Green Electroic CircuitsCE 343Electronic Circuits LaboratoryECE 344Introduction to Algorithms & Models of ComputationECE 355Data Science and EngineeringECE 356Honors ProjectECE 357Individuel Study in ECECE 364Honors ProjectECE 375Advanced Digital Projects LabECE 376Advanced Digital Projects LabECE 376Honors ProjectECE 377Individual Study in ECEECE 378Advanced Digital Projects LabECE 379Advanced Digital Projects LabECE 376Advanced Digital Projects IabECE 376Advanced Digital Projects IabECE 376Honors Project <td><u>CS 465</u></td> <td>User Interface Design</td> <td>4</td>	<u>CS 465</u>	User Interface Design	4
CS 462Social Visualization3 or 4CS 473Algorithms4CS 475Formal Models of Computation3 or 4CS 472Formal Software Development Methods3 or 4CS 471Formal Software Development Methods3 or 4CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 485Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4CCE 297Individual Study1ECE 304Photonic Devices3ECE 301Digital Signal Processing3ECE 302Techniques for Engrg Decisions3ECE 303Operet Circuits3ECE 304Photonic Circuits3ECE 305Power Clrks & Electromechanics3ECE 304Photonic Circuits Laboratory1ECE 305Data Science and Engineering3ECE 304Fields and Waves II3ECE 305Data Science and Engineering3ECE 305Data Science and Engineering4ECE 305Advanced Digital Programming4ECE 305Advanced Digital Programming3ECE 305Dombuter Systems Engineering4ECE 305Advanced Digital Programming4ECE 305Advanced Digital Programming3ECE 305Advanced Digital Programming4ECE 305Advanced Digital Programming3ECE 402Electronic Music	<u>CS 466</u>	Introduction to Bioinformatics	3 or 4
CS 423Algorithms4CS 425Formal Models of Computation3 or 4CS 426Program Verification3 or 4CS 427Formal Software Development Methods3 or 4CS 431Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 498Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1CE 2927Individual Study1CE 304Photonic Devices3CE 305Techniques for Engrg Decisions3CE 310Digital Signal Processing Lab1CE 331Probability in Engineering Lab1CE 333Green Electric Energy3CE 333Green Electroic Energy3CE 334Electronic Circuits3CE 335Data Science and Engineering3CE 336Biomedical Imaging3CE 337Individual Study in ECE3CE 339Advanced Digital Projects Lab2 or 3CE 330Biomedical Imaging3CE 335Advanced Digital Projects Lab3 or 4CE 402Electronic Music Synthesis3CE 403Audio Engineering3CE 404Applied Parallel Programming4CE 405Advanced Digital Programming4CE 405Applied Parallel Programming3CE 405Advanced Digital Programming3CE	<u>CS 467</u>	Social Visualization	3 or 4
CS 475Formal Models of Computation3 or 4CS 476Program Verification3 or 4CS 477Formal Software Development Methods3 or 4CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 498Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4ECE 302Individual Study1ECE 304Photonic Devices3ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 332Green Electric Energy3ECE 333Green Electric Circuits3ECE 334Flectronic Circuits3ECE 335Fields and Waves II3ECE 336Dat Science and Engineering3ECE 337Computer Systems Engineering4ECE 338Biomedical Imaging3ECE 339Proyet Systems Engineering4ECE 330Advanced Digital Projects Lab3ECE 331Computer Systems Engineering4ECE 332Individual Study in ECE0 to 4ECE 333Audie Engineering3ECE 402Electronic Music Synthesis3ECE 403Audie Cingineering4ECE 403Audie Cingineering3ECE 404Applied Parallel Programming4ECE 405Audie Engineering3ECE 406Apole Corganization & Design4ECE 407 </td <td><u>CS 473</u></td> <td>Algorithms</td> <td>4</td>	<u>CS 473</u>	Algorithms	4
CS 476Program Verification3 or 4CS 477Formal Software Development Methods3 or 4CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 498Special Topics (As Approved)1 to 4ECE 297Individual Study1ECE 304Photonic Devices3ECE 304Photonic Devices3ECE 304Digital Signal Processing Lab1ECE 305Digital Signal Processing Lab1ECE 304Photonic Circuits3ECE 313Green Electric Energy3ECE 333Green Electric Energy3ECE 334Fields and Waves II3ECE 335Digital Signal Processing4ECE 336Fields and Waves II3ECE 337Introduction to Algorithms & Models of Computation4ECE 339Romeuter Unstate Models of Computation4ECE 339Advanced Digital Progrets Lab2 or 3ECE 339Advanced Digital Progrets Lab3 or 4ECE 339Individual Study in ECE0 to 4ECE 339Advanced Digital Programming3ECE 410Cryptography3 or 4ECE 411Computer Laboratory3ECE 412Microcomputer Laboratory3ECE 413Biomedical Instrumentation3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation3ECE 416Biosensors3 </td <td><u>CS 475</u></td> <td>Formal Models of Computation</td> <td>3 or 4</td>	<u>CS 475</u>	Formal Models of Computation	3 or 4
CS 477Formal Software Development Methods3 or 4CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 498Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4ECE 297Individual Study1ECE 304Photonic Devices3ECE 305Techniques for Engrg Decisions3ECE 310Digital Signal Processing1ECE 311Digital Signal Processing Lab1ECE 332Power Ckts & Electromechanics3ECE 333Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 343Electronic Circuits Laboratory3ECE 345Data Science and Engineering4ECE 346Biomedical Imaging3ECE 347Introduction to Algorithms & Models of Computation4ECE 348Biomedical Imaging3ECE 349Honors Project1 to 4ECE 340Biomedical Imaging3ECE 341Advanced Digital Projects Lab2 or 3ECE 402Individual Study in ECE0 to 4ECE 403Advanced Digital Programming4ECE 404Apulied Praallel Programming3ECE 405Biomedical Instrumentation3ECE 411Biomedical Instrumentation Lab2ECE 4114Biomedical Instrumentation Lab2ECE 4115 <td><u>CS 476</u></td> <td>Program Verification</td> <td>3 or 4</td>	<u>CS 476</u>	Program Verification	3 or 4
CS 481Advanced Topics in Stochastic Processes & Applications3 or 4CS 484Parallel Programming3 or 4CS 398Special Topics (As Approved)1 to 4CC 498Special Topics (As Approved)1ECE 297Individual Study1ECE 304Photonic Devices3ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 332Green Electric Energy3ECE 333Green Electric Energy3ECE 334Electronic Circuits Laboratory1ECE 335Fields and Waves II3ECE 336Data Science and Engineering3ECE 337Introduction to Algorithms & Models of Computation4ECE 336Biomedical Imaging3ECE 337Individual Study in ECE3ECE 338Honors Project1 to 4ECE 339Honors Project Stab3 or 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3ECE 404Applied Parallel Programming4ECE 405Biomedical Instrumentation3ECE 407Cryptography3 or 4ECE 411Microcomputer Laboratory3ECE 412Microcomputer Laboratory3ECE 413Biomedical Instrumentation Lab2ECE 414Biomedical Instrumentation Lab3ECE 414Biomedical Instrumentation Lab3ECE 415Biomedical Instrumentation Lab3	<u>CS 477</u>	Formal Software Development Methods	3 or 4
CS 484Parallel Programming3 or 4CS 398Special Topics (As Approved)1 to 4ECE 397Individual Study1ECE 304Photonic Devices3ECE 307Techniques for Engrg Decisions3ECE 301Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 332Power Ckts & Electromechanics3ECE 333Green Electric Energy3ECE 334Power Ckts & Electromechanics3ECE 335Fields and Waves II3ECE 336Data Science and Engineering3ECE 3374Introduction to Algorithms & Models of Computation4ECE 335Advanced Digital Projects Lab2 or 3ECE 335Advanced Digital Frojects Lab3ECE 336Honors Project1 to 4ECE 407Cryptography3 or 4ECE 408Applied Parallel Programming3ECE 407Cryptography3 or 4ECE 411Microcomputer Laboratory3ECE 403Audio Engineering3ECE 404Applied Parallel Programming4ECE 405Individual Study in ECE0 to 4ECE 407Cryptography3 or 4ECE 418Microcomputer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Biosenors3 <trr>ECE 417Multime</trr>	<u>CS 481</u>	Advanced Topics in Stochastic Processes & Applications	3 or 4
CS 398Special Topics (As Approved)1 to 4CS 498Special Topics (As Approved)1 to 4ECE 297Individual Study1ECE 304Photonic Devices3ECE 307Techniques for Engrg Decisions3ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 312Probability in Engineering Lab1ECE 313Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 343Electronic Circuits Laboratory3ECE 343Biomedical Imaging3ECE 343Biomedical Imaging3ECE 343Biomedical Imaging3ECE 345Advanced Digital Projects Lab2 or 3ECE 340Honrs Project1 to 4ECE 340Audio Engineering3ECE 341Computer Systems Engineering4ECE 342Electronic Music Synthesis3ECE 343Audio Engineering3ECE 402Electronic Music Synthesis3ECE 403Audio Engineering4ECE 404Applied Programming4ECE 411Computer Laboratory3ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Mutimedia Signal Processing4ECE	<u>CS 484</u>	Parallel Programming	3 or 4
CS 498Special Topics (As Approved)1 to 4ECE 297Individual Study1ECE 304Photonic Devices3ECE 305Techniques for Engrg Decisions3ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 332Power Ckts & Electromechanics3ECE 333Green Electric Energy3ECE 334Electronic Circuits3ECE 335Fields and Waves II3ECE 336Data Science and Engineering3ECE 337Introduction to Algorithms & Models of Computation4ECE 339Biomedical Imaging3ECE 339Advanced Digital Projects Lab2 or 3ECE 339Advanced Digital Projects Lab3ECE 339Individual Study in ECE0 to 4ECE 3397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Adulo Engineering4ECE 404Applied Parallel Programming4ECE 411Computer Organization & Design3ECE 412Microcomputer Laboratory3ECE 413Biomedical Instrumentation Lab2ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Mutimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4EC	<u>CS 398</u>	Special Topics (As Approved)	1 to 4
ECE 297Individual Study1ECE 304Photonic Devices3ECE 307Techniques for Engrg Decisions3ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 313Probability in Engineering Lab1ECE 330Power Ckts & Electromechanics3ECE 331Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 350Fields and Waves II3ECE 350Biomedical Imaging3ECE 351Computer Systems Engineering4ECE 392Advanced Digital Projects Lab2 or 3ECE 393Advanced Digital Projects Lab3ECE 395Advanced Digital Projects Lab3ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3ECE 404Applied Parallel Programming4ECE 411Computer Organization & Design3ECE 412Microcomputer Laboratory3 or 4ECE 412Biomedical Instrumentation Lab2ECE 4148Biomedical Instrumentation Lab3ECE 415Biomedical Instrumentation Lab3ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Scurtty Laboratory3 or 4ECE 4114Biomedical Instrumentation Lab2ECE 4115 <t< td=""><td><u>CS 498</u></td><td>Special Topics (As Approved)</td><td>1 to 4</td></t<>	<u>CS 498</u>	Special Topics (As Approved)	1 to 4
ECE 304Photonic Devices3ECE 307Techniques for Engrg Decisions3ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 314Probability in Engineering Lab1ECE 333Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 345Data Science and Engineering3ECE 346Biomedical Imaging3ECE 347Introduction to Algorithms & Models of Computation4ECE 349Biomedical Imaging3ECE 349Biomedical Imaging3ECE 349Honors Project1 to 4ECE 349Honors Project1 to 4ECE 4007Cryptography3 or 4ECE 411Computer Computation3ECE 411Biomedical Instrumentation3ECE 411Biomedical Instrumentation3ECE 411Biomedical Instrumentation3ECE 411Biomedical Instrumentation3ECE 4114Biomedical Instrumentation Lab2ECE 4115Biomedical Instrumentation Lab2ECE 4116Biosensors3ECE 4117Multimedia Signal Processing4ECE 4118Image & Video Processing4ECE 4119Security Laboratory3 or 4ECE 4129Security Laboratory3 or 4ECE 4130Biomedical Instrumentation Lab2ECE 41418Image & Video Pr	<u>ECE 297</u>	Individual Study	1
ECE 307Techniques for Engrg Decisions3ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 314Probability in Engineering Lab1ECE 333Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 350Fields and Waves II3ECE 350Fields and Waves II3ECE 351Data Science and Engineering3ECE 352Data Science and Engineering3ECE 353Biomedical Imaging3ECE 395Advanced Digital Projects Lab2 or 3ECE 395Advanced Digital Projects Lab3ECE 395Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering4ECE 404Applied Parallel Programming4ECE 405Applied Parallel Programming4ECE 406Applied Parallel Programming3ECE 411Computer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 4112Image & Video Processing4ECE 4125Elomedica	<u>ECE 304</u>	Photonic Devices	3
ECE 310Digital Signal Processing3ECE 311Digital Signal Processing Lab1ECE 314Probability in Engineering Lab1ECE 330Power Ckts & Electromechanics3ECE 333Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 350Fields and Waves II3ECE 365Data Science and Engineering3ECE 364Biomedical Imaging3ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 403Audio Engineering3ECE 404Audio Engineering3ECE 405Advanced Digital Programming3ECE 406Applied Parallel Programming3ECE 407Cryptography3 or 4ECE 411Computer Organization & Design3ECE 411Biomedical Instrumentation Lab2ECE 4118Biosensors3ECE 4118Image & Video Processing4ECE 4129Security Laboratory3 or 4ECE 4130Signal Processing4ECE 4140Einsensors3 <td< td=""><td>ECE 307</td><td>Techniques for Engrg Decisions</td><td>3</td></td<>	ECE 307	Techniques for Engrg Decisions	3
ECE 311Digital Signal Processing Lab1ECE 314Probability in Engineering Lab1ECE 330Power Ckts & Electromechanics3ECE 333Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 345Data Science and Engineering3ECE 346Biomedical Imaging3ECE 347Introduction to Algorithms & Models of Computation4ECE 348Biomedical Imaging3ECE 349Computer Systems Engineering4ECE 391Computer Systems Engineering1 to 4ECE 392Individual Study in ECE0 to 4ECE 403Audio Engineering3ECE 404Electronic Music Synthesis3ECE 405Applied Pragital Programming4ECE 406Applied Pragination & Design4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Image & Video Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 410Engenering3ECE 4112Mutimedia Signal Processing4ECE 4115Engenering3ECE 4116 <td><u>ECE 310</u></td> <td>Digital Signal Processing</td> <td>3</td>	<u>ECE 310</u>	Digital Signal Processing	3
ECE 314Probability in Engineering Lab1ECE 330Power Ckts & Electromechanics3ECE 331Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 354Electronic Circuits Laboratory3ECE 355Data Science and Engineering3ECE 365Data Science and Engineering4ECE 380Biomedical Imaging3ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering4ECE 404Applied Parallel Programming4ECE 411Computer Laboratory3 or 4ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 419Ecurity Laboratory3 or 4ECE 410Enge Avideo Processing4ECE 4120Enbedded DSP Laboratory3 or 4	<u>ECE 311</u>	Digital Signal Processing Lab	1
ECE 330Power Ckts & Electromechanics3ECE 331Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 350Fields and Waves II3ECE 355Data Science and Engineering3ECE 356Data Science and Engineering4ECE 357Introduction to Algorithms & Models of Computation4ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Applied Parallel Programming4ECE 411Computer Laboratory3ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 419Security Laboratory3 or 4ECE 419Secu	<u>ECE 314</u>	Probability in Engineering Lab	1
ECE 333Green Electric Energy3ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 350Fields and Waves II3ECE 365Data Science and Engineering3ECE 364Introduction to Algorithms & Models of Computation4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 403Audio Engineering3ECE 403Audio Engineering3 or 4ECE 403Audio Engineering3 or 4ECE 404Electronic Music Synthesis3 or 4ECE 411Computer Laboratory3 or 4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab3ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 419Ecurity Laboratory3 or 4	ECE 330	Power Ckts & Electromechanics	3
ECE 342Electronic Circuits3ECE 343Electronic Circuits Laboratory1ECE 343Electronic Circuits Laboratory3ECE 350Fields and Waves II3ECE 365Data Science and Engineering3ECE 374Introduction to Algorithms & Models of Computation4ECE 380Biomedical Imaging3ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Cryptography3 or 4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 415Biosensors3ECE 416Biosensors3ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4	<u>ECE 333</u>	Green Electric Energy	3
ECE 343Electronic Circuits Laboratory1ECE 343Fields and Waves II3ECE 350Data Science and Engineering3ECE 365Data Science and Engineering4ECE 374Introduction to Algorithms & Models of Computation4ECE 380Biomedical Imaging3ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Audio Engineering3 or 4ECE 405Morputer Organization & Design4ECE 411Computer Laboratory3ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 412Multimedia Signal Processing4ECE 413Enge & Video Processing4ECE 414Enge & Video Processing3 or 4ECE 412Enge & Video Processing3 or 4ECE 412Enge & Video DSP Laboratory3 or 4ECE 4130Enge & Video DSP Laboratory3 or 4	<u>ECE 342</u>	Electronic Circuits	3
ECE 350Fields and Waves II3ECE 351Data Science and Engineering3ECE 374Introduction to Algorithms & Models of Computation4ECE 380Biomedical Imaging3ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Audio Engineering3 or 4ECE 405Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation Lab2ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Ecurity Laboratory3 or 4	ECE 343	Electronic Circuits Laboratory	1
ECE 365Data Science and Engineering3ECE 374Introduction to Algorithms & Models of Computation4ECE 380Biomedical Imaging3ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Cryptography3 or 4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Ended DSP Laboratory3 or 4	ECE 350	Fields and Waves II	3
ECE 374Introduction to Algorithms & Models of Computation4ECE 380Biomedical Imaging3ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Cryptography3 or 4ECE 410Computer Organization & Design4ECE 411Computer Laboratory3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Encurity Laboratory3 or 4	<u>ECE 365</u>	Data Science and Engineering	3
ECE 380Biomedical Imaging3ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3ECE 404Cryptography3 or 4ECE 405Applied Parallel Programming4ECE 411Computer Organization & Design3ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Security Laboratory3 or 4ECE 419Ece 419Security Laboratory3 or 4	<u>ECE 374</u>	Introduction to Algorithms & Models of Computation	4
ECE 391Computer Systems Engineering4ECE 395Advanced Digital Projects Lab2 or 3ECE 395Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3ECE 404Cryptography3 or 4ECE 405Applied Parallel Programming4ECE 411Computer Organization & Design3ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Ece uity Laboratory3 or 4ECE 419Ece uity Laboratory3 or 4	<u>ECE 380</u>	Biomedical Imaging	3
ECE 395Advanced Digital Projects Lab2 or 3ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Cryptography3 or 4ECE 405Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biosensors3ECE 416Biosensors3ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Ece 419Ece 4195 or 4	<u>ECE 391</u>	Computer Systems Engineering	4
ECE 396Honors Project1 to 4ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 404Cryptography3 or 4ECE 405Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biosensors3ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Ecurity Laboratory3 or 4	<u>ECE 395</u>	Advanced Digital Projects Lab	2 or 3
ECE 397Individual Study in ECE0 to 4ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3 or 4ECE 407Cryptography3 or 4ECE 408Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Ecurity Laboratory3 or 4	ECE 396	Honors Project	1 to 4
ECE 402Electronic Music Synthesis3ECE 403Audio Engineering3ECE 4047Cryptography3 or 4ECE 405Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 419Ecurity Laboratory3 or 4	<u>ECE 397</u>	Individual Study in ECE	0 to 4
ECE 403Audio Engineering3ECE 407Cryptography3 or 4ECE 408Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 402</u>	Electronic Music Synthesis	3
ECE 407Cryptography3 or 4ECE 408Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 411Computer Organization & Design3ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	ECE 403	Audio Engineering	3
ECE 408Applied Parallel Programming4ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 407</u>	Cryptography	3 or 4
ECE 411Computer Organization & Design4ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 408</u>	Applied Parallel Programming	4
ECE 412Microcomputer Laboratory3ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 411</u>	Computer Organization & Design	4
ECE 414Biomedical Instrumentation3ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 412</u>	Microcomputer Laboratory	3
ECE 415Biomedical Instrumentation Lab2ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 414</u>	Biomedical Instrumentation	3
ECE 416Biosensors3ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 415</u>	Biomedical Instrumentation Lab	2
ECE 417Multimedia Signal Processing4ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 416</u>	Biosensors	3
ECE 418Image & Video Processing4ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 417</u>	Multimedia Signal Processing	4
ECE 419Security Laboratory3 or 4ECE 420Embedded DSP Laboratory2	<u>ECE 418</u>	Image & Video Processing	4
ECE 420Embedded DSP Laboratory2	<u>ECE 419</u>	Security Laboratory	3 or 4
	ECE 420	Embedded DSP Laboratory	2

Code	Title	Hours
<u>ECE 422</u>	Computer Security I	4
<u>ECE 424</u>	Computer Security II	3 or 4
<u>ECE 425</u>	Intro to VLSI System Design	3
<u>ECE 428</u>	Distributed Systems	3 or 4
<u>ECE 431</u>	Electric Machinery	4
<u>ECE 432</u>	Advanced Electric Machinery	3
<u>ECE 435</u>	Computer Networking Laboratory	3 or 4
<u>ECE 437</u>	Sensors and Instrumentation	3
<u>ECE 438</u>	Communication Networks	3 or 4
<u>ECE 439</u>	Wireless Networks	3 or 4
<u>ECE 441</u>	Physcs & Modeling Semicond Dev	3
<u>ECE 442</u>	Silicon Photonics	3 or 4
<u>ECE 443</u>	LEDs and Solar Cells	4
<u>ECE 444</u>	IC Device Theory & Fabrication	4
<u>ECE 446</u>	Principles of Experimental Research in Electrical Engineering	4
<u>ECE 447</u>	Active Microwave Ckt Design	3
<u>ECE 448</u>	Artificial Intelligence	3 or 4
<u>ECE 451</u>	Adv Microwave Measurements	3
<u>ECE 452</u>	Electromagnetic Fields	3
<u>ECE 453</u>	Wireless Communication Systems	4
<u>ECE 454</u>	Antennas	3
<u>ECE 455</u>	Optical Electronics	3 or 4
<u>ECE 456</u>	Global Nav Satellite Systems	4
<u>ECE 457</u>	Microwave Devices & Circuits	3
<u>ECE 458</u>	Applic of Radio Wave Propag	3
<u>ECE 459</u>	Communications Systems	3
ECE 460	Optical Imaging	4
<u>ECE 461</u>	Digital Communications	3
<u>ECE 462</u>	Logic Synthesis	3
<u>ECE 463</u>	Digital Communications Lab	2
ECE 464	Power Electronics	3
<u>ECE 465</u>	Optical Communications Systems	3
<u>ECE 466</u>	Optical Communications Lab	1
<u>ECE 467</u>	Biophotonics	3
<u>ECE 468</u>	Optical Remote Sensing	3
<u>ECE 469</u>	Power Electronics Laboratory	2
<u>ECE 470</u>	Introduction to Robotics	4
<u>ECE 472</u>	Biomedical Ultrasound Imaging	3
<u>ECE 473</u>	Fund of Engrg Acoustics	3 or 4
<u>ECE 476</u>	Power System Analysis	3
<u>ECE 478</u>	Formal Software Development Methods	3 or 4
<u>ECE 479</u>	IoT and Cognitive Computing	<u>4</u>
<u>ECE 480</u>	Magnetic Resonance Imaging	3 or 4
<u>ECE 481</u>	Nanotechnology	4
<u>ECE 482</u>	Digital IC Design	3
ECE 483	Analog IC Design	3
<u>ECE 484</u>	Principles of Safe Autonomy	4

Code	Title	Hours
<u>ECE 485</u>	MEMS Devices & Systems	3
<u>ECE 486</u>	Control Systems	4
<u>ECE 487</u>	Intro Quantum Electr for EEs	3
ECE 488	Compound Semicond & Devices	3
ECE 489	Robot Dynamics and Control	4
<u>ECE 490</u>	Introduction to Optimization	3 or 4
<u>ECE 491</u>	Numerical Analysis	0 to
		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 298	Special Topics (As approved)	1 to 4
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 Proi (CubeSat, Solar Decathlon, Formula SAE, Baja SAE, or by	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	Investigating the Farth's Interior	3
GEOL 452	Introduction to Geophysics	4
GEOL 460	Geochemistry	3
IF 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
IF 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	Frology	4
IB 204	Genetics	- 3 ∩r ⊿
IB 302	Evolution	4
IB 335	Plant Systematics	4
<u>10 348</u> IB 348	Fish and Wildlife Ecology	' Z
10 5 10	This and Wilding Ecology	5

Code	Title	Hours
<u>IB 368</u>	Vertebrate Natural History	4
<u>IB 401</u>	Introduction to Entomology	3 or 4
<u>IB 405</u>	Evolution of Traits and Genomes	3
<u>IB 420</u>	Plant Physiology	3
<u>IB 421</u>	Photosynthesis	3
<u>IB 426</u>	Env and Evol Physl of Animals	3
<u>IB 427</u>	Insect Physiology	4
<u>IB 431</u>	Behavioral Ecology	3
<u>IB 432</u>	Genes and Behavior	3
<u>IB 440</u>	Plants and Global Change	3
<u>IB 443</u>	Evolutionary Ecology	3
<u>IB 444</u>	Insect Ecology	3 or 4
<u>IB 451</u>	Conservation Biology	4
<u>IB 452</u>	Ecosystem Ecology	3
<u>IB 453</u>	Community Ecology	3
<u>IB 461</u>	Ornithology	4
<u>IB 462</u>	Mammalogy	4
<u>IB 463</u>	Ichthyology	4
<u>IB 464</u>	Herpetology	4
<u>IB 467</u>	Principles of Systematics	4
<u>IB 468</u>	Insect Classification and Evol	4
<u>IB 471</u>	General Mycology	4
<u>IB 472</u>	Plant Molecular Biology	1
<u>IB 473</u>	Plant Genomics	1
<u>IB 481</u>	Vector-borne Diseases	4
<u>IB 482</u>	Insect Pest Management	3
<u>IB 483</u>	Insect Pathology	3
<u>IB 485</u>	Environ Toxicology & Health	3
<u>IB 486</u>	Pesticide Toxicology	3 or 4
<u>LING 300</u>	Anat & Physiol Spch Mechanism	4
<u>LING 406</u>	Introduction to Computational Linguistics	3 or 4
<u>LING 407</u>	Logic and Linguistic Analysis	3 or 4
<u>LING 427</u>	Language and the Brain	3 or 4
<u>MSE 280</u>	Engineering Materials	3
Material Scien	ce 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.	
<u>MATH 213</u>	Basic Discrete Mathematics	3
<u>MATH 347</u>	Fundamental Mathematics	3
<u>MATH 348</u>	Fundamental Mathematics-ACP	4
<u>MATH 357</u>	Numerical Methods I	3
<u>MATH 402</u>	Non Euclidean Geometry	3 or 4
<u>MATH 403</u>	Euclidean Geometry	3 or 4
<u>MATH 412</u>	Graph Theory	3 or 4
<u>MATH 413</u>	Intro to Combinatorics	3 or 4
<u>MATH 414</u>	Mathematical Logic	3 or 4
<u>MATH 417</u>	Intro to Abstract Algebra	3 or 4
<u>MATH 418</u>	Intro to Abstract Algebra II	3 or 4

Code	Title	Hours
<u>MATH 423</u>	Differential Geometry	3 or 4
<u>MATH 424</u>	Honors Real Analysis	3
<u>MATH 425</u>	Honors Advanced Analysis	3
<u>MATH 427</u>	Honors Abstract Algebra	3
<u>MATH 428</u>	Honors Topics in Mathematics	3
<u>MATH 432</u>	Set Theory and Topology	3 or 4
<u>MATH 442</u>	Intro Partial Diff Equations	3 or 4
<u>MATH 444</u>	Elementary Real Analysis	3 or 4
<u>MATH 446</u>	Applied Complex Variables	3 or 4
<u>MATH 447</u>	Real Variables	3 or 4
<u>MATH 448</u>	Complex Variables	3 or 4
<u>MATH 450</u>	Numerical Analysis	3 or 4
<u>MATH 453</u>	Number Theory	3 or 4
<u>MATH 473</u>	Algorithms	4
<u>MATH 475</u>	Formal Models of Computation	3 or 4
<u>MATH 481</u>	Vector and Tensor Analysis	3 or 4
<u>MATH 482</u>	Linear Programming	3 or 4
<u>MATH 484</u>	Nonlinear Programming	3 or 4
<u>MATH 487</u>	Advanced Engineering Math	3 or 4
<u>MATH 489</u>	Dynamics & Differential Eqns	3 or 4
<u>MCB 150</u>	Molec & Cellular Basis of Life	4
<u>MCB 250</u>	Molecular Genetics	3
<u>MCB 251</u>	Exp Techniqs in Molecular Biol	2
<u>MCB 252</u>	Cells, Tissues & Development	3
<u>MCB 253</u>	Exp Techniqs in Cellular Biol	2
<u>MCB 300</u>	Microbiology	3
<u>MCB 301</u>	Experimental Microbiology	3
<u>MCB 314</u>	Introduction to Neurobiology	3
<u>MCB 316</u>	Genetics and Disease	4
<u>MCB 354</u>	Biochem & Phys Basis of Life	3
<u>MCB 400</u>	Cancer Cell Biology	3
<u>MCB 401</u>	Cellular Physiology	3
<u>MCB 402</u>	Sys & Integrative Physiology	3
<u>MCB 403</u>	Cell & Membrane Physiology Lab	1 or 2
<u>MCB 404</u>	Sys & Integrative Physiol Lab	1 to 2
<u>MCB 406</u>	Gene Expression & Regulation	3
<u>MCB 408</u>	Immunology	3
<u>MCB 410</u>	Developmental Biology, Stem Cells and Regenerative Medicine	3
<u>MCB 413</u>	Endocrinology	3
<u>MCB 419</u>	Brain, Behavior & Info Process	3
<u>MCB 421</u>	Microbial Genetics	3
<u>MCB 424</u>	Microbial Biochemistry	3
<u>MCB 426</u>	Bacterial Pathogenesis	3
<u>MCB 430</u>	Molecular Microbiology	3
<u>MCB 431</u>	Microbial Physiology	3
<u>MCB 433</u>	Virology & Viral Pathogenesis	3
<u>MCB 435</u>	Evolution of Infectious Disease	3

Code	Title	Hours
<u>MCB 446</u>	Physical Biochemistry	3
<u>MCB 480</u>	Eukaryotic Cell Signaling	3
<u>ME 200</u>	Thermodynamics	3
<u>ME 310</u>	Fundamentals of Fluid Dynamics	4
<u>ME 320</u>	Heat Transfer	4
<u>ME 330</u>	Engineering Materials	4
<u>ME 340</u>	Dynamics of Mechanical Systems	3.5
<u>ME 370</u>	Mechanical Design I	3
<u>ME 371</u>	Mechanical Design II	3
<u>ME 400</u>	Energy Conversion Systems	3 or 4
<u>ME 401</u>	Refrigeration and Cryogenics	3 or 4
<u>ME 402</u>	Design of Thermal Systems	3 or 4
<u>ME 403</u>	Internal Combustion Engines	3 or 4
<u>ME 404</u>	Intermediate Thermodynamics	4
<u>ME 410</u>	Intermediate Gas Dynamics	3 or 4
<u>ME 411</u>	Viscous Flow & Heat Transfer	4
<u>ME 412</u>	Numerical Thermo-Fluid Mechs	2 to 4
<u>ME 420</u>	Intermediate Heat Transfer	4
<u>ME 430</u>	Failure of Engrg Materials	3 or 4
<u>ME 431</u>	Mechanical Component Failure	3 or 4
<u>ME 440</u>	Kinem & Dynamics of Mech Syst	3 or 4
<u>ME 445</u>	Introduction to Robotics	4
<u>ME 451</u>	Computer-Aided Mfg Systems	3 or 4
<u>ME 452</u>	Num Control of Mfg Processes	3 or 4
<u>ME 460</u>	Industrial Control Systems	4
<u>ME 461</u>	Computer Cntrl of Mech Systems	3 or 4
<u>ME 471</u>	Finite Element Analysis	3 or 4
<u>ME 472</u>	Introduction to Tribology	3 or 4
<u>ME 485</u>	MEMS Devices & Systems	3
<u>ME 487</u>	MEMS-NEMS Theory & Fabrication	4
<u>MUS 407</u>	Elect Music Techniques I	3
<u>MUS 409</u>	Elec Music Techniques II	2
<u>NEUR 453</u>	Cog Neuroscience of Vision	3 or 4
<u>NPRE 201</u>	Energy Systems	2 or 3
<u>NPRE 247</u>	Modeling Nuclear Energy System	3
<u>NPRE 330</u>	Materials in Nuclear Engineering	<u>3</u>
<u>NPRE 402</u>	Nuclear Power Engineering	3 or 4
<u>NPRE 412</u>	Nuclear Power Econ & Fuel Mgmt	3 or 4
<u>NPRE 421</u>	Plasma and Fusion Science	3
<u>NPRE 423</u>	Plasma Laboratory	2
<u>NPRE 429</u>	Plasma Engineering	3
NPRE 431	Course NPRE 431 Not Found	
NPRE 435	Radiological Imaging	3
<u>NPRE 432</u>	Nuclear Engrg Materials Lab	2
NPRE 441	Radiation Protection	4
<u>NPRE 442</u>	Radioactive Waste Management	3
<u>NPRE 444</u>	Nuclear Analytical Methods Lab	2 or 3

Code	Title	Hours
<u>NPRE 446</u>	Radiation Interact w/Matter I	3
<u>NPRE 447</u>	Radiation Interact w/Matter II	3
<u>NPRE 448</u>	Nuclear Syst Engrg & Design	4
<u>NPRE 451</u>	NPRE Laboratory	3
<u>NPRE 455</u>	Neutron Diffusion & Transport	4
<u>NPRE 457</u>	Safety Anlys Nucl Reactor Syst	3 or 4
<u>NPRE 458</u>	Design in NPRE	4
<u>NPRE 470</u>	Fuel Cells & Hydrogen Sources	3
<u>NPRE 475</u>	Wind Power Systems	3 or 4
<u>PHYS 225</u>	Relativity & Math Applications	2
<u>PHYS 325</u>	Classical Mechanics I	3
<u>PHYS 326</u>	Classical Mechanics II	3
<u>PHYS 401</u>	Classical Physics Lab	3
<u>PHYS 402</u>	Light	3 or 4
<u>PHYS 403</u>	Modern Experimental Physics	4 or 5
<u>PHYS 406</u>	Acoustical Physics of Music	4
<u>PHYS 419</u>	Space, Time, and Matter-ACP	3 or 4
<u>PHYS 420</u>	Space, Time, and Matter	2
<u>PHYS 427</u>	Thermal & Statistical Physics	4
<u>PHYS 460</u>	Condensed Matter Physics	4
<u>PHYS 466</u>	Atomic Scale Simulations	3 or 4
<u>PHYS 470</u>	Subatomic Physics	4
<u>PHYS 485</u>	Atomic Phys & Quantum Theory	3
<u>PHYS 486</u>	Quantum Physics I	4
<u>PHYS 487</u>	Quantum Physics II	4
<u>PSYC 204</u>	Intro to Brain and Cognition	3
<u>SHS 200</u>	General Phonetics	3
<u>SHS 240</u>	Intro Sound & Hearing Science	3
<u>SHS 300</u>	Anat & Physiol Spch Mechanism	4
<u>SHS 301</u>	General Speech Science	4
<u>SHS 320</u>	Development of Spoken Language	3
<u>SHS 450</u>	Intro Audiol & Hear Disorders	4
<u>SHS 470</u>	Neural Bases Spch Lang	4
<u>STAT 420</u>	Methods of Applied Statistics	3 or 4
<u>STAT 424</u>	Analysis of Variance	3 or 4
<u>STAT 425</u>	Statistical Modeling I	3 or 4
<u>STAT 428</u>	Statistical Computing	3 or 4
<u>STAT 429</u>	Time Series Analysis	3 or 4
<u>STAT 440</u>	Statistical Data Management	3 or 4
<u>SE 411</u>	Reliability Engineering	3 or 4
<u>SE 420</u>	Digital Control Systems	4
<u>SE 423</u>	Mechatronics	3
<u>SE 424</u>	State Space Design for Control	3
<u>TAM 211</u>	Statics	3
<u>TAM 212</u>	Introductory Dynamics	3
<u>TAM 251</u>	Introductory Solid Mechanics	3
<u>TAM 324</u>	Behavior of Materials	4

Code	Title	Hours
<u>TAM 335</u>	Introductory Fluid Mechanics	4
<u>TAM 412</u>	Intermediate Dynamics	4
<u>TAM 435</u>	Intermediate Fluid Mechanics	4
<u>TAM 445</u>	Continuum Mechanics	4
<u>TAM 451</u>	Intermediate Solid Mechanics	4
Select three c	ourses from the following list of Advanced Core ECE electives	
<u>ECE 391</u>	Computer Systems Engineering	4
or <u>CS 225</u>	Data Structures	
<u>ECE 310</u>	Digital Signal Processing	3
<u>ECE 330</u>	Power Ckts & Electromechanics	3
ECE 342	Electronic Circuits	3
ECE 350	Fields and Waves II	3
Select three c	ourses from the following list of ECE labs. At least one must be a Hardware Lab.	
Hardware L	abs:	
ECE 343	Electronic Circuits Laboratory	1
<u>ECE 391</u>	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
<u>CS 436</u>	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
<u>ECE 444</u>	IC Device Theory & Fabrication	4
ECE 446	Principles of Experimental Research in Electrical Engineering	4
ECE 447	Active Microwave Ckt Design	3
<u>ECE 451</u>	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 La	abs:	-
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
	······································	-

Code	Title	Hours
<u>ECE 484</u>	Principles of Safe Autonomy	<u>4</u>
<u>Free</u> Ele	ctives	
	Course List	
Code	Title	Hours
The Grainger campus Gene	College of Engineering Liberal Education course list, or additional courses from the ral Education lists for Social and Behavioral Sciences or Humanities and the Arts 7	<del>6</del> 12
College, so th	at there are at least 128 credit hours earned toward the degree. 8	TZ
Additional un there are at l	restricted course work, subject to certain exceptions as noted by the College, so that east 128 credit hours earned toward the degree.	<u>16</u>
Total Hours o	f Curriculum to Graduate	128
Footnote	2S	
HATH 220%7 220%7C is a <sub>l</sub> <b>3</b>	C may be substituted, with four of the five credit hours applying toward the degree. Mi propriate for students with no background in calculus.	<del>ATH</del>
<del>Freshmen tal</del> <del>permission) i</del>	æ ECE 110%7C for 3 credit hours. Lab-only version taken by transfer students (with sp <del>s 1 credit hour.</del>	<del>ecial</del>
4STAT 410%	7C may be substituted.5ECE 496%7C AND ECE 499%7C may be substituted.6	al
education or	free elective categories which has the Advanced Composition designation.	ai
<b>7</b> The Creative area	College of Engineering annual liberal education second list. Note that these and it has	
could carry the Grainger	College of Engineering approved liberal education course list. Note that these credit no ne required cultural studies designation required for campus general education requiren or College of Engineering restrictions to free electives.	<del>urs</del> nents.
Correspondin	a BS Bachelor of Science	
Degree		
Program F	eatures	
Academic Lev	/el Undergraduate	
Does this ma have transcri concentration	jor No pted ns?	
What is the t 4 years	ypical time to completion of this program?	
What are the 128 hours	minimum Total Credit Hours required for this program?	
CIP Code	141001 - Electrical and Electronics Engineering.	

Is This a Teacher Certification Program?

Will specialized accreditation be sought for this program?

No

# **Delivery Method**

This program is available: On Campus - Students are required to be on campus, they may take some online courses.

# Admission Requirements

Desired Effective Admissions Term

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

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

### Enrollment

Describe how this revision will impact enrollment and degrees awarded.

These changes will not impact enrollment.

Estimated Annual Number of Degrees Awarded

Year One Estimate

5th Year Estimate (or when fully implemented)

What is the matriculation term for this program? Fall

## Budget

Are there budgetary implications for this revision?

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

No

Additional Budget Information

Attach File(s)

## 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

Attach letters of support

What tuition rate do you expect to charge for this program? e.g, Undergraduate Base Tuition, or Engineering Differential, or Social Work Online (no dollar amounts necessary)

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

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.

Attach File(s)

# 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.

These changes will not impact our 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 to the use of the Library collections, resources, and services.

### **EP** Documentation

EP Control Number	EP.22.089
Attach Rollback/Approval Notices	ep22089_response from sponsor_20220214.pdf
This proposal requires HLC inquiry	No

# **DMI** Documentation

Attach Final Approval Notices				
Banner/Codebook Name	BS:Electrical Engineerng -UIUC			
Program Code:	10KP0115BS			
Minor Code 0115	Conc Code	Degree Code	BS	Major Code
Senate Approval Date				
Senate Conference Approval Date				
BOT Approval Date				
IBHE Approval Date				
HLC Approval				

### Date

Effective Date:

Attached Document Justification for this request

Program Reviewer Comments

Key: 116

### Addition Removal Revision

# **Current Program of Study**

General education: Students must complete the Campus General Education requirements including the campus general education language requirement. Specific Advanced Composition courses required for this degree are listed below.

Orientation and Professional E	Development	
	Engineering	
ENG 100	Orientation <sup>1</sup>	0
Total Hours		0

CHEM 102	General Chemistry I	3	Foundat CHEM 1
CHEM 103	General Chemistry Lab I	1	CHEM 1
MATH 221	Calculus I <sup>2</sup>	4	MATH 2
MATH 231	Calculus II	3	MATH 2
MATH 241	Calculus III	4	MATH 2
	Linear Algebra with		
	Computational	2	
MATH 257	Applications	3	
	Austract Lineal Aigenia		
MATH 285	Intro to Differential Eq	3	MATH 2
	University Physics:		
PHYS 211	Mechanics	4	PHYS 21
	University Physics: Elec		
PHYS 212	& Mag	4	PHYS 21
	Univ Physics: Thermal		
PHYS 213	Physics	2	PHYS 21
	Univ Physics: Quantum	2	DHVS 21
rnis 214 Total Hours	Physics	2	PH13 21
		33	I I Otal Ho
		33	Total Ho
Electrical Engineering Technical Core		33	Electric
Electrical Engineering Technical Core	Introduction to	33	Electrica
Electrical Engineering Technical Core	Introduction to	33	Electrica
Electrical Engineering Technical Core	Introduction to Electronics <sup>3</sup> Introduction to	33	Electrica ECE 110
Electrical Engineering Technical Core	Introduction to Electronics <sup>3</sup> Introduction to Computing	33	Electrica ECE 110 ECE 120
Electrical Engineering Technical Core ECE 110 ECE 120	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems &	33	Electrica ECE 110 ECE 120
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming	33 3 4 4	Electric ECE 110 ECE 120 ECE 220
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal	33 3 4 4 4	Electrica ECE 110 ECE 120 ECE 220
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing	33 3 4 4 4	Electrica ECE 110 ECE 120 ECE 220 ECE 210
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg	33	Electrica ECE 110 ECE 120 ECE 220 ECE 210
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup>	33 3 4 4 4 3	Electrica ECE 110 ECE 120 ECE 220 ECE 210
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup>	33 3 4 4 4 3	Electrica ECE 110 ECE 120 ECE 220 ECE 210 ECE 313
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 313 ECE 329	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I	33 3 4 4 4 3 3	ECE 313 ECE 329
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I Semiconductor	33 3 4 4 4 3 3 3	Electrica ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I Semiconductor Electronics	33 3 4 4 4 3 3 3	Electric ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I Semiconductor Electronics Digital Systems	33 3 4 4 4 3 3 3 3	Electrica ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I Semiconductor Electronics Digital Systems Laboratory	33 3 4 4 4 3 3 3 3 3	Electrica ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I Semiconductor Electronics Digital Systems Laboratory	33 3 4 4 4 3 3 3 3	Electrica ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I Semiconductor Electronics Digital Systems Laboratory Senior Design Project	33 3 4 4 4 3 3 3 3 3 4	Electrica ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385
Electrical Engineering Technical Core ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385	Introduction to Electronics <sup>3</sup> Introduction to Computing Computer Systems & Programming Analog Signal Processing Probability with Engrg Applic <sup>4</sup> Fields and Waves I Semiconductor Electronics Digital Systems Laboratory Senior Design Project Lab <sup>5,6</sup>	33 3 4 4 4 3 3 3 3 4	Electrica ECE 110 ECE 120 ECE 220 ECE 210 ECE 313 ECE 329 ECE 340 ECE 385

# New Program of Study

General education: Students must complete the Campus General Education requirements including the campus general education language requirement. ECE 445 or combination of ECE 496 & ECE 499 satisfies a technical core requirement and the Campus General Education Advanced Composition requirement.

Orientation and Professional		
Development		
	Engineering	
	Orientation (External	
	transfer students take	
ENG 100	ENG 300 instead.)	1
Total Hours		1

CHEM 102	General Chemistry I
CHEM 103	General Chemistry Lab I
	Calculus I (MATH 220
	may be substituted.
	MATH 220 is
	appropriate for
	students with no
	background in calculus.
	4 of 5 credit hours
MATH 221	count towards degree.)
MATH 231	Calculus II
MATH 241	Calculus III
	Linear Algebra with
	Computational
MATH 257	Applications
or MATH 416	Abstract Linear Algebra
MATH 285	Intro to Differential Eq
	University Physics:
PHYS 211	Mechanics
	University Physics: Elec
PHYS 212	& Mag
	Univ Physics: Thermal
PHYS 213	Physics
	Univ Physics: Quantum
PHYS 214	Physics
Total Hours	-

#### **Technical Electives**

From the Departmentally Approved List of Technical Electives, to30at least 6 hours of non-ECE electives30

lectrical Engineering Technical Core		
CE 110	Introduction to Electronics	
CE 120	Introduction to Computing	
CE 220	Computer Systems & Programming Analog Signal	
CE 210	Processing	
	Applic (STAT 410 may	
CE 313	Fields and Wayes I	
CE 340	Semiconductor Electronics	
CE 385	Digital Systems Laboratory	
	Senior Design Project Lab (ECE 496 & ECE 499 may be substituted )	
CE 445 Total Hours	indy be substituted.	3

#### Technical Electives

From the Departmentally Approved List of Technical Electives, to **31** at least 6 hours of non-ECE electives

at least 20 hours of ECE electives		
at least 3 Advanced Core Electives		
at least 3 ECE Labs, where at least one must be	a Hardware Lab	
	Aerospace Flight	
AE 202	Mechanics	3
	Aerospace Flight	
AE 302	Mechanics II	3
AF 311	Incompressible Flow	3
AF 312	Compressible Flow	3
	Mechs of Aerospace	5
AF 321	Structures	3
	Aerosnace Dynamical	5
ΔF 352	Systems	3
	Aerosnace Control	5
AE 252	Sustame	2
AE 333	Orbital Machanias	5 2 or 4
AE 402		3 OF 4
45 402	Spacecraft Attitude	2 4
AE 403	Control	3 or 4
	Computational	
AE 410	Aerodynamics	3 or 4
	Viscous Flow & Heat	
AE 412	Transfer	4
AE 416	Applied Aerodynamics	3 or 4
	Aircraft Flight	
AE 419	Mechanics	3 or 4
AE 420	Finite Element Analysis	3 or 4
	Mechanics of	
AE 428	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
	Aerodynamics &	
AE 460	Propulsion Lab	2
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		
	Introduction to	
ASTR 210	Astrophysics	3
	Computing in	
ASTR 310	Astronomy	3
ASTR 330	Extraterrestrial Life	3
	The Big Bang, Black	
	Holes, and the End of	
ASTR 350	the Universe	3
ASTR 404	Stellar Astrophysics	3
ASTR 405	Planetary Systems	3
		-
	Galaxies and the	
ASTR 406	Galaxies and the Universe	3
ASTR 406	Galaxies and the Universe Astronomical	3

at least 3 Advanced Core Electives		
at least 3 ECE Labs, where at least one n	nust be a Hardware Lab	
	Aerospace Flight	
AE 202	Mechanics	3
	Aerospace Flight	
AE 302	Mechanics II	3
AE 311	Incompressible Flow	3
AE 312	Compressible Flow	3
	Mechs of Aerospace	
AE 321	Structures	3
	Aerospace Dynamical	
AE 352	Systems	3
	Aerospace Control	
AE 353	Systems	3
AE 402	Orbital Mechanics	3
	Spacecraft Attitude	
AE 403	Control	3
	Computational	
AE 410	Aerodynamics	3
	, Viscous Flow & Heat	
AE 412	Transfer	4
AE 416	Applied Aerodynamics	3
	Aircraft Flight	-
AE 419	Mechanics	3
		Ũ
AE 420	Finite Element Analysis	3
	Mochanics of	
AF 478	Composites	З
	composites	Ũ
AE 433	Aerospace Propulsion	3
AE 434	Rocket Propulsion	3
AE 435	Electric Propulsion	3
AF 451	Aeroelasticity	3
	Aerodynamics &	•
AE 460	Propulsion Lab	2
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		
-	Introduction to	
ASTR 210	Astrophysics	3
-	Computing in	-
ASTR 310	Astronomy	3
ASTR 330	Extraterrestrial Life	3
	The Big Bang Black	5
	Holes and the End of	
ASTR 350	the Universe	z
ASTR 404	Stellar Astronhysics	2
ΔSTR 405	Planetary Systems	2
	Galaxies and the	5
ASTR 406		2
	Astronomical	5

3 or 4

		-			
ASTR 414	Techniques	4	ASTR 414	Techniques	4
ASTR 450	Astrochemistry	4	ASTR 450	Astrochemistry	4
	General Physical			General Physical	
ATMS 201	Meteorology	3	ATMS 201	Meteorology	3
	Atmospheric			Atmospheric	
ATMS 301	Thermodynamics	3	ATMS 301	Thermodynamics	3
	Atmospheric Dynamics			Atmospheric Dynamics	
ATMS 302	I	3	ATMS 302	I	3
	Synoptic-Dynamic Wea			Synoptic-Dynamic Wea	
ATMS 303	Analysis	4	ATMS 303	Analysis	4
	Radiative Transfer-			Radiative Transfer-	
ATMS 304	Remote Sens	3	ATMS 304	Remote Sens	3
	Computing and Data			Computing and Data	
ATMS 305	Analysis	3	ATMS 305	Analysis	3
	Risk Analysis in Earth			Risk Analysis in Earth	
ATMS 404	Science	3 or 4	ATMS 404	Science	3 (
	Boundary Layer			Boundary Layer	
ATMS 405	Processes	4	ATMS 405	Processes	4
ATMS 406	Tropical Meteorology	4	ATMS 406	Tropical Meteorology	4
ATMS 410	Radar Remote Sensing	4	ATMS 410	Radar Remote Sensing	4
	Satellite Remote			Satellite Remote	
ATMS 411	Sensing	4	ATMS 411	Sensing	4
ATMS 420	Atmospheric Chemistry	4	ATMS 420	Atmospheric Chemistry	4
	Earth Systems			Earth Systems	
ATMS 421	Modeling	4	ATMS 421	Modeling	4

ATMS 447 Assessment ATMS 449 Biogeochemic Gene Expressi BIOC 406 Regulation Physical Chem BIOC 440 Principles BIOC 446 Physical Bioch Technqs Bioch BIOC 455 Biotech	3 cal Cycles 4 ion & 3 nistry 4	3	1	ATMS 447 ATMS 449	Assessment Biogeochemical Cycles Gene Expression &	3 4
ATMS 449 Biogeochemic Gene Expressi BIOC 406 Regulation Physical Chem BIOC 440 Principles BIOC 446 Physical Bioch Technqs Bioch BIOC 455 Biotech	cal Cycles 4 ion & 3 nistry 4	1 3	,	ATMS 449	Biogeochemical Cycles Gene Expression &	4
BIOC 406 BIOC 440 BIOC 440 BIOC 446 BIOC 446 BIOC 455 BIOC 455 BIOC 455 BIOC 455 BIOC 455 BIOC 455 BIOC 455 BIOC 455	3 nistry 4	3				
BIOC 440 Principles BIOC 446 Physical Bioch Technqs Bioch BIOC 455 Biotech	4 A			BIOC 406	Regulation	3
BIOC 446 Physical Bioch Technqs Bioch BIOC 455 Biotech		Ļ	1	BIOC 440	Principles	4
Technqs Bioch BIOC 455 Biotech	nemistry 3	3	1	BIOC 446	Physical Biochemistry	3
	hem & 4	Ļ	1	BIOC 455	Technqs Biochem & Biotech	4
Conservation Bioeng	Principles 3	3	1	BIOE 201	Conservation Principles Bioeng	3
Cell & Tissue BIOE 202 Engineering Li	ab 2	2	1	BIOE 202	Cell & Tissue Engineering Lab	2
Modeling Hun BIOE 302 Physiology	man 3	3		BIOE 302	Modeling Human Physiology	3
BIOE 414 Instrumentati	ion 3	3	1	BIOE 414	Biomedical Instrumentation	3
BIOE 415 Instrumentati	ion Lab 2	,		RIOF /15	Biomedical	2
				DIOE 415		2
BIOE 461 Cellular Biome	echanics 4			BIOE 461	Cellular Biomechanics	4
BIOE 467 BIOPHOLOHICS BIOE 476 Tissue Engine	oring 3			BIOE 467 BIOE 476		3
Magnetic Reso	onance	, or 4		BIOE 490	Magnetic Resonance	5 2 or 4
DIUE 400 IMaging	3 al	our 4			Computational	5 OF 4
Mathematics	for				Mathematics for	
Machine Lear	ning and				Machine Learning and	
BIOE 485 Imaging	4	t	1	BIOE 485	Imaging	4
				Biophysics (BIOP): All 400 level courses		
Biophysics (BIOP): All 400 level courses except			(	except seminars and special topics		
seminars and special topics courses, which			(	courses, which may be reviewed in the		
may be reviewed in the Advising Office.		, I	, ,	Advising Office.		
CHBE 221 Principles of C	UHE 3	5 1			Principles of CHE	3
Momentum a	and Heat		ľ		Momentum and Heat	4
CHBE 421 Transfer		t	(	СНВЕ 421	Transfer Mass Transfor	4
CHBE 422 Operations	4	Ļ	(	CHBE 422	Operations	4
CHBE 424 Chemical Read Linit Operation	ction 3	3	(	СНВЕ 424	Chemical Reaction Engineering	3
	ліs Л			CHRE 430	Laboratory	1
CHBE 431 Process Design	n 4	1		CHBE 431	Process Design	4
Process Contra	rol and	,			Process Control and	2
CHBE 440 Dynamics	5	<b>)</b>		СПВЕ 440	Dynamics	5
CHBE 451 Transport Phe Chemical Kine	enomena 3 etics &	3	(	CHBE 451	Transport Phenomena Chemical Kinetics &	3
CHBE 452 Catalysis	3	3	(	CHBE 452	Catalysis	3
CHBE 453 Engineering	cai 2	2 or 3	(	CHBE 453	Electrochemical Engineering	2 or 3
Polymer Scien	nce &				Polymer Science &	2
CIDE 400 Engineering	3 nics	°	ľ	UNDE 400	Microelectropics	э
CHBE 457 Processing	1105 2	3		СНВЕ 457	Processing	3
Biochemical	5		ĺ		Biochemical	
CHBE 471 Engineering Techniques in	3 1	8 or 4	(	CHBE 471	Engineering Techniques in	3 or 4
CHBE 472 Biomolecular Biomolecular	Eng 3	8 or 4	(	СНВЕ 472	Biomolecular Eng Biomolecular	3 or 4
CHBE 473 Engineering	3	8 or 4	(	СНВЕ 473	Engineering	3 or 4
CHBE 474 Metabolic For	gineering 3	or 4		СНВЕ 474	Metabolic Engineering	3 or 4
CHEM 104 General Chem	nistry II 3	3	(	CHEM 104	General Chemistry Lab	3
CHEM 105 II	1 IIII y Lau	L	(	CHEM 105		1
Chemistry (CHEM): All 200. 300 and 400 level				chemistry (CHEIVI): All 200, 300 and 400 level except 397, 497, and 499.		
except 397, 497, and 499. Exceptions also include seminars and special topics, which may be reviewed in the Advising Office.			1	Exceptions also include seminars and special topics, which may be reviewed in the Advising Office.	1	
CEE 310 Transportation CEE 310 Engineering	n 3	3		CEE 310	Transportation Engineering	3
CEE 330 Environmenta CEE 330	al 3	3	(	CEE 330	Environmental Engineering	3
Railroad Trans CEE 408 Engrg	sportation 3	3 or 4		CEE 408	Railroad Transportation Engrg	3 or 4
Railway Signal	ling & ว	or 4		CEE 410	Railway Signaling & Control	3 or 4
Traffic Capaci	ity			-	Traffic Capacity	
CEE 416 Analysis	3	8 or 4	1	CEE 416	Analysis	3 or 4

	Ecological Quality			Ecological Quality	
CEE 430	Engineering	2	CEE 430	Engineering	2
	Attra each aris Chamistry	4		Atur carb aris Chamistury	4
CEE 447	Atmospheric Chemistry	4	CEE 447	Atmospheric Chemistry	4
CFF 491	Analysis	3 or 4	CFF 491	Analysis	3 or 4
	Genetic Engineering	5014		Genetic Engineering	5014
CPSC 265	Lab	3	CPSC 265	Lab	3
	Intro Computing: Engrg			Intro Computing: Engrg	
CS 101	& Sci (By Approval)	3	CS 101	& 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
	Text Information			Text Information	
CS 410	Systems	3 or 4	CS 410	Systems	3 or 4
CS 411	Database Systems	3 or 4	CS 411	Database Systems	3 or 4
	Introduction to Data			Introduction to Data	
CS 412	Mining	3 or 4	CS 412	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 416	Data Visualization	3 or 4	CS 416	Data Visualization	3 or 4
	Interactive Computer			Interactive Computer	
CS 418	Graphics	3 or 4	CS 418	Graphics	3 or 4
	Production Computer			Production Computer	
CS 419	Graphics	3 or 4	CS 419	Graphics	3 or 4
CC 420	Parallel Progrmg: Sci &	2	CC 430	Parallel Progrmg: Sci &	<b>.</b>
CS 420	Engrg	3 or 4	CS 420	Engrg	3 or 4
	- ·			- ·	
CC 121	Programming	2	65.434	Programming	2
CS 421	Languages & Compilers	3 or 4	CS 421	Languages & Compilers	3 or 4
CC 422	Programming Language	2	CC 422	Programming Language	2 4
CS 422	Design	3 or 4	CS 422	Design	3 or 4
CC 422	Operating Systems	2	CC 122	Operating Systems	2 4
CS 423	Design Deal Time Systems	3 01 4	CS 423	Design Desil Timo Systems	3 01 4
CS 424	Real-Time Systems	3 01 4	CS 424	Real-Time Systems	3014
CS 425	Distributed Systems	3 OF 4	CS 425	Distributed Systems	3 OF 4
CS 426	Compiler Construction	2 or 1	CS 426	Compiler Construction	2 or 1
C3 420	compiler construction	5 01 4	C3 420	complier construction	5014
CS 127	Software Engineering L	2 or 1	CS 427	Software Engineering L	2 or 1
C3 427	Software Engineering i	5014	C3 427	Software Engineering i	5014
CS 428	Software Engineering II	2 or 1	CS 428	Software Engineering II	2 or 1
C3 428	Software Engineering II	5 01 4	03 428	Software Engineering II	5014
CS 429		2	CS 420		2
CS 429	ACF Embedded Systems	3 2 or 1	CS 429	ACF Embaddad Systems	3 2 or 1
C3 431	Computer Systems	5014	CJ 451	Computer Systems	5014
CS 433	Organization	3 or 4	CS 433	Organization	3 or 4
	organization	5014		Mobile Computing &	5014
			CS 434	Application	3 or 4
CS 435	Cloud Networking	3 or 4	CS 435	Cloud Networking	3 or 4
		0 01 1			0011
	Computer Networking			Computer Networking	
CS 436		3 or 4	CS 436	Laboratory	3 or 4
	200010101	0 01 1		Topics in Internet of	
			CS 437	Things	3 or 4
	Communication			Communication	
CS 438	Networks	3 or 4	CS 438	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
	Applied Machine			Applied Machine	
CS 441	Learning	3 or 4	CS 441	Learning	3 or 4
	-			Deep Learning for	2
			CS 444	Computer Vision	5 OF 4
	Computational			Computational	
CS 445	Photography	3 or 4	CS 445	Photography	3 or 4
CS 446	Machine Learning	3 or 4	CS 446	Machine Learning	3 or 4
	Natural Language			Natural Language	
CS 447	Processing	3 or 4	CS 447	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
	Introduction to			Introduction to	
CS 466	Bioinformatics	3 or 4	CS 466	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
	Formal Models of			Formal Models of	
CS 475	Computation	3 or 4	CS 475	Computation	3 or 4
CS 476	Program Verification	3 or 4	CS 476	Program Verification	3 or 4

	5				
CS 477	Formal Software	2 or 1	CS 477	Formal Software	2 or 1
C3 477		5014	C3 477	Advanced Tonics in	5 01 4
	Stochastic Processes &			Stochastic Processes &	
CS 481	Applications	3 or 4	CS 481	Applications	3 or 4
CS 484	Parallel Programming	3 or 4	CS 484	Parallel Programming	3 or 4
	Special Topics (As			Special Topics (As	
CS 398	Approved)	1 to 4	CS 398	Approved)	1 to 4
	Special Topics (As			Special Topics (As	
CS 498	Approved)	1 to 4	CS 498	Approved)	1 to 4
ECE 297	Individual Study	1	ECE 297	Individual Study	1
ECE 304	Photonic Devices	3	ECE 304	Photonic Devices	3
FCF 307	Decisions	3	FCF 307		3
	Digital Signal			Digital Signal	
ECE 310	Processing	3	ECE 310	Processing	3
	Digital Signal			Digital Signal	
ECE 311	Processing Lab	1	ECE 311	Processing Lab	1
	Probability in	1		Probability in	1
ECE 314	Engineering Lab	1	ECE 314	Engineering Lab	1
	Power Ckts &	3		Power Ckts &	3
ECE 330	Electromechanics	-	ECE 330	Electromechanics	-
505 222	Green Electric Energy	3	505 222	Green Electric Energy	3
ECE 333	Floatropia Circuita	2	ELE 333	Flootropic Circuits	2
ECE 342	Electronic Circuits	5	ECE 342	Electronic Circuits	5
FCF 343	Laboratory	1	FCF 343	Laboratory	1
ECE 350	Fields and Waves II	3	ECE 350	Fields and Waves II	3
-	Data Science and	2		Data Science and	2
ECE 365	Engineering	3	ECE 365	Engineering	3
	Introduction to			Introduction to	
	Algorithms & Models	Л		Algorithms & Models	Л
	of Computation	-		of Computation	7
ECE 374	or computation		ECE 374		
ECE 380	Biomedical Imaging	3	ECE 380	Biomedical Imaging	3
FCF 201	Computer Systems	4	FCF 201	Computer Systems	4
ECE 391	Engineering Advanced Digital		ECE 391	Engineering Advanced Digital	
FCF 395	Projects Lab	2 or 3	FCF 395	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
	Electronic Music	2		Electronic Music	2
ECE 402	Synthesis	5	ECE 402	Synthesis	5
ECE 403	Audio Engineering	3	ECE 403	Audio Engineering	3
ECE 407	Cryptography	3 or 4	ECE 407	Cryptography	3 or 4
505 400	Applied Parallel	4		Applied Parallel	4
ECE 408	Programming		ECE 408	Programming	
	Computer Organization	Л		Computer Organization	л
FCF 411	& Design	4	FCF 411	& Design	4
	Microcomputer			Microcomputer	
ECE 412	Laboratory	3	ECE 412	Laboratory	3
	Biomedical	2		Biomedical	2
ECE 414	Instrumentation	3	ECE 414	Instrumentation	3
	Biomedical	2		Biomedical	2
ECE 415	Instrumentation Lab	2	ECE 415	Instrumentation Lab	۲
ECE 416	Biosensors	3	ECE 416	Biosensors	3
	Multimedia Signal	4		Multimedia Signal	4
EUE 41/	Processing		ECE 41/	Processing	
ECE /19	Image & Video	4	ECE 110	Image & Video	4
FCF 419	FLUCESSIIIg Security Laboratory	3 or /	FCF 419	Security Laboratory	3 or 4
	Embedded DSP	5014		Embedded DSP	5 01 4
ECE 420	Laboratory	2	ECE 420	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
	Intro to VLSI System	2		Intro to VLSI System	3
ECE 425	Design	J	ECE 425	Design	5
ECE 428	Distributed Systems	3 or 4	ECE 428	Distributed Systems	3 or 4
ECE 431	Electric Machinery	4	ECE 431	Electric Machinery	4
	Advanced Electric	3		Advanced Electric	3
EUE 432	wachinery		EUE 432	iviacninery	
	Computer Networking	3 or 1		Computer Networking	3 or 1
ECE 435	Laboratory	5014	FCF 435	Laboratory	5 01 4
	Sensors and			Sensors and	
ECE 437	Instrumentation	3	ECE 437	Instrumentation	3
	Communication	•		Communication	2
ECE 438	Networks	3 or 4	ECE 438	Networks	3 or 4
ECE 439	Wireless Networks	3 or 4	ECE 439	Wireless Networks	3 or 4
	Physcs & Modeling	2		Physcs & Modeling	3
ECE 441	Semicond Dev	J	ECE 441	Semicond Dev	J

ECE 4	42	Silicon Photonics	3 or 4	ECE 442	Silicon Photonics	3 or 4
ECE 4	43	IC Device Theory &	4	ECE 443	LEDs and Solar Cells IC Device Theory &	4
ECE 4	44	Fabrication	-	ECE 444	Fabrication	-
		Principles of Experimental Research	4		Principles of Experimental Research	4
	16	Engineering			Engineering	
ECE 4	40	Active Microwave Ckt	3	ECE 440	Active Microwave Ckt Design	3
	77	Artificial Intelligence	3 or 4		Artificial Intelligence	3 or 4
ECE 4	48	Adv Microwave		ECE 448	Adv Microwave	
ECE 4	51	Measurements	3	ECE 451	Measurements	3
ECE 4	52	Electromagnetic Fields	3	ECE 452	Electromagnetic Fields	3
		Wireless Communication	Д		Wireless	4
ECE 4	53	Systems	-	ECE 453	Systems	-
ECE 4	54	Antennas Optical Electropics	3 2 or 4	ECE 454	Antennas Optical Electropics	3 2 or 4
ECE 4		Global Nav Satellite	4	ECE 433	Global Nav Satellite	4
ECE 4	56	Systems Microwave Devices &	2	ECE 456	Systems Microwave Devices &	2
ECE 4	57	Circuits	3	ECE 457	Circuits	3
ECE 4	58	Propag	3	ECE 458	Propag	3
	-0	Communications	3		Communications	3
ECE 4 ECE 4	59 60	Systems Optical Imaging	4	ECE 459 ECE 460	Systems Optical Imaging	4
		Digital Communications	3		Digital Communications	3
ECE 4	61 62	Logic Synthesis	3	ECE 461 ECE 462	Logic Synthesis	3
		Digital Communications	2		Digital Communications	2
ECE 4	63	Lab	2	ECE 463	Lab	2
ECE 4	54	Optical	3	ECE 464	Optical	3
	~	Communications	3		Communications	3
ECE 4	05	Optical	1	ECE 465	Optical	1
ECE 4	56 - 7	Communications Lab	1 2	ECE 466	Communications Lab	1 2
ECE 4	07	Biophotonics	3	ECE 467	Biophotonics	3
ECE 4	68	Dever Electronics	3	ECE 468	Optical Remote Sensing	3
ECE 4	69	Laboratory	2	ECE 469	Laboratory	2
FCF 4	70	Introduction to Robotics	4	FCF 470	Introduction to Robotics	4
		Biomedical Ultrasound	3		Biomedical Ultrasound	3
ECE 4	72	Imaging Fund of Engrg	2 4	ECE 472	Imaging Fund of Engrg	2
ECE 4	73	Acoustics	3 OF 4	ECE 473	Acoustics	3 OF 4
ECE 4	76	Power System Analysis	3	ECE 476	Power System Analysis	3
		Formal Software	3 or 4		Formal Software	3 or 4
ECE 4	78	Development Methods		ECE 478	Development Methods	
				FCF 479	IoT and Cognitive	4
		Magnetic Resonance	3 or 4		Magnetic Resonance	3 or 4
ECE 4	80	Imaging Nanatashnalagu	4	ECE 480	Imaging Nanotochnology	4
ECE 4	82	Digital IC Design	3	ECE 481	Digital IC Design	4 3
ECE 4	83	Analog IC Design	3	ECE 483	Analog IC Design	3
				FCF 484	Principles of Safe Autonomy	4
		MEMS Devices &	3		MEMS Devices &	3
ECE 4	85	Systems	4	ECE 485	Systems	4
ECE 4	86	Intro Quantum Electr	4	ECE 486	Intro Quantum Electr	4
ECE 4	87	for EEs	3	ECE 487	for EEs	3
FCF 4	88	Compound Semicond & Devices	3	ECE 488	Compound Semicond &	3
		Robot Dynamics and	Л		Robot Dynamics and	4
ECE 4	89	Control	т	ECE 489	Control	-7
ECE 4	90	Optimization	3 or 4	ECE 490	Optimization	3 or 4
ECE 4	91	Numerical Analysis	3 or 4	ECE 491	Numerical Analysis	3 or 4
ECE 4	92	Parallel Progrmg: Sci & Engrg	3 or 4	ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4
	22	Advanced Engineering	3 or 4	ECE 402	Advanced Engineering	3 or 4
eue 4	55	Photonic Device	2	EUE 493	Photonic Device	2
ECE 4	95	Laboratory	Э	ECE 495	Laboratory	Э

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ECE 298	Special Topics (As	1 to /	ECE 200	Special Topics (As	1 + ~ 4
EUE 230	approved)	1 (0 4	ECE 298	approved)	±ι04
1	Spacial Tanics in ECE		•	Special Topics in ECE	
		0 to 4			0 to 4
ECE 398	(As approved)		ECE 398	(As approved)	
	Special Topics in ECE			Special Topics in ECE	
ECE 409	(As approved)	0 to 4	ECE 409	(As approved)	0 to 4
ECE 498	(As approved)		ECE 498	(As approved)	
	Interdisciplinery Design			Interdisciplinary Design	
	interdisciplinary Design			interdisciplinary Design	
	Proj (CubeSat, Solar			Proj (CubeSat, Solar	
	Decathlon, Formula	1 to 4		Decathlon, Formula	1 to 4
	SAE, Baja SAE, or by			SAE, BAJA SAE, OF DY	
FNC 404	Approval.)		ENIC 404	Approval.)	
ENG 491			ENG 491		
GEOL 107	Physical Geology	4	GEOL 107	Physical Geology	4
	History of the Earth			History of the Farth	
		4			4
GEOL 208	System		GEOL 208	System	
	Earth Materials and the			Earth Materials and the	
GEOL 333	Env	4	GEOL 333	Env	4
	LIIV		GEOE 555	Env	
	Environmental Geology	4		Environmental Geology	4
GEOL 380	Environmental Geology	-	GEOL 380	Environmental Geology	-
	Structural Geol and			Structural Geol and	
		4			4
GEOL 411	Tectonics		GEOL 411	Tectonics	
	Geol Field Methods.			Geol Field Methods.	
CEOL 417	Western US	6		Wostorn US	6
GEOL 417	western 05		GEOL 417	western 05	
	Mineralogy and	4		Mineralogy and	1
GEOL 432	Mineral Optics	4	GEOL 432	Mineral Optics	4
	Potrology and		-	Dotrology and	
	renology allu	4		retrology and	4
GEOL 436	Petrography		GEOL 436	Petrography	
	Sedimentology and	. 1		Sedimentology and	
	Stratigraphy	4		Ctratigraph.	4
GEOL 440	Stratigraphy		GEUL 440	Stratigraphy	
	Probing the Earth's	~		Probing the Earth's	2
GEOL 450	Interior	3	GEOL 450	Interior	3
			0101 100		
	Introduction to	4		Introduction to	4
GEOL 452	Geophysics		GEOL 452	Geophysics	
GEOL 460	Geochemistry	3	GEOL 460	Geochemistry	3
	debenembery	J	6262 100	Geoenemistry	5
	Deterministic Models			Deterministic Models	
		3			3
IF 310	in Optimization		IF 310	in Optimization	
	Industrial Quality		12 0 20	Industrial Quality	
	Industrial Quality	3		Industrial Quality	3
IE 330	Control	-	IE 330	Control	-
	Facilities Planning and			Facilities Planning and	
IE 260	Docign	3		Dosign	3
IE 300	Design		TE 300	Design	
	Production Planning &	2		Production Planning &	2
IF 361	Control	3	IF 361	Control	3
	Desire 8 Anhus of		12 301	Design Q Anhur of	
	Design & Aniys of	3 or 4		Design & Aniys of	3 or 4
IE 400	Experiments		IE 400	Experiments	00.1
	Advanced Topics in			Advanced Topics in	
		2		Ctachastia Drassassa 8	2 4
	Stochastic Processes &	3 or 4		Stochastic Processes &	3 or 4
IE 410	Applications		IE 410	Applications	
	Optimization of Large			Optimization of Large	
	Sustance	3 or 4	15 411	Suctome	3 or 4
1E 411	Systems		IE 411	Systems	
	OR Models for Mfg	2 0 1 4		OR Models for Mfg	2 0 - 1
IF 412	Systems	3 or 4	IF 412	Systems	3 OF 4
	Cimulation	2	15 412	Cimulation	2 4
IE 413	Simulation	3 or 4	IE 413	Simulation	3 or 4
	5	2		Figure delle states de la	2
IF 420	Financial Engineering	3 or 4	IF 420	Financial Engineering	3 or 4
	Feer surface in the			- · · - · · ·	
	Economic Found of	3 or 4		Economic Found of	3 or 4
IE 430	Quality Syst	'	IE 430	Quality Syst	
IF 431	Design for Six Sigma	3	IF 431	Design for Six Sigma	3
		~ <b> </b>	12 131		-
	Organismal &	4		Urganismai &	4
IB 150	Evolutionary Biol	·	IB 150	Evolutionary Biol	•
IB 202	Physiology	3 or 4	IB 202	Physiology	3 or ⊿
 ID 202	Ecology	· '		Factory .	
ID 203	ECOLOGY	4	IB 203	ECOIOGY	4
IB 204	Genetics	3 or 4	IB 204	Genetics	3 or 4
IB 302	Evolution	4	IB 302	Fvolution	4
			10 002		
255 al	Plant Systematics	4	IR 332	Plant Systematics	4
				Fish and Wildlife	2
IB 348	Fish and Wildlife	<b>,</b>			<b>≺</b>
-	Fish and Wildlife	3	IR 348	FCOLOGY	5
	Fish and Wildlife Ecology	3	IB 348	Ecology	5
	Fish and Wildlife Ecology Vertebrate Natural	3	IB 348	Ecology Vertebrate Natural	4
IB 368	Fish and Wildlife Ecology Vertebrate Natural History	3 4	IB 348 IB 368	Ecology Vertebrate Natural History	4
IB 368	Fish and Wildlife Ecology Vertebrate Natural History Introduction to	3 4	IB 348 IB 368	Ecology Vertebrate Natural History	4
IB 368	Fish and Wildlife Ecology Vertebrate Natural History Introduction to	3 4 3 or 4	IB 348 IB 368	Ecology Vertebrate Natural History Introduction to	4 3 or 4
IB 368 IB 401	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology	3 4 3 or 4	IB 348 IB 368 IB 401	Ecology Vertebrate Natural History Introduction to Entomology	4 3 or 4
IB 368 IB 401	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and	3 4 3 or 4	IB 348 IB 368 IB 401	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and	4 3 or 4
IB 368 IB 401 IB 405	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes	3 4 3 or 4 3	IB 348 IB 368 IB 401 IB 405	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes	4 3 or 4 3
IB 368 IB 401 IB 405	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes	3 4 3 or 4 3	IB 348 IB 368 IB 401 IB 405	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes	4 3 or 4 3
IB 368 IB 401 IB 405 IB 420	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology	3 4 3 or 4 3 3	IB 348 IB 368 IB 401 IB 405 IB 420	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology	4 3 or 4 3
IB 368 IB 401 IB 405 IB 420 IB 421	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis	3 4 3 or 4 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis	4 3 or 4 3 3 3
IB 368 IB 401 IB 405 IB 420 IB 421	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physiolog	3 4 3 or 4 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physiol of	4 3 or 4 3 3 3 3
IB 368 IB 401 IB 405 IB 420 IB 421	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of	3 4 3 or 4 3 3 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of	4 3 or 4 3 3 3 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals	3 4 3 or 4 3 3 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals	4 3 or 4 3 3 3 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology	3 4 3 or 4 3 3 3 3 4	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology	4 3 or 4 3 3 3 3 4
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology	3 4 3 or 4 3 3 3 3 4 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology	4 3 or 4 3 3 3 3 4
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology	3 4 3 or 4 3 3 3 3 4 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology	4 3 or 4 3 3 3 4 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior	3 4 3 or 4 3 3 3 3 4 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior	4 3 or 4 3 3 3 4 3 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global	3 4 3 or 4 3 3 3 3 4 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global	4 3 or 4 3 3 3 4 3 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global Change	3 4 3 or 4 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432 IB 440	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global	4 3 or 4 3 3 3 4 3 3 3 3 3 3 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 421 IB 427 IB 431 IB 432 IB 440	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global Change	3 4 3 or 4 3 3 3 3 4 3 3 3 3 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432 IB 440	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global Change	4 3 or 4 3 3 3 4 3 3 3 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432 IB 440 IB 443	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global Change Evolutionary Ecology	3 4 3 or 4 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432 IB 440 IB 443	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global Change Evolutionary Ecology	4 3 or 4 3 3 3 4 3 3 3 3 3 3 3
IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432 IB 440 IB 443 IB 444	Fish and Wildlife Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global Change Evolutionary Ecology Insect Ecology	3 4 3 or 4 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3	IB 348 IB 368 IB 401 IB 405 IB 420 IB 421 IB 426 IB 427 IB 431 IB 432 IB 440 IB 443 IB 444	Ecology Vertebrate Natural History Introduction to Entomology Evolution of Traits and Genomes Plant Physiology Photosynthesis Env and Evol Physl of Animals Insect Physiology Behavioral Ecology Genes and Behavior Plants and Global Change Evolutionary Ecology Insect Ecology	4 3 or 4 3 3 3 3 4 3 3 3 3 3 3 or 4

		Conservation Biology	4		Conservation Biology	4
	IB 451	07		IB 451	07	
	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
		Principles of	Л		Principles of	Л
	IB 467	Systematics	4	IB 467	Systematics	4
		Insect Classification	4		Insect Classification	4
	IB 468	and Evol	4	IB 468	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
		Insect Pest	_		Insect Pest	_
	IB 482	Management	3	IB 482	Management	3
	IB 483	Insect Pathology	3	IB 483	Insect Pathology	3
		Environ Toxicology &			Environ Toxicology &	
	IB 485	Health	3	IB 485	Health	3
	IB 486	Pesticide Toxicology	3 or 4	IB 486	Pesticide Toxicology	3 or 4
		Anat & Physiol Snch	••••		Anat & Physiol Spch	
	LING 300	Mechanism	4	LING 300	Mechanism	4
		Introduction to			Introduction to	
		Computational	3 or 4		Computational	3 or A
		Linguistics	5014	LING 406	Linguistics	5014
		Linguistics			Linguistics	
			3 or 4	LINC 407		3 or 4
	LING 407	Analysis		LING 407	AlldlySIS	
		Language and the Brain	3 or 4		Language and the Brain	3 or 4
	LING 427			LING 427		
	N 455 200	Engineering Materials	3	N/05 200	Engineering Materials	3
I						
	Material Science and Eng. (MSE): All 300 and 40	DU level courses except		Material Science and Eng. (MSE): All 300	and 400 level courses	
		Basic Discrete	3		Basic Discrete	3
	MATH 213	Mathematics		MATH 213	Mathematics	
		Fundamental	3		Fundamental	3
	MATH 347	Mathematics		MATH 347	Mathematics	
		Fundamental	4		Fundamental	4
	MATH 348	Mathematics-ACP	-	MATH 348	Mathematics-ACP	-
	MATH 357	Numerical Methods I	3	MATH 357	Numerical Methods I	3
		Non Euclidean	3 or 4		Non Euclidean	3 or 4
	MATH 402	Geometry		MATH 402	Geometry	
	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
		Intro to Combinatorics	3 or 4		Intro to Combinatorics	3 or 4
	MATH 413			MATH 413		
	MATH 414	Mathematical Logic	3 or 4	MATH 414	Mathematical Logic	3 or 4
		Intro to Abstract	3 or 4		Intro to Abstract	3 or 4
	MATH 417	Algebra		MATH 417	Algebra	
		Intro to Abstract	3 or 4		Intro to Abstract	3 or 4
	MATH 418	Algebra II		MATH 418	Algebra II	
		Differential Geometry	3 or 4		Differential Geometry	3 or 4
	MATH 423	,		MATH 423	,	
	MATH 424	Honors Real Analysis	3	MATH 424	Honors Real Analysis	3
		Honors Advanced	3		Honors Advanced	3
	MATH 425	Analysis		MATH 425	Analysis	
		Honors Abstract	3		Honors Abstract	3
	MATH 427	Algebra		MATH 427	Algebra	
		Honors Topics in	3		Honors Topics in	3
	MATH 428	Mathematics		MATH 428	Mathematics	
		Set Theory and	3 or 4		Set Theory and	3 or 4
	MATH 432	lopology	-	MATH 432	lopology	-
		Intro Partial Diff	3 or 4		Intro Partial Diff	3 or 4
	MATH 442	Equations		MATH 442	Equations	
		Elementary Real	3 or 4		Elementary Real	3 or 4
	MATH 444	Analysis		MATH 444	Analysis	
		Applied Complex	3 or 4		Applied Complex	3 or 4
	MATH 446	Variables		MATH 446	Variables	
	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	Number Theory	3 or 4	MATH 453	Number Theory	3 or 4
	MATH 473	Algorithms	4	MATH 473	Algorithms	4
		Formal Models of	3 or 4		Formal Models of	3 or 4
	MATH 475	Computation	- • · T	MATH 475	Computation	- • • •
		Vector and Tensor	3 or 4		Vector and Tensor	3 or 4
	MATH 481	Analysis		MATH 481	Analysis	
	MATH 482	Linear Programming	3 or 4	MATH 482	Linear Programming	3 or 4
		Nonlinear	3 or 4		Nonlinear	3 or 4
	MATH 484	Programming	- • · T	MATH 484	Programming	- • • •
		Advanced Engineering	3 or 1		Advanced Engineering	3 or 1
	MATH 487	Math	- • · T	MATH 487	Math	

	Dynamics & Differential			Dynamics & Differential	
ΜΔΤΗ /89	Fans	3 or 4	MATH <b>189</b>	Fans	3 or 4
MATH 469			WIATH 469		
	Molec & Cellular Basis	4		Molec & Cellular Basis	4
MCB 150	of Life		MCB 150	of Life	•
MCB 250	Molecular Genetics	3	MCB 250	Molecular Genetics	3
	Exp Techniqs in			Exp Technias in	
MCB 251	Molecular Biol	2	MCB 251	Molecular Biol	2
WICD 231			WED 251		
	Cells, fissues &	3		Cells, fissues &	3
MCB 252	Development		MCB 252	Development	
	Exp Techniqs in Cellular	2		Exp Techniqs in Cellular	2
MCB 253	Biol	Z	MCB 253	Biol	Z
MCB 300	Microhiology	3	MCB 300	Microbiology	3
WICD 300	Eventimental	5	WEB 500	Experimental	5
	Experimental	3		Experimental	3
MCB 301	Microbiology		MCB 301	Microbiology	
	Introduction to	2		Introduction to	2
MCB 314	Neurobiology	5	MCB 314	Neurobiology	5
	0,			07	
MCP 216	Genetics and Disease	4	MCD 216	Genetics and Disease	4
WICE STO			WICB 510		
	Biochem & Phys Basis	3		Biochem & Phys Basis	3
MCB 354	of Life	•	MCB 354	of Life	•
MCB 400	Cancer Cell Biology	3	MCB 400	Cancer Cell Biology	3
MCB 401	Cellular Physiology	3	MCB 401	Cellular Physiology	3
	Svc & Intogrativo	5		Sys & Integrative	5
	Sys & Integrative	3		Sys & Integrative	3
MCB 402	Physiology		MCB 402	Physiology	
	Cell & Membrane	1		Cell & Membrane	1
MCB 403	Physiology Lab	1012	MCB 403	Physiology Lab	1012
	Sys & Integrative			Svs & Integrative	
	Dhusial Lab	1 to 2		Dhusial Lab	1 to 2
MCB 404	Physiol Lab		IVICB 404	Physiol Lab	
	Gene Expression &	2		Gene Expression &	2
MCB 406	Regulation	3	MCB 406	Regulation	5
MCB 408	Immunology	3	MCB 408	Immunology	3
		•			-
	Developmental Biology,			Developmental Biology,	
	Stem Cells and	3		Stem Cells and	3
	Regenerative Medicine	-		Regenerative Medicine	-
MCB 410	Regenerative medicine		MCB 410		
MCB 413	Endocrinology	3	MCB 413	Endocrinology	3
	Brain Behavior & Info			Brain Behavior & Info	
MCB 410	Dragoss	3	MCD 410	Dragoss	3
IVICB 419	Process	-	WICB 419	Process	-
MCB 421	Microbial Genetics	3	MCB 421	Microbial Genetics	3
	Microhial Piachamistry	2		Microbial Piochomistry	2
MCB 424	Wilciobiai Biochernistry	5	MCB 424		5
MCP 426	Bacterial Pathogenesis	3	MCB 426	Bacterial Pathogenesis	3
WICB 420			IVICB 420		
	Molecular	3		Molecular	3
MCB 430	Microbiology	•	MCB 430	Microbiology	-
MCB 431	Microbial Physiology	3	MCB 431	Microbial Physiology	3
	Virology & Viral			Virology & Viral	
MCB 133	Pathogenesis	3	MCB /33	Pathogenesis	3
10160 455	Fuglition of infostions		WICD +33		
	Evolution of Infectious	3		Evolution of Infectious	3
MCB 435	Disease		MCB 435	Disease	
	Dhusiaal Diachamistry	2		Dhusiaal Diachamistru	2
MCB 446	Physical Biochemistry	3	MCB 446	Physical Biochemistry	3
	Eukarvotic Cell			Eukaryotic Cell	
	Eukaryotic cen	3	N4CD 400		3
MCB 480	Signaling		MCB 480	Signaling	
ME 200	Thermodynamics	3	ME 200	Thermodynamics	3
	Fundamentals of Fluid			Fundamentals of Fluid	
MF 310	Dynamics	4	MF 310	Dynamics	4
ME 320	Hoat Transfor	4	ME 220	Host Transfor	л
IVIL JZU	ווכמו וומווגופו	-			-
	Engineering Materials	4		Engineering Materials	4
ME 330			ME 330	0	
	Dynamics of	2 5		Dynamics of	<b>2</b> -
MF 340	Mechanical Systems	3.5	MF 340	Mechanical Systems	3.5
ME 270	Mochanical Docign I	2	ME 270	Machanical Dasign I	2
		5	IVIE 570		5
ME 371	Mechanical Design II	3	ME 371	Mechanical Design II	3
	Energy Conversion	2 or 1		Energy Conversion	2 or 1
ME 400	Systems	5 OF 4	ME 400	Systems	3 01 4
	Refrigeration and			Refrigeration and	
ME 401	Cryogenics	3 or 4	ME 401	Cryogenics	3 or 4
WIE 401	Cryogenics Design of Thermool		IVIE 401	Cryogenics Design of Thermool	
	Design of Thermal	3 or 4		Design of Thermal	3 or 4
ME 402	Systems		ME 402	Systems	
	Internal Combustion	2 - 4		Internal Combustion	2 4
ME 403	Engines	3 or 4	ME 403	Engines	3 or 4
	Intermediate			Intermediate	
		4			4
IVIE 404	Thermodynamics		IVIE 404	Inermodynamics	
	Intermediate Gas	3 or 1		Intermediate Gas	2 or 1
ME 410	Dynamics	5014	ME 410	Dynamics	J UT 4
	Viscous Flow & Heat	_		Viscous Flow & Heat	
MF /11	Transfor	4	MF //11	Transfor	4
	Numerical Thermo-	2 to 4		Numerical Thermo-	2 to 4
ME 412	Fluid Mechs		ME 412	Fluid Mechs	1
	Intermediate Heat			Intermediate Heat	
ME 420	Transfer	4	ME 420	Transfer	4
	Epiluro of Engra			Esilure of Engra	
	railure of Engrg	3 or 4			3 or 4
IVIE 430	Materials		ME 430	Materials	

	Mechanical			Mechanical	
		3 or 4	NAE 401		3 or 4
ME 431	Component Failure		ME 431	Component Failure	
	Kinem & Dynamics of	3 or 1		Kinem & Dynamics of	3 or 1
ME 440	Mech Syst	5014	ME 440	Mech Syst	5014
	Introduction to			Introduction to	
	Bobotics	4		Pohotics	4
IVIE 445	RODULICS		IVIE 445	Robotics	
	Computer-Aided Mfg	3 or 4		Computer-Aided Mfg	3 or 4
ME 451	Systems	5014	ME 451	Systems	5014
	Num Control of Mfg			Num Control of Mfg	
	Null Control of Mig	3 or 4		Num control of Mig	3 or 4
ME 452	Processes		ME 452	Processes	
	Industrial Control			Industrial Control	
ME 460	Systems	4	ME 460	Systems	4
WIL 400	Systems		IVIL 400	Systems	
	Computer Cntrl of	3 or 4		Computer Cntrl of	3 or /
ME 461	Mech Systems	5014	ME 461	Mech Systems	5014
	Finite Element Analysis	3 or 4	NAE 471	Finite Element Analysis	3 or 4
	Introduction to	2 or 1		Introduction to	2 or 1
ME 472	Tribology	5014	ME 472	Tribology	5014
	MEMS Devices &			MFMS Devices &	
	Gustoma	3		Sustana	3
IVIE 485	Systems		IVIE 485	Systems	
	MEMS-NEMS Theory &	4		MEMS-NEMS Theory &	4
MF 487	Fabrication	4	MF 487	Fabrication	4
	Elect Music Techniques	3		Elect Music Techniques	3
MUS 407	I	-	MUS 407	I	-
	Elec Music Techniques	-		Elec Music Techniques	-
MUS 400		2			2
10103 405			1003 403		
	Cog Neuroscience of	3 or 4		Cog Neuroscience of	3 or /
NEUR 453	Vision	5014	NEUR 453	Vision	5014
NPRF 201	Energy Systems	2 or 3	NPRF 201	Energy Systems	2 or 3
	Energy Systems	2013		Energy Systems	2013
	Modeling Nuclear	3		Modeling Nuclear	3
NPRE 247	Energy System	0	NPRE 247	Energy System	0
				Materials in Nuclear	
				Engineering	3
			NPRE 550	Engineering	
	Nuclear Power	3 or 4		Nuclear Power	3 or /
NPRE 402	Engineering	5014	NPRE 402	Engineering	5014
	Nuclear Power Econ &			Nuclear Power Econ &	
	Fuel Marst	3 or 4		Fuel Ment	3 or 4
NPRE 412	Fuel Mgmt		NPRE 412	Fuel Night	
	Plasma and Fusion	2		Plasma and Fusion	2
NPRE 421	Science	3	NPRE 421	Science	3
	Plasma Laboratory	2		Plasma Laboratory	2
NFRE 425		2			2
NPRE 429	Plasma Engineering	3	NPRE 429	Plasma Engineering	3
NPRF 431	Course Not Found	3			
	Nuclear Engrg			Nuclear Engrg	
	Nuclear Engrg	2		Nuclear Engrg	2
NPRE 432	Nuclear Engrg Materials Lab	2	NPRE 432	Nuclear Engrg Materials Lab	2
NPRE 432 NPRE 435	Nuclear Engrg Materials Lab Radiological Imaging	2 3	NPRE 432 NPRE 435	Nuclear Engrg Materials Lab Radiological Imaging	2 3
NPRE 432 NPRE 435 NPRE 441	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection	2 3 4	NPRE 432 NPRE 435 NPRE 441	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection	2 3 4
NPRE 432 NPRE 435 NPRE 441	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste	2 3 4	NPRE 432 NPRE 435 NPRE 441	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste	2 3 4
NPRE 432 NPRE 435 NPRE 441	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste	2 3 4 3	NPRE 432 NPRE 435 NPRE 441	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste	2 3 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management	2 3 4 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management	2 3 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical	2 3 4 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical	2 3 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab	2 3 4 3 2 or 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab	2 3 4 3 2 or 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact	2 3 4 3 2 or 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact	2 3 4 3 2 or 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact	2 3 4 3 2 or 3 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact	2 3 4 3 2 or 3 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I	2 3 4 3 2 or 3 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I	2 3 4 3 2 or 3 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact	2 3 4 3 2 or 3 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact	2 3 4 3 2 or 3 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II	2 3 4 3 2 or 3 3 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II	2 3 4 3 2 or 3 3 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II	2 3 4 3 2 or 3 3 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II	2 3 4 3 2 or 3 3 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg &	2 3 4 3 2 or 3 3 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg &	2 3 4 3 2 or 3 3 3 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 448	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design	2 3 4 3 2 or 3 3 3 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 448	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design	2 3 4 3 2 or 3 3 3 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 448 NPRE 451	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory	2 3 4 3 2 or 3 3 3 4 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory	2 3 4 3 2 or 3 3 3 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 448 NPRE 451	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion &	2 3 4 3 2 or 3 3 3 4 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 448 NPRE 451	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory	2 3 4 3 2 or 3 3 3 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion &	2 3 4 3 2 or 3 3 3 4 3 4 3 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion &	2 3 4 3 2 or 3 3 3 4 3 4 3 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport	2 3 4 3 2 or 3 3 3 4 3 4 3 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport	2 3 4 3 2 or 3 3 3 4 3 4 3 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl	2 3 4 3 2 or 3 3 3 4 3 4 3 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl	2 3 4 3 2 or 3 3 3 4 3 4 3 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 or 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 445 NPRE 451 NPRE 455 NPRE 457	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 or 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 457 NPRE 458	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 or 4 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 457 NPRE 458	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 or 4 4 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458 NPRE 470	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 or 4 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458 NPRE 470	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 445 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458 NPRE 470	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 457 NPRE 458 NPRE 470	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 458 NPRE 470	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 457 NPRE 458 NPRE 470	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 475	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 475	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 475	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4 3 3 or 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 447 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 475	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4 2
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 475 PHYS 225	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems Relativity & Math Applications	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4 3 3 or 4 2	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 447 NPRE 451 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 475 PHYS 225	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems Relativity & Math Applications	2 3 4 3 2 or 3 3 3 4 3 4 3 or 4 4 3 3 or 4 2
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NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 444 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 458 NPRE 470 NPRE 470 NPRE 470 NPRE 475 PHYS 225 PHYS 325 PHYS 325 PHYS 326 PHYS 401 PHYS 402 PHYS 403 PHYS 406 PHYS 419	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems Relativity & Math Applications Classical Mechanics I Classical Mechanics I Classical Physics Lab Light Modern Experimental Physics Acoustical Physics of Music Space, Time, and Matter-ACP Space, Time, and	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 3 or 4 4 3 3 or 4 2 3 3 or 4 4 or 5 4 or 5 4 3 or 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 447 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 457 NPRE 458 NPRE 470 NPRE 470 NPRE 475 PHYS 225 PHYS 326 PHYS 326 PHYS 326 PHYS 403 PHYS 403 PHYS 403 PHYS 409 PHYS 419	Nuclear Engrg Materials LabRadiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen SourcesWind Power Systems Relativity & Math Applications Classical Mechanics IClassical Mechanics II Classical Physics Lab LightModern Experimental PhysicsAcoustical Physics of Music Space, Time, and Matter	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 4 3 3 or 4 4 3 3 or 4 4 or 5 4 3 or 4 2 3 3 or 4 2 3 or 4 2 3 or 4 2 3 or 4 2 3 or 4 2 3 or 4 2 3 or 5
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 444 NPRE 446 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 458 NPRE 470 NPRE 470 NPRE 470 NPRE 475 PHYS 225 PHYS 325 PHYS 325 PHYS 326 PHYS 401 PHYS 402 PHYS 403 PHYS 403 PHYS 406 PHYS 419 PHYS 420	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems Relativity & Math Applications Classical Mechanics I Classical Mechanics I Classical Mechanics I Classical Physics Lab Light Modern Experimental Physics Acoustical Physics of Music Space, Time, and Matter-ACP Space, Time, and Matter	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 3 or 4 4 3 3 or 4 2 3 3 or 4 4 or 5 4 or 5 4 3 or 4	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 447 NPRE 448 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 470 NPRE 475 PHYS 225 PHYS 326 PHYS 326 PHYS 401 PHYS 403 PHYS 403 PHYS 409 PHYS 419 PHYS 420	Nuclear Engrg Materials LabRadiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen SourcesWind Power Systems Relativity & Math Applications Classical Mechanics IClassical Mechanics IClassical Mechanics II Classical Physics Lab LightModern Experimental PhysicsAcoustical Physics of Music Space, Time, and Matter Thermal & Statistical	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 4 3 3 or 4 4 3 3 or 4 4 3 3 or 4 4 or 5 4 3 or 4 2 3 3 or 4 2 3 or 4 2 3 or 4 2 3 or 4 2 3 or 5
NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 446 NPRE 447 NPRE 447 NPRE 451 NPRE 455 NPRE 455 NPRE 455 NPRE 458 NPRE 470 NPRE 470 NPRE 470 NPRE 475 PHYS 225 PHYS 325 PHYS 325 PHYS 326 PHYS 401 PHYS 402 PHYS 403 PHYS 403 PHYS 406 PHYS 419 PHYS 420	Nuclear Engrg Materials Lab Radiological Imaging Radiation Protection Radioactive Waste Management Nuclear Analytical Methods Lab Radiation Interact w/Matter I Radiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen Sources Wind Power Systems Relativity & Math Applications Classical Mechanics I Classical Mechanics I Classical Mechanics I Classical Physics Lab Light Modern Experimental Physics Acoustical Physics of Music Space, Time, and Matter-ACP Space, Time, and Matter	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 4 3 3 or 4 4 3 3 or 4 4 4 3 3 or 4 4 4 3 3 or 5 4 3 3 or 4 4 3 3 or 4 4 4 3 3 or 4 4 3 3 or 4 4 4 3 3 or 4 4 3 3 or 4 4 4 3 3 or 4 4 4 3 3 or 4 4 4 3 3 or 4 4 4 3 3 or 4 4 4 3 3 3 or 4 4 4 4 3 3 3 or 4 4 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	NPRE 432 NPRE 435 NPRE 441 NPRE 442 NPRE 444 NPRE 446 NPRE 447 NPRE 447 NPRE 453 NPRE 455 NPRE 455 NPRE 457 NPRE 458 NPRE 470 NPRE 470 NPRE 475 PHYS 225 PHYS 326 PHYS 326 PHYS 401 PHYS 402 PHYS 403 PHYS 406 PHYS 419 PHYS 420	Nuclear Engrg Materials LabRadiological Imaging Radiation ProtectionRadioactive Waste Management Nuclear Analytical Methods LabRadiation Interact w/Matter IRadiation Interact w/Matter II Nuclear Syst Engrg & Design NPRE Laboratory Neutron Diffusion & Transport Safety Anlys Nucl Reactor Syst Design in NPRE Fuel Cells & Hydrogen SourcesWind Power Systems Classical Mechanics IClassical Mechanics IClassical Mechanics IIClassical Physics Lab LightModern Experimental PhysicsAcoustical Physics of Music Space, Time, and Matter Thermal & Statistical	2 3 4 3 2 or 3 3 3 4 3 4 3 4 3 4 3 3 or 4 4 3 3 or 4 4 3 3 or 4 4 or 5 4 3 or 4 2 3 3 or 4 4 or 5

		4	DUNG 460
PHYS 460	Physics		PHYS 460
	Atomic Scale	3 or 4	
PHYS 466	Simulations		PHYS 466
PHYS 470	Subatomic Physics	4	PHYS 470
	Atomic Phys &	2	
PHYS 485	Quantum Theory	5	PHYS 485
PHYS 486	Quantum Physics I	4	PHYS 486
PHYS 487	Quantum Physics II	4	PHYS 487
	Intro to Brain and		
PSVC 204	Cognition	3	PSVC 204
SHC 204	Conoral Dhanatics	2	SHE 200
3H3 200		5	383 200
	Intro Sound & Hearing	3	
SHS 240	Science		SHS 240
	Anat & Physiol Spch	4	
SHS 300	Mechanism		SHS 300
	Conoral Speech Science	4	
SHS 301	General Speech Science	4	SHS 301
	Development of	2	
SHS 320	Spoken Language	3	SHS 320
	Intro Audiol & Hear		
SHS 450	Disorders	4	SHS 450
SHS 470	Neural Bases Spch Lang	4	SHS 470
5115 470	Mathads of Applied		5115 470
STAT 420	Statistics	3 or 4	CTAT 420
51A1 420 STAT 424		, <b>.</b>	SIAI 420
STAT 424	Analysis of variance	5 OF 4	STAT 424
<u>STAT 425</u>	Statistical Modeling I	3 or 4	<u>STAT 425</u>
	Statistical Computing	3 or 4	
STAT 428		'	STAT 428
STAT 429	Time Series Analysis	3 or 4	STAT 429
	Statistical Data	2 05 4	
STAT 440	Management	3 or 4	STAT 440
SE 411	Reliability Engineering	3 or 4	SE 411
SE 420	Digital Control Systems	4	SE 420
SE 420	Machatropics	2	SE 420
SE 423	Niechatronics	5	SE 423
	State Space Design for	3	
SE 424	Control		SE 424
TAM 211	Statics	3	TAM 211
	Introductory Dynamics	3	
TAM 212		5	TAM 212
	Instance during the multiplication		
	Introductory Solid	2	
TAM 251	Mechanics	3	TAM 251
TAM 251	Mechanics	3	TAM 251
TAM 251 TAM 324	Mechanics Behavior of Materials	3 4	TAM 251 TAM 324
TAM 251 TAM 324	Mechanics Behavior of Materials	3 4	TAM 251 TAM 324
TAM 251 TAM 324 TAM 335	Mechanics Behavior of Materials Introductory Fluid Mechanics	3 4 4	TAM 251 TAM 324 TAM 335
TAM 251 TAM 324 TAM 335	Mechanics Behavior of Materials Introductory Fluid Mechanics	3 4 4	TAM 251 TAM 324 TAM 335
TAM 251 TAM 324 TAM 335	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics	3 4 4 4	TAM 251 TAM 324 TAM 335
TAM 251 TAM 324 TAM 335 TAM 412	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics	3 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412
TAM 251 TAM 324 TAM 335 TAM 412	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid	3 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics	3 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics	3 4 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics	3 4 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list o	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list of	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 435 TAM 445 TAM 451 Select three courses from the following list of	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391
TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 <b>Select three courses from the following list o</b> ECE 391 or CS 225	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225
TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list of the following list o	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 <b>Select three courses from the following list o</b> ECE 391 or CS 225 ECE 310	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list of ECE 391 or CS 225 ECE 310	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Chts &	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310
TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 ECE 391 or CS 225 ECE 310 ECE 320	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310
TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list of ECE 391 or CS 225 ECE 310 ECE 330	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 <b>Select three courses</b> ECE 391 or CS 225 ECE 310 ECE 330
TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list of ECE 391 or CS 225 ECE 310 ECE 330 ECE 342	Mechanics Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 <b>Select three courses</b> ECE 391 or CS 225 ECE 310 ECE 330 ECE 330
TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list of ECE 391 or CS 225 ECE 310 ECE 330 ECE 350 ECE 350	Mechanics Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310 ECE 330 ECE 342 ECE 350
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CS 225         ECE 391 or CS 225         ECE 310         ECE 330         ECE 330         ECE 330         ECE 350         Select three courses from the following list of CS 225	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b>	3 4 4 4 4 4 4	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330         ECE 350         Select three courses
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CS 225         ECE 391 or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:	Mechanics Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b>	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310 ECE 310 ECE 342 ECE 350 Select three courses Hardware Labs:
TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses from the following list of ECE 391 or CS 225 ECE 310 ECE 330 ECE 342 ECE 350 Select three courses from the following list of Hardware Labs:	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits	3 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310 ECE 310 ECE 330 ECE 342 ECE 350 Select three courses Hardware Labs:
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CS 225         ECE 391 or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory	3 4 4 4 4 4 4 4	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310 ECE 310 ECE 342 ECE 350 Select three courses Hardware Labs:
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CC 391 or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems	3 4 4 4 4 4 4 4 1	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310 ECE 310 ECE 342 ECE 350 Select three courses Hardware Labs: ECE 343
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CCE 391 or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:         ECE 343	Mechanics Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics f Advanced Core ECE Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II f ECE Labs. At least one Electronic Circuits Laboratory Computer Systems Engineering	3 4 4 4 4 4 4 4 4 1 1 4	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330 ECE 342 ECE 350         Select three courses         Hardware Labs:         ECE 343         ECE 391
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of the courses	Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics f Advanced Core ECE Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II f ECE Labs. At least one Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital	3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330 ECE 342 ECE 350         Select three courses         Hardware Labs:         ECE 343         ECE 391
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of th	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab	3 4 4 4 4 4 4 4 4 4 4 4 2 or 3	TAM 251 TAM 324 TAM 335 TAM 412 TAM 435 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310 ECE 340 ECE 342 ECE 350 Select three courses Hardware Labs: ECE 391 ECE 391 ECE 391 ECE 391
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:         ECE 391         ECE 393         ECE 391         ECE 393         ECE 343         ECE 391         ECE 391	Mechanics Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics f Advanced Core ECE Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II f ECE Labs. At least one Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music	3 4 4 4 4 4 4 4 4 4 2 or 3	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330 ECE 342 ECE 350         Select three courses         Hardware Labs:         ECE 391 ECE 391         ECE 391
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of a course course from the following list of a course c	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music	3 4 4 4 4 4 4 4 4 4 4 4 2 or 3 3	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330         ECE 330         ECE 342         ECE 350         Select three courses         Hardware Labs:         ECE 391         ECE 391
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of a state of a	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics f Advanced Core ECE Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II f ECE Labs. At least one Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music Synthesis Biomedical	3 4 4 4 4 4 4 4 4 4 4 2 0 7 3	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330 ECE 342 ECE 350         Select three courses         Hardware Labs:         ECE 391         ECE 391         ECE 343         ECE 391         ECE 391
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CE 391 or CS 225         ECE 310         ECE 330         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:         ECE 343         ECE 391         ECE 395         ECE 395         ECE 402         ECE 415	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music Synthesis Biomedical	3 4 4 4 4 4 4 4 4 4 2 or 3 3 2	TAM 251 TAM 324 TAM 335 TAM 335 TAM 412 TAM 435 TAM 445 TAM 451 Select three courses ECE 391 or CS 225 ECE 310 ECE 310 ECE 342 ECE 350 Select three courses Hardware Labs: ECE 391 ECE 391 ECE 391 ECE 343 ECE 391 ECE 391 ECE 343
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of th	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music Synthesis Biomedical Instrumentation Lab	3 4 4 4 4 4 4 4 4 4 2 0 7 3 3 2	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330 ECE 342 ECE 350         Select three courses         Hardware Labs:         ECE 391         ECE 391         ECE 343         ECE 391         ECE 343         ECE 391         ECE 343         ECE 391         ECE 343         ECE 343         ECE 343         ECE 343         ECE 391         ECE 343         ECE 402         ECE 415
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of a state of a	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music Synthesis Biomedical Instrumentation Lab Embedded DSP	3 4 4 4 4 4 4 4 4 4 4 2 0 7 3 3 2 2	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391         or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses         Hardware Labs:         ECE 391         ECE 391         ECE 343         ECE 391         ECE 395         ECE 402         ECE 415
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CE 391 or CS 225         ECE 310         ECE 330         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:         ECE 391         ECE 395         ECE 402         ECE 415         ECE 420	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music Synthesis Biomedical Instrumentation Lab Embedded DSP Laboratory	3 4 4 4 4 4 4 4 4 4 4 4 2 or 3 3 2 2 2	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330         ECE 330         ECE 342         ECE 350         Select three courses         Hardware Labs:         ECE 391         ECE 391         ECE 343         ECE 391         ECE 391         ECE 343         ECE 343         ECE 391         ECE 343
TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 445         TAM 451         Select three courses from the following list of CS 225         ECE 391         or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses from the following list of Hardware Labs:         ECE 391         ECE 395         ECE 402         ECE 415         ECE 420         ECE 420         ECE 420         ECE 420         ECE 420	Introductory Solid Mechanics Behavior of Materials Introductory Fluid Mechanics Intermediate Dynamics Intermediate Dynamics Intermediate Fluid Mechanics Continuum Mechanics Intermediate Solid Mechanics <b>f Advanced Core ECE</b> Computer Systems Engineering Data Structures Digital Signal Processing Power Ckts & Electromechanics Electronic Circuits Fields and Waves II <b>f ECE Labs. At least one</b> Electronic Circuits Laboratory Computer Systems Engineering Advanced Digital Projects Lab Electronic Music Synthesis Biomedical Instrumentation Lab Embedded DSP Laboratory Electric Machinery	3 4 4 4 4 4 4 4 4 4 2 or 3 3 2 2 4	TAM 251         TAM 324         TAM 335         TAM 412         TAM 435         TAM 435         TAM 445         TAM 451         Select three courses         ECE 391 or CS 225         ECE 310         ECE 330         ECE 342         ECE 350         Select three courses         Hardware Labs:         ECE 391         ECE 391         ECE 391         ECE 343         ECE 391         ECE 391         ECE 343         ECE 343         ECE 391         ECE 391         ECE 343         ECE 391         ECE 343         ECE 391         ECE 395         ECE 402         ECE 402         ECE 415         ECE 420         ECE 420

Condensed Matter Physics	4
Atomic Scale Simulations	3 or 4
Subatomic Physics	4
Atomic Phys &	3
Quantum Physics I	4
Quantum Physics II	4
Intro to Brain and Cognition	3
General Phonetics	3
Intro Sound & Hearing Science	3
Anat & Physiol Spch Mechanism	4
General Speech Science	4
Development of Spoken Language	3
Intro Audiol & Hear Disorders	4
Neural Bases Spch Lang	4
Methods of Applied Statistics	3 or 4
Analysis of Variance Statistical Modeling I	3 or 4 3 or 4
Statistical Computing	3 or 4
Time Series Analysis	3 or 4
Statistical Data Management	3 or 4
Reliability Engineering	3 or 4
Digital Control Systems	4
Mechatronics	3
State Space Design for	3
Statics	3
Introductory Dynamics	3
Introductory Solid Mechanics	3
Behavior of Materials	4
Introductory Fluid Mechanics	4
Intermediate Dynamics	4
Intermediate Fluid Mechanics	4
Continuum Mechanics	4

	Intermediate Solid	4
1 451	Mechanics	4
ct three courses from the following	list of Advanced Core	
	Computer Systems	
391	Engineering	
S 225	Data Structures	
	Digital Signal	
310	Processing	
	Power Ckts &	
330	Electromechanics	
342	Electronic Circuits	
350	Fields and Waves II	
ct three courses from the following	list of ECE Labs. At least	
lware Labs:		
	Electronic Circuits	1
343	Laboratory	T
	Computer Systems	4
391	Engineering	4
	Advanced Digital	2 2
395	Projects Lab	2 OF 3
	Electronic Music	2
402	Synthesis	3
	Biomedical	-
415	Instrumentation Lab	2
	Embedded DSP	-
420	Laboratory	2
431	Electric Machinery	4
	•	

		1			
	Computer Networking	3 or 4		Computer Networking	3 or 4
CS 436	Laboratory	5 61 1	CS 436	Laboratory	5 61 1
	Sensors and			Sensors and	
FCF 437	Instrumentation	3	FCF 437	Instrumentation	3
	Communication			Communication	
FCF 438	Networks	3 or 4	FCF 438	Networks	3 or 4
ECE 430	Wireless Networks	3 or 1	ECE 430	Wireless Networks	3 or 1
ECE 433	LEDs and Solar Cells	3 01 <del>4</del> Д	ECE 433	LEDs and Solar Cells	л ог 4 Л
LCL 443	IC Device Theory &	т Т		IC Device Theory &	7
ECE 444	Eabrication	4	ECE 444	Eabrication	4
ECE 444	Tablication			lasheation	
	Principles of			Principles of	
	Experimental Research	4		Experimental Research	4
	in Electrical			in Electrical	
ECE 446	Engineering		FCF 446	Engineering	
	Active Microwave Ckt		202 110	Active Microwave Ckt	
ECE 447	Design	3	ECE 447	Design	3
	Adv Microwave			Adv Microwave	
ECE 451	Measurements	3	FCF 451	Measurements	3
	Wireless			Wireless	
	Communication	4		Communication	4
FCF 453	Systems		ECE 453	Systems	
	Global Nav Satellite			Global Nav Satellite	
ECE 456	Systems	4	ECE 456	Systems	4
ECE 460	Optical Imaging	4	ECE 460	Optical Imaging	4
	Digital Communications			Digital Communications	
ECE 463	Lab	2	ECE 463	Lab	2
	Optical			Optical	
ECE 466	Communications Lab	1	ECE 466	Communications Lab	1
	Ontical Remote Sensing	3		Ontical Remote Sensing	3
ECE 468		J	ECE 468		Ĵ
	Power Electronics	2		Power Electronics	2
ECE 469	Laboratory	-	ECE 469	Laboratory	-
	Introduction to	4		Introduction to	4
ECE 470	Robotics		ECE 470	Robotics	
ECE 481	Nanotechnology	4	ECE 481	Nanotechnology	4
ECE 486	Control Systems	4	ECE 486	Control Systems	4
	Robot Dynamics and	4		Robot Dynamics and	4
ECE 489	Control		ECE 489	Control	
	Photonic Device	3		Photonic Device	3
ECE 495	Laboratory	-	ECE 495	Laboratory	-
Software Labs:			Software Labs:		
	Digital Signal	1		Digital Signal	1
ECE 311	Processing Lab		ECE 311	Processing Lab	
	Probability in	1		Probability in	1
ECE 314	Engineering Lab		ECE 314	Engineering Lab	
505.005	Data Science and	3	505 0 00	Data Science and	3
ECE 305	Engineering		ECE 365	Engineering	
	Computer Organization	4		Computer Organization	1
ECE 411	& Design	4		& Design	4
	Drinciples of Safa			Dringinlas of Safa	
ECE 484		4	ECE 484		4
	Autonomy	I		Autonomy	

### Electives

The Grainger College of Engineering Liberal Education course list, or Free electives. Additional unrestricted course work, subject to certain 

### Total Hours of Curriculum to Graduate

Free Electives

Additional unrestricted course work, subject to certain

Total Hours of Curriculum to Graduate	128
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Freshmen take ECE 110 for 3 credit hours. Lab-only version taken by transfer students (with special permission) is 1 <sup>3</sup> credit hour. STAT 410 may be substituted. ECE 496 AND ECE 499 may be substituted.

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

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.

The Grainger College of Engineering restrictions to free electives can be <sup>8</sup> found here.



#### COLLEGE OF AGRICULTURAL, CONSUMER & ENVIRONMENTAL SCIENCES

Office of the Dean 227 Mumford Hall, MC-710 1301 W. Gregory Drive Urbana, IL 61801

January 13, 2022

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Germán Bollero, Interim Dean



### **COLLEGE OF APPLIED HEALTH SCIENCES**

Office of the Dean 110 Huff Hall, MC-586 1206 S. Fourth St. Champaign, IL 61820

January 25, 2022

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

While I support the move the give your students more freedom in course selection, it is important to express my concern that discontinuing your Liberal Education requirement may negatively impact my college's finances by reducing the IUs generated from lower enrollments in AHS courses. As you know, the current budget model rewards colleges financially based on the number of registrants in courses. I am hopeful that your students and advisors will continue to view AHS courses as relevant and valuable when they are selecting electives.

Sincerely,

Chery Hanley - Maxwell

Dean



#### **College of Education**

Undergraduate Student Academic Affairs Office 110 Education Building, MC-708 1310 S. Sixth St. Champaign, IL 61820

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Assistant Dean for Academic Affairs College of Education | University of Illinois at Urbana-Champaign



**College of Fine & Applied Arts** 

Office of the Dean 100 Architecture Building, MC-622 608 E. Lorado Taft Dr. Champaign, IL 61820

21 December 2021

Rashid Bashir, Dean 306 Engineering Hall 1308 W. Green St. M/C 266 Urbana, IL 61801

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from the College of Fine & Applied Arts. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Kevin Hamiltan

Kevin Hamilton Dean and Professor



2090 Lincoln Hall, MC-448 702 S. Wright St. Urbana, IL 61801

December 20, 2021

Dear Dean Bashir,

Thank you for informing the College of LAS of the proposed removal of the Liberal Education requirement in all undergraduate programs in the Grainger College of Engineering. I understand that this requirement includes an extensive list of courses from which your students could choose some, many of which are from our college. Grainger Engineering students will continue to be welcome to take our courses formerly on your Liberal Education list as free electives after the removal of this requirement from their programs of study.

metrie Rollin

Venetria K. Patton Harry E. Preble Dean



**College of Media** 

Office of the Dean 119 Gregory Hall, MC-462 810 S. Wright St. Urbana, IL 61801

January 13, 2022

Rashid Bashir, Dean The Grainger College of Engineering 306 Engineering Hall 1308 W. Green Street Urbana, IL 61801

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Shary huk

Tracy Sulkin Dean, College of Media



December 13th, 2021

Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from Gies College of Business. Students from Grainger will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Jeffrey R. Brown Dean, Gies College of Business



501 E. Daniel St., MC-493 Champaign, IL 61820-6211

February 3, 2022

Dean Rashid Bashir 306 Engineering Hall 1308 West Green Street Urbana, IL 61801

Dear Rashid,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in the Grainger College of Engineering. I understand that this requirement included an extensive list of courses that Grainger Engineering students could choose from, including some from the iSchool. This letter acknowledges that Grainger Engineering students will continue to be able to enroll in courses as articulated and constrained in Course Explorer and formerly on your Liberal Education list as Free Electives, after the removal of this requirement.

Eunice Santos

Eunice Santos Professor and Dean

From: Hanley-Maxwell, Cheryl D <<u>cherylhm@illinois.edu</u>>
Sent: Monday, February 14, 2022 3:57 PM
To: Miller, Nolan H <<u>nmiller@illinois.edu</u>>
Subject: RE: Senate Ed Pol - Re: change to Grainger Liberal Education requirement

That's fine. Thanks for asking

#### **CHERYL D HANLEY-MAXWELL**

Dean

University of Illinois at Urbana-Champaign College of Applied Health Sciences 108 Huff Hall 1206 S Fourth | M/C 586 Champaign, IL 61820 217.333.2131 | <u>cherylhm@illinois.edu</u> www.ahs.illinois.edu (217) 333-0404 (FAX)

Human kindness has never weakened the stamina or softened the fiber of a free people. A nation does not have to be cruel to be tough. -- President Franklin D. Roosevelt



*Under the Illinois Freedom of Information Act any written communication to or from university employees regarding university business is a public record and may be subject to public disclosure.* 

From: Miller, Nolan H <<u>nmiller@illinois.edu</u>>
Sent: Monday, February 14, 2022 1:49 PM
To: Hanley-Maxwell, Cheryl D <<u>cherylhm@illinois.edu</u>>
Subject: RE: Senate Ed Pol - Re: change to Grainger Liberal Education requirement

Dear Cheryl,

Thanks again for talking with me about the changes to the Grainger BS programs. I read the statement you sent to the committee today. The Chair would like to include it in the record that is forwarded to the Senate. Is it ok to include the email you sent below?

Thanks,

Nolan



#### **NOLAN H MILLER**

Daniel and Cynthia Mah Helle Professor in Finance | Department of Finance Director, Center for Business and Public Policy Gies College of Business | University of Illinois at Urbana-Champaign 217.244.2847 | nmiller@illinois.edu | http://www.business.illinois.edu/nmiller

*Under the Illinois Freedom of Information Act any written communication to or from university employees regarding university business is a public record and may be subject to public disclosure.* 

From: Hanley-Maxwell, Cheryl D <<u>cherylhm@illinois.edu</u>>
Sent: Thursday, February 10, 2022 1:49 PM
To: Miller, Nolan H <<u>nmiller@illinois.edu</u>>
Subject: RE: Senate Ed Pol - Re: change to Grainger Liberal Education requirement

Hi Nolan –

I appreciate what Ed Pol does in juggling the interests and concerns of the various programs across the campus, while keeping the students in mind. I served on a committee like this at my previous institution and know that it all boils down to what is best for the students' learning. Thanks for reminding me of that.

Here is a statement: While the Grainger proposal has the potential to financially affect AHS, we want to affirm another college's right to control their program requirements and student experiences, ensuring the best possible outcomes for their students. As a result, AHS supports this proposal and hopes that Grainger advisors will recognize the valuable contribution AHS classes make to the education of their students and continue to encourage them to consider relevant and/or high interest classes in AHS.

Hope this works!

Cheryl

CHERYL D HANLEY-MAXWELL, PHD Dean

University of Illinois at Urbana-Champaign College of Applied Health Sciences 108 Huff Hall 1206 S Fourth | M/C 586 Champaign, IL 61820 217.333.2131 | <u>cherylhm@illinois.edu</u> www.ahs.illinois.edu (217) 333-0404 (FAX)

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