APPROVED BY SENATE
02/10/2020

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

Viewing: 10KP0130BS : Materials Science & Engineering, BS

Last approved: 08/12/19 8:34 am

Last edit: 01/22/20 3:14 pm

Changes proposed by: Brooke Newell

Catalog Pages Using this Program	Materials Science & Engineering, BS

In Workflow

1. **U Program Review**
2. **1919 Head**
3. **KP Committee Chair**
4. **KP Dean**
5. **University Librarian**
6. **Provost**
7. **Senate EPC**
8. Senate
9. U Senate Conf
10. Board of Trustees
11. IBHE
12. DMI

Approval Path

1. 01/10/20 9:13 am Deb Forgacs (dforgacs): Approved for U Program Review
2. 01/13/20 3:41 pm Nancy Sottos (n-sottos): Approved for 1919 Head
3. 01/13/20 3:51 pm Michael Hirschi (mch): Approved for KP Committee Chair
4. 01/13/20 4:03 pm Candy Deaville (candyd): Approved for KP Dean
5. 01/13/20 4:08 pm John Wilkin (jpwilkin): Approved for

University Librarian
6. 01/22/20 11:48 am
Kathy Martensen (kmartens): Approved for Provost

History

1. Dec 14, 2018 by Deb Forgacs (dforgacs)
2. Dec 14, 2018 by Deb Forgacs (dforgacs)
3. Apr 23, 2019 by Deb Forgacs (dforgacs)
4. May 14, 2019 by Deb Forgacs (dforgacs)
5. Aug 12, 2019 by Deb Forgacs (dforgacs)

Proposal Type

Proposal Type:
Major (ex. Special Education)

This proposal is for a:
Revision

Proposal Title:

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

Removed deactivated course, fixed course lists, revised table placement
~~degree audit update.UG Course Lists.~~

EP Control Number	**EP.20.104_original**
Official Program Name	Materials Science & Engineering, BS

Effective Catalog Term	Fall 2020
Sponsor College	Grainger College of Engineering
Sponsor Department	Materials Science & Engineering
Sponsor Name	
Sponsor Email	
College Contact	College Contact Email

Program Description and Justification

Justification for proposal change:

Updates for Academic Catalog 2020-21

Corresponding Degree	**BS Bachelor of Science**

Is this program interdisciplinary?

No

Academic Level	Undergraduate
Will you admit to the concentration directly?	
Is a concentration required for graduation?	
CIP Code	141801 - Materials Engineering.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Admission Requirements

Desired Admissions Term	

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

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

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

None

Estimated Annual Number of Degrees Awarded

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

What is the matriculation term for this program?

Fall

Delivery Method

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

This program is available:

On Campus

Budget

Are there budgetary implications for this revision? No

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

No

Additional Budget Information

Attach File(s)

Resource Implications

Facilities

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

No

Technology

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

No

Non-Technical Resources

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

No

Resources

Faculty Resources

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

None

Library Resources

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

None

Instructional Resources

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

No

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

No

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

No

Financial Resources

How does the unit intend to financially support this proposal?

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

No

Attach letters of support

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

Yes

Program Regulation and Assessment

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

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

No

Program of Study

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

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

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

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

Catalog Page Text

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

Statement for Programs of Study Catalog

Graduation Requirements

Minimum Overall GPA: 2.0

Minimum hours required for graduation: 128 hours
General education: Students must complete the Campus General Education requirements including the campus general education language requirement.
~~**Overview of Curricular Requirements The curriculum requires 128 hours for graduation and is organized asfollows.Orientation and Professional Development These courses introduce the opportunities and resources your college, department, and curriculum can offer you as you work to achieve your careergoals.They also provide the skills to work effectively and successfully in the engineeringprofession.Foundational Mathematics and Science These courses stress the basic mathematical and scientific principles upon which this engineering discipline isbased.Materials Science and Engineering Technical Core These courses stress fundamental concepts and basic laboratory techniques that comprise the common intellectual understanding of materials science andengineering.**~~**Orientation and Professional Development**

Course List

Code	Title	Hours
ENG 100	Engineering Orientation 1	0

Code	Title	Hours
MSE 183	Freshman Materials Laboratory 2	1
Total Hours		1

Foundational Mathematics and Science

Course List

Code	Title	Hours
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
CHEM 104	General Chemistry II	3
CHEM 105	General Chemistry Lab II	1
MATH 221	Calculus I 3	4
MATH 225	Introductory Matrix Theory	2
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 214	Univ Physics: Quantum Physics	2
Total Hours		34

Materials Science and Engineering ~~For All StudentsFor the Biomaterials AreaFor All Other Areas~~ Technical Core

For All Students

Course List

Code	Title	Hours
CS 101	Intro Computing: Engrg & Sci	3
ECE 205	Electrical and Electronic Circuits	3
IE 300	Analysis of Data 4	3
or STAT 400	Statistics and Probability I	
MSE 182	Introduction to MatSE	2
MSE 201	Phases and Phase Relations	3
MSE 206	Mechanics for MatSE	4
MSE 307	Materials Laboratory I	3
MSE 308	Materials Laboratory II	3
MSE 395	Materials Design	3
MSE 401	Thermodynamics of Materials	3
MSE 402	Kinetic Processes in Materials	3
MSE 406	Thermal-Mech Behavior of Matls	3
Total Hours		36

For the Biomaterials Area

Course List

Code	Title	Hours
CHEM 232	Elementary Organic Chemistry I	3 or 4
MCB 150	Molec & Cellular Basis of Life	4
MCB 450	Introductory Biochemistry	3

Code	Title	Hours
MCB 252	Cells, Tissues & Development	3
Subtotal		13
Total for the Biomaterials Area		49

For All Other Areas

Course List

Code	Title	Hours
MSE 304	Electronic Properties of Matls	3
MSE 405	Microstructure Determination	3
Subtotal		6
Total for all non-Biomaterials Students		42

Technical Electives

For ~~These courses stress~~ the **Biomaterials Area**

Course List

Code	Title	Hours
Biomaterials area topical lectures selected from the list of topical lectures established by the department. See Topical Lecture list below:		5
MSE 404	Laboratory Studies in Materials Science and Engineering (Each section of MSE 404 is 1.5 hours. Students take 2 unique sections of MSE 404 for 3 hours.)	3
MSE 470	Design and Use of Biomaterials	3
Topical lectures outside the biomaterials area. See Topical Lecture list below.		6
Total Hours		17

For All Other Areas

Course List

Code	Title	Hours
Topical lectures selected for the list of courses established by the department below. No more than 6 hours may be from introductory topical lectures		**12**
MSE 404	**Laboratory Studies in Materials Science and Engineering (Each section of MSE 404 is 1.5 hours. Students take 4 unique sections of MSE 404 for 6 hours.)**	**6**
Technical elective courses selected from the list of technical electives below.		**6**
Total Hours		24

Topical Lectures

Course List

Code	Title	Hours
Introductory - No more than 2 introductory courses can count for Topical Lecture		
MSE 420	**Ceramic Materials & Properties**	**3**
MSE 441	**Metals Processing**	**3**
MSE 450	**Polymer Science & Engineering**	**3 or 4**
MSE 470	**Design and Use of Biomaterials**	**3**
ECE 340	**Semiconductor Electronics**	**3**
Biomaterials		
MSE 473	**Biomolecular Materials Science**	**3**
MSE 474	**Biomaterials and Nanomedicine**	**3**

Code	Title	Hours
ABE 446	Biological Nanoengineering	3 or 4
BIOE 416	Biosensors	3
BIOE 461	Cellular Biomechanics	4
BIOE 476	Tissue Engineering	3
BIOE 487	Stem Cell Bioengineering	3 or 4
CHBE 473	Biomolecular Engineering	3 or 4
ECE 380	Biomedical Imaging	3
ECE 414	Biomedical Instrumentation	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 472	Biomedical Ultrasound Imaging	3
ME 482	Musculoskel Tissue Mechanics	3 or 4
ME 483	Mechanobiology	4
Biomaterials Science - Can only count one science course for Topical Lecture Biomaterials		
BIOC 446	Physical Biochemistry	3
BIOC 455	Technqs Biochem & Biotech	4
BIOP 401	Introduction to Biophysics	3
All Other Areas		
MSE 403	Synthesis of Materials	3
MSE 421	Ceramic Processing	3 or 4
MSE 422	Electrical Ceramics	3
MSE 440	Mechanical Behavior of Metals	3
MSE 443	Design of Engineering Alloys	3
MSE 445	Corrosion of Metals	3 or 4
MSE 453	Plastics Engineering	3
MSE 455	Macromolecular Solids	3
MSE 456	Mechanics of Composites	3
MSE 457	Polymer Chemistry	3 or 4
MSE 458	Polymer Physics	3 or 4
MSE 460	Electronic Materials I	3
MSE 461	Electronic Materials II	3
MSE 466	Materials in Electrochem Syst	3
MSE 480	Surfaces and Colloids	3
MSE 481	Electron Microscopy	3
MSE 484	Composite Materials	3
MSE 485	Atomic Scale Simulations	3
MSE 487	Materials for Nanotechnology	3

Code	Title	Hours
MSE 488	**Optical Materials**	**3 or 4**
MSE 489	**Matl Select for Sustainability**	**3**
ABE 482	**Package Engineering**	**3**
CEE 401	**Concrete Materials**	**4**
CEE 460	**Steel Structures I**	**3**
CHBE 457	**Microelectronics Processing**	**3**
ECE 441	**Physcs & Modeling Semicond Dev**	**3**
ECE 443	**LEDs and Solar Cells**	**4**
ECE 444	**IC Device Theory & Fabrication**	**4**
ECE 481	**Nanotechnology**	**4**
ECE 485	**MEMS Devices & Systems**	**3**
ECE 487	**Intro Quantum Electr for EEs**	**3**
ECE 488	**Compound Semicond & Devices**	**3**
ECE 495	**Photonic Device Laboratory**	**3**
IE 431	**Design for Six Sigma**	**3**
ME 431	**Mechanical Component Failure**	**3 or 4**
ME 450	**Modeling Materials Processing**	**3**
ME 472	**Introduction to Tribology**	**3 or 4**
ME 487	**MEMS-NEMS Theory & Fabrication**	**4**
NPRE 470	**Fuel Cells & Hydrogen Sources**	**3**
SE 412	**Nondestructive Evaluation**	**3 or 4**
TAM 427	**Mechanics of Polymers**	**3**
TAM 451	**Intermediate Solid Mechanics**	**4**
TAM 456	**Experimental Stress Analysis**	**3**
Science - Can only count one science course for Topical Lecture		
CHEM 436	**Fundamental Organic Chem II**	**3**
PHYS 485	**Atomic Phys & Quantum Theory**	**3**
PHYS 486	**Quantum Physics I**	**4**
PHYS 487	**Quantum Physics II**	**4**

Technical Elective courses

Course List

Code	Title	Hours
~~Topical lectures selected from the list of courses established by the department below. No more than 6 hours may be from introductory topical lectures.~~		~~12~~
~~MSE 404~~	~~Laboratory Studies in Materials Science and Engineering (Each section of MSE 404 is 1.5 hours. Students take 4 unique sections of MSE 404 for 6 hours.)~~	~~6~~
~~Technical electives selected from the list below of approved courses established by the department. Six credit hours total.~~		
Technical electives selected from the list below of approved courses established by the department:		**6**
AE 202	Aerospace Flight Mechanics	3

Code	Title	Hours
AE 302	Aerospace Flight Mechanics II	3
AE 311	Incompressible Flow	3
AE 312	Compressible Flow	3
AE 321	Mechs of Aerospace Structures	3
AE 323	Applied Aerospace Structures	3
AE 352	Aerospace Dynamical Systems	3
AE 353	Aerospace Control Systems	3
AE 370	Aerospace Numerical Methods	3
AE 402	Orbital Mechanics	3 or 4
AE 403	Spacecraft Attitude Control	3 or 4
AE 410	Computational Aerodynamics	3 or 4
AE 412	Viscous Flow & Heat Transfer	4
AE 416	Applied Aerodynamics	3 or 4
AE 419	Aircraft Flight Mechanics	3 or 4
AE 420	Finite Element Analysis	3 or 4
AE 427	Mechanics of Polymers	3
AE 428	Mechanics of Composites	3
AE 433	Aerospace Propulsion	3 or 4
AE 434	Rocket Propulsion	3 or 4
AE 435	Electric Propulsion	3 or 4
AE 442	Aerospace Systems Design I	3
AE 443	Aerospace Systems Design II	3
AE 451	Aeroelasticity	3 or 4
AE 454	Systems Dynamics & Control	3 or 4
AE 460	Aerodynamics & Propulsion Lab	2
AE 461	Structures & Control Lab	2
AE 468	Optical Remote Sensing	3
AE 482	Introduction to Robotics	4
AE 483	Unmanned Aerial Vehicle (UAV) Navigation and Control	3
ABE 223	ABE Principles: Machine Syst	2
ABE 224	ABE Principles: Soil & Water	2
ABE 225	ABE Principles: Bioenvironment	2
ABE 226	ABE Principles: Bioprocessing	2
ABE 341	Transport Processes in ABE	3

Code	Title	Hours
ABE 361	Off-Road Machine Design	3
ABE 425	Engrg Measurement Systems	4
ABE 430	Project Management	2
ABE 436	Renewable Energy Systems	3 or 4
ABE 446	Biological Nanoengineering	3 or 4
ABE 454	Environmental Soil Physics	3
ABE 455	Erosion and Sediment Control	2
ABE 456	Land & Water Resources Engrg	3 or 4
ABE 457	NPS Pollution Processes	2
ABE 458	NPS Pollution Modeling	2
ABE 459	Drainage and Water Management	3 or 4
ABE 463	Electrohydraulic Systems	3
ABE 466	Engineering Off-Road Vehicles	3
ABE 469	Industry-Linked Design Project	4
ABE 474	Indoor Environmental Control	3 or 4
ABE 476	Indoor Air Quality Engineering	4
ABE 482	Package Engineering	3
ABE 483	Engrg Properties of Food Matls	3
ABE 488	Bioprocessing Biomass for Fuel	3
BIOC 446	Physical Biochemistry	3
BIOC 455	Technqs Biochem & Biotech	4
BIOE 201	Conservation Principles Bioeng	3
BIOE 202	Cell & Tissue Engineering Lab	2
BIOE 205	Signals & Systems in Bioengrg	3
BIOE 301	Introductory Biomechanics	3
BIOE 302	Modeling Human Physiology	3
BIOE 303	Quantitative Physiology Lab	2
BIOE 306	Biofabrication Lab	3
BIOE 360	Transport & Flow in Bioengrg	3
BIOE 380	Biomedical Imaging	3
BIOE 414	Biomedical Instrumentation	3
BIOE 415	Biomedical Instrumentation Lab	2
BIOE 416	Biosensors	3
BIOE 420	Intro Bio Control Systems	3
BIOE 430	Intro Synthetic Biology	3 or 4
BIOE 461	Cellular Biomechanics	4
BIOE 467	Biophotonics	3
BIOE 476	Tissue Engineering	3
BIOE 479	Cancer Nanotechnology	3

Code	Title	Hours
BIOE 480	Magnetic Resonance Imaging	3 or 4
BIOE 481	Whole-Body Musculoskel Biomech	3 or 4
BIOE 482	Musculoskel Tissue Mechanics	3 or 4
BIOE 487	Stem Cell Bioengineering	3 or 4
BIOP 401	Introduction to Biophysics	3
BIOP 419	Brain, Behavior & Info Process	3
BIOP 432	Photosynthesis	3
BTW 261	Principles Tech Comm	3
CHBE 221	Principles of CHE	3
CHBE 421	Momentum and Heat Transfer	4
CHBE 422	Mass Transfer Operations	4
CHBE 424	Chemical Reaction Engineering	3
CHBE 430	Unit Operations Laboratory	4
CHBE 431	Process Design	4
CHBE 440	Process Control and Dynamics	3
CHBE 451	Transport Phenomena	3
CHBE 452	Chemical Kinetics & Catalysis	3
CHBE 456	Polymer Science & Engineering	3
CHBE 457	Microelectronics Processing	3
CHBE 471	Biochemical Engineering	3 or 4
CHBE 472	Techniques in Biomolecular Eng	3 or 4
CHBE 473	Biomolecular Engineering	3 or 4
CHBE 474	Metabolic Engineering	3 or 4
CHBE 475	Tissue Engineering	3
CHBE 476	Biotransport	3
CHBE 478	Bioenergy Technology	3
CHEM 222	Quantitative Analysis Lecture	2
CHEM 223	Quantitative Analysis Lab	2
CHEM 232	Elementary Organic Chemistry I	3 or 4
CHEM 233	Elementary Organic Chem Lab I	2
CHEM 236	Fundamental Organic Chem I	4
CHEM 237	Structure and Synthesis	2
CHEM 312	Inorganic Chemistry	3
CHEM 315	Instrumental Chem Systems Lab	2
CHEM 317	Inorganic Chemistry Lab	3
CHEM 332	Elementary Organic Chem II	4

Code	Title	Hours
CHEM 360	Chemistry of the Environment	3
CHEM 420	Instrumental Characterization	2
CHEM 436	Fundamental Organic Chem II	3
CHEM 437	Organic Chemistry Lab	3
CHEM 438	Advanced Organic Chemistry	3
CHEM 440	Physical Chemistry Principles	4
CHEM 442	Physical Chemistry I	4
CHEM 445	Physical Principles Lab I	2
CHEM 447	Physical Principles Lab II	2
CHEM 450	Astrochemistry	4
CHEM 451	Astrochemistry Laboratory	3 or 4
CHEM 460	Green Chemistry	3 or 4
CHEM 472	Physical Biochemistry	3
CHEM 480	Polymer Chemistry	3 or 4
CHEM 482	Polymer Physics	3 or 4
CHEM 483	Solid State Structural Anlys	4
CHEM 488	Surfaces and Colloids	3 or 4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
CEE 401	Concrete Materials	4
CEE 405	Asphalt Materials I	3 or 4
CEE 406	Pavement Design I	3 or 4
CEE 407	Airport Design	3 or 4
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 409	Railroad Track Engineering	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 411	RR Project Design & Constr	3 or 4
CEE 412	High-Speed Rail Engineering	3 or 4

Code	Title	Hours
CEE 430	Ecological Quality Engineering	2
CEE 432	Stream Ecology	3 or 4
CEE 434	Environmental Systems I	3
CEE 437	Water Quality Engineering	3
CEE 440	Fate Cleanup Environ Pollutant	4
CEE 442	Environmental Engineering Principles, Physical	4
CEE 443	Env Eng Principles, Chemical	4
CEE 444	Env Eng Principles, Biological	4
CEE 445	Air Quality Modeling	4
CEE 446	Air Quality Engineering	4
CEE 447	Atmospheric Chemistry	4
CEE 449	Environmental Engineering Lab	3
CEE 450	Surface Hydrology	3
CEE 451	Environmental Fluid Mechanics	3
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 457	Groundwater	3
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 462	Steel Structures II	3 or 4
CEE 463	Reinforced Concrete II	3 or 4
CEE 465	Design of Structural Systems	3
CEE 467	Masonry Structures	3 or 4
CEE 468	Prestressed Concrete	3 or 4
CEE 469	Wood Structures	3 or 4
CEE 470	Structural Analysis	4
CEE 471	Structural Mechanics	3 or 4
CEE 472	Structural Dynamics I	3 or 4
CEE 480	Foundation Engineering	3
CEE 483	Soil Mechanics and Behavior	4
CEE 484	Applied Soil Mechanics	3 or 4
CEE 491	Decision and Risk Analysis	3 or 4
CSE 401	Numerical Analysis	3 or 4

Code	Title	Hours
CSE 402	Parallel Progrmg: Sci & Engrg	3 or 4
CSE 414	Algorithms	4
CSE 422	Computer System Organization	3 or 4
CSE 423	Operating Systems Design	3 or 4
CSE 426	Software Engineering I	3 or 4
CSE 427	Interactive Computer Graphics	3 or 4
CSE 429	Software Engineering II	3 or 4
CSE 441	Introduction to Optimization	3 or 4
CSE 450	Computational Mechanics	3 or 4
CSE 451	Finite Element Analysis	3 or 4
CSE 461	Computational Aerodynamics	3 or 4
CSE 485	Atomic Scale Simulations	3 or 4
CS 173	Discrete Structures	3
CS 210	Ethical & Professional Issues	2
CS 225	Data Structures	4
CS 233	Computer Architecture	4
CS 241	System Programming	4
CS 242	Programming Studio	3
CS 357	Numerical Methods I	3
CS 374	Introduction to Algorithms & Models of Computation	4
CS 410	Text Information Systems	3 or 4
CS 411	Database Systems	3 or 4
CS 412	Introduction to Data Mining	3 or 4
CS 413	Intro to Combinatorics	3 or 4
CS 414	Multimedia Systems	3 or 4
CS 418	Interactive Computer Graphics	3 or 4
CS 419	Production Computer Graphics	3 or 4

Code	Title	Hours
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4
CS 421	Programming Languages & Compilers	3 or 4
CS 422	Programming Language Design	3 or 4
CS 423	Operating Systems Design	3 or 4
CS 424	Real-Time Systems	3 or 4
CS 425	Distributed Systems	3 or 4
CS 426	Compiler Construction	3 or 4
CS 427	Software Engineering I	3 or 4
CS 428	Software Engineering II	3 or 4
CS 429	Software Engineering II, ACP	3
CS 431	Embedded Systems	3 or 4
CS 433	Computer System Organization	3 or 4
CS 436	Computer Networking Laboratory	3 or 4
CS 438	Communication Networks	3 or 4
CS 439	Wireless Networks	3 or 4
CS 440	Artificial Intelligence	3 or 4
CS 446	Machine Learning	3 or 4
CS 447	Natural Language Processing	3 or 4
CS 450	Numerical Analysis	3 or 4
CS 457	Numerical Methods II	3
CS 460	Security Laboratory	3 or 4
CS 461	Computer Security I	4
CS 463	Computer Security II	3 or 4
CS 465	User Interface Design	3 or 4

Code	Title	Hours
CS 466	Introduction to Bioinformatics	3 or 4
CS 467	Social Visualization	3 or 4
CS 473	Algorithms	4
CS 475	Formal Models of Computation	3 or 4
CS 476	Program Verification	3 or 4
CS 477	Formal Software Devel Methods	3 or 4
CS 481	Advanced Topics in Stochastic Processes & Applications	3 or 4
CS 482	Simulation	3 or 4
CS 483	Applied Parallel Programming	4
CS 484	Parallel Programming	3 or 4
ECE 206	Electrical and Electronic Circuits Lab	1
ECE 210	Analog Signal Processing	4
ECE 211	Analog Circuits & Systems	2
ECE 304	Photonic Devices	3
ECE 307	Techniques for Engrg Decisions	3
ECE 310	Digital Signal Processing	3
ECE 311	Digital Signal Processing Lab	1
ECE 329	Fields and Waves I	3
ECE 330	Power Ckts & Electromechanics	3
ECE 333	Green Electric Energy	3
ECE 340	Semiconductor Electronics	3
ECE 342	Electronic Circuits	3
ECE 343	Electronic Circuits Laboratory	1
ECE 350	Fields and Waves II	3
ECE 380	Biomedical Imaging	3
ECE 385	Digital Systems Laboratory	3
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 401	Signal and Image Analysis	4
ECE 402	Electronic Music Synthesis	3
ECE 403	Audio Engineering	3
ECE 408	Applied Parallel Programming	4
ECE 411	Computer Organization & Design	4
ECE 412	Microcomputer Laboratory	3
ECE 414	Biomedical Instrumentation	3
ECE 415	Biomedical Instrumentation Lab	2

Code	Title	Hours
ECE 416	Biosensors	3
ECE 417	Multimedia Signal Processing	4
ECE 418	Image & Video Processing	4
ECE 419	Security Laboratory	3 or 4
ECE 420	Embedded DSP Laboratory	2
ECE 422	Computer Security I	4
ECE 424	Computer Security II	3 or 4
ECE 425	Intro to VLSI System Design	3
ECE 428	Distributed Systems	3 or 4
ECE 431	Electric Machinery	4
ECE 432	Advanced Electric Machinery	3
ECE 435	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 441	Physcs & Modeling Semicond Dev	3
ECE 443	**LEDs and Solar Cells**	**4**
ECE 444	IC Device Theory & Fabrication	4
ECE 445	Senior Design Project Lab	4
ECE 446	Principles of Experimental Research in Electrical Engineering	4
ECE 447	Active Microwave Ckt Design	3
ECE 448	Artificial Intelligence	3 or 4
ECE 451	Adv Microwave Measurements	3
ECE 452	Electromagnetic Fields	3
ECE 453	Wireless Communication Systems	4
ECE 454	Antennas	3
ECE 455	Optical Electronics	3 or 4
ECE 456	Global Nav Satellite Systems	4
ECE 457	Microwave Devices & Circuits	3
ECE 458	Applic of Radio Wave Propag	3
ECE 459	Communications Systems	3
ECE 460	Optical Imaging	4
ECE 461	Digital Communications	3
ECE 462	Logic Synthesis	3
ECE 463	Digital Communications Lab	2
ECE 464	Power Electronics	3
ECE 465	Optical Communications Systems	3

Code	Title	Hours
ECE 466	Optical Communications Lab	1
ECE 467	Biophotonics	3
ECE 468	Optical Remote Sensing	3
ECE 469	Power Electronics Laboratory	2
ECE 470	Introduction to Robotics	4
ECE 472	Biomedical Ultrasound Imaging	3
ECE 473	Fund of Engrg Acoustics	3 or 4
ECE 476	Power System Analysis	3
ECE 478	Formal Software Devel Methods	3 or 4
ECE 480	Magnetic Resonance Imaging	3 or 4
ECE 481	Nanotechnology	4
ECE 482	Digital IC Design	3
ECE 483	Analog IC Design	3
~~ECE 484~~	~~Course ECE 484 Not Found~~	
ECE 485	MEMS Devices & Systems	3
ECE 486	Control Systems	4
ECE 487	Intro Quantum Electr for EEs	3
ECE 488	Compound Semicond & Devices	3
ECE 489	Robot Dynamics and Control	4
ECE 490	Introduction to Optimization	3 or 4
ECE 491	Numerical Analysis	3 or 4
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4
ECE 493	Advanced Engineering Math	3 or 4
ECE 495	Photonic Device Laboratory	3
ABE 482	Package Engineering	3
IE 330	Industrial Quality Control	3
IE 340	Human Factors	4
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

Code	Title	Hours
IE 413	Simulation	3 or 4
IE 420	Financial Engineering	3 or 4
IE 430	Economic Found of Quality Syst	3 or 4
IE 431	Design for Six Sigma	3
IE 445	Human Performance and Cognition in Context	3 or 4
~~Materials Science and Engineering - Any otherwise not required courses~~		
MATH 213	Basic Discrete Mathematics	3
MATH 347	Fundamental Mathematics	3
MATH 348	Fundamental Mathematics-ACP	4
MATH 357	Numerical Methods I	3
MATH 402	Non Euclidean Geometry	3 or 4
MATH 403	Euclidean Geometry	3 or 4
MATH 412	Graph Theory	3 or 4
MATH 413	Intro to Combinatorics	3 or 4
MATH 414	Mathematical Logic	3 or 4
MATH 416	Abstract Linear Algebra	3 or 4
MATH 417	Intro to Abstract Algebra	3 or 4
MATH 418	Intro to Abstract Algebra II	3 or 4
MATH 423	Differential Geometry	3 or 4
MATH 432	Set Theory and Topology	3 or 4
MATH 442	Intro Partial Diff Equations	3 or 4
MATH 444	Elementary Real Analysis	3 or 4
MATH 446	Applied Complex Variables	3 or 4
MATH 447	Real Variables	3 or 4
MATH 448	Complex Variables	3 or 4

Code	Title	Hours
MATH 450	Numerical Analysis	3 or 4
MATH 453	Elementary Theory of Numbers	3 or 4
MATH 461	Probability Theory	3 or 4
MATH 464	Statistics and Probability II	3 or 4
MATH 473	Algorithms	4
MATH 475	Formal Models of Computation	3 or 4
MATH 481	Vector and Tensor Analysis	3 or 4
MATH 482	Linear Programming	3 or 4
MATH 484	Nonlinear Programming	3 or 4
MATH 487	Advanced Engineering Math	3 or 4
MATH 489	Dynamics & Differential Eqns	3 or 4
ME 170	Computer-Aided Design	3
ME 270	Design for Manufacturability	3
ME 310	Fundamentals of Fluid Dynamics	4
ME 320	Heat Transfer	4
ME 340	Dynamics of Mechanical Systems	3.5
ME 351	Analysis of Mfg Processes	3
ME 360	Signal Processing	3.5
ME 370	Mechanical Design I	3
ME 371	Mechanical Design II	3
ME 400	Energy Conversion Systems	3 or 4
ME 401	Refrigeration and Cryogenics	3 or 4
ME 402	Design of Thermal Systems	3 or 4
ME 403	Internal Combustion Engines	3 or 4
ME 410	Intermediate Gas Dynamics	3 or 4
ME 411	Viscous Flow & Heat Transfer	4
ME 412	Numerical Thermo-Fluid Mechs	2 to 4
ME 420	Intermediate Heat Transfer	4
ME 431	Mechanical Component Failure	3 or 4

Code	Title	Hours
ME 440	Kinem & Dynamics of Mech Syst	3 or 4
ME 445	Introduction to Robotics	4
ME 446	Robot Dynamics and Control	4
ME 450	Modeling Materials Processing	3
ME 451	Computer-Aided Mfg Systems	3 or 4
ME 452	Num Control of Mfg Processes	3 or 4
ME 455	Micromanufacturing Process & Automation	3 or 4
ME 460	Industrial Control Systems	4
ME 461	Computer Cntrl of Mech Systems	3 or 4
ME 471	Finite Element Analysis	3 or 4
ME 472	Introduction to Tribology	3 or 4
ME 481	Whole-Body Musculoskel Biomech	3 or 4
ME 482	Musculoskel Tissue Mechanics	3 or 4
ME 483	Mechanobiology	4
ME 485	MEMS Devices & Systems	3
ME 487	MEMS-NEMS Theory & Fabrication	4
MCB 150	Molec & Cellular Basis of Life	4
MCB 151	Molec & Cellular Laboratory	1
MCB 215	Foundation in Mol & Cell Bio	3
MCB 244	Human Anatomy & Physiology I	3
MCB 245	Human Anat & Physiol Lab I	2
MCB 246	Human Anatomy & Physiology II	3
MCB 247	Human Anat & Physiol Lab II	2
MCB 250	Molecular Genetics	3
MCB 251	Exp Techniqs in Molecular Biol	2
MCB 252	Cells, Tissues & Development	3
MCB 253	Exp Techniqs in Cellular Biol	2
MCB 270	Medical Genetics	3
MCB 300	Microbiology	3
MCB 301	Experimental Microbiology	3
MCB 314	Introduction to Neurobiology	3
MCB 316	Genetics and Disease	4
MCB 317	Genetics and Genomics	4
MCB 320	Mechanisms of Human Disease	3
MCB 354	Biochem & Phys Basis of Life	3
MCB 400	Cancer Cell Biology	3

Code	Title	Hours
MCB 401	Cell & Membrane Physiology	3
MCB 402	Sys & Integrative Physiology	3
MCB 403	Cell & Membrane Physiology Lab	1 or 2
MCB 404	Sys & Integrative Physiol Lab	1 to 2
MCB 406	Gene Expression & Regulation	3
MCB 408	Immunology	3
MCB 410	Developmental Biology, Stem Cells and Regenerative Medicine	3
MCB 413	Endocrinology	3
MCB 419	Brain, Behavior & Info Process	3
MCB 421	Microbial Genetics	3
MCB 424	Microbial Biochemistry	3
MCB 426	Bacterial Pathogenesis	3
MCB 428	Microbial Pathogens Laboratory	2
MCB 429	Cellular Microbiology &Disease	3
MCB 430	Molecular Microbiology	3
MCB 431	Microbial Physiology	3
MCB 432	Computing in Molecular Biology	3
MCB 433	Virology & Viral Pathogenesis	3
MCB 435	Evolution of Infectious Disease	3
MCB 442	Comparative Immunobiology	4
MCB 446	Physical Biochemistry	3
MCB 450	Introductory Biochemistry	3
MCB 458	Basic Human Pathology	3
MCB 461	Cell & Molecular Neuroscience	3
MCB 462	Integrative Neuroscience	3
MCB 465	Human Metabolic Disease	3
MCB 471	Cell Structure and Dynamics	3
MCB 480	Eukaryotic Cell Signaling	2
MSE 396	**Introduction to Research (Maximum of 3 hours of technical elective credit for research (MSE 396 and MSE 499). All additional research credit counts for free elective.)**	**1 to 3**
MSE 403	**Synthesis of Materials**	**3**
MSE 420	**Ceramic Materials & Properties**	**3**
MSE 421	**Ceramic Processing**	**3 or 4**
MSE 422	**Electrical Ceramics**	**3**
MSE 440	**Mechanical Behavior of Metals**	**3**
MSE 441	**Metals Processing**	**3**
MSE 443	**Design of Engineering Alloys**	**3**
MSE 445	**Corrosion of Metals**	**3 or 4**
MSE 450	**Polymer Science & Engineering**	**3 or 4**
MSE 453	**Plastics Engineering**	**3**

Code	Title	Hours
MSE 454	**Mechanics of Polymers**	**3**
MSE 455	**Macromolecular Solids**	**3**
MSE 456	**Mechanics of Composites**	**3**
MSE 457	**Polymer Chemistry**	**3 or 4**
MSE 458	**Polymer Physics**	**3 or 4**
MSE 460	**Electronic Materials I**	**3**
MSE 461	**Electronic Materials II**	**3**
MSE 466	**Materials in Electrochem Syst**	**3**
MSE 470	**Design and Use of Biomaterials**	**3**
MSE 473	**Biomolecular Materials Science**	**3**
MSE 474	**Biomaterials and Nanomedicine**	**3**
MSE 480	**Surfaces and Colloids**	**3**
MSE 481	**Electron Microscopy**	**3**
MSE 484	**Composite Materials**	**3**
MSE 485	**Atomic Scale Simulations**	**3**
MSE 487	**Materials for Nanotechnology**	**3**
MSE 488	**Optical Materials**	**3**
MSE 489	**Matl Select for Sustainability**	**3**
MSE 499	**Senior Thesis**	**3**
NPRE 201	Energy Systems	2 or 3
NPRE 241	Intro to Radiation Protection	2
NPRE 247	Modeling Nuclear Energy System	3
NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4
NPRE 421	Plasma and Fusion Science	3
NPRE 423	Plasma Laboratory	2
NPRE 429	Plasma Engineering	3
NPRE 431	Materials in Nuclear Engrg	3
NPRE 432	Nuclear Engrg Materials Lab	2
NPRE 435	Radiological Imaging	3
NPRE 441	Radiation Protection	4
NPRE 442	Radioactive Waste Management	3
NPRE 446	Radiation Interact w/Matter I	3
NPRE 447	Radiation Interact w/Matter II	3
NPRE 448	Nuclear Syst Engrg & Design	4
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 461	Probabilistic Risk Assessment	3 or 4
NPRE 470	Fuel Cells & Hydrogen Sources	3

Code	Title	Hours
NPRE 475	Wind Power Systems	3 or 4
PHYS 213	Univ Physics: Thermal Physics	2
PHYS 225	Relativity & Math Applications	2
PHYS 325	Classical Mechanics I	3
PHYS 326	Classical Mechanics II	3
PHYS 329	Atmospheric Dynamics I	3
PHYS 330	Atmospheric Dynamics II	3
PHYS 401	Classical Physics Lab	3
PHYS 402	Light	3 or 4
PHYS 403	Modern Experimental Physics	4 or 5
PHYS 406	Acoustical Physics of Music	4
PHYS 419	Space, Time, and Matter-ACP	3 or 4
PHYS 420	Space, Time, and Matter	2
PHYS 435	Electromagnetic Fields I	3
PHYS 436	Electromagnetic Fields II	3
PHYS 466	Atomic Scale Simulations	3 or 4
PHYS 470	Subatomic Physics	4
PHYS 475	Introduction to Biophysics	3 or 4
PHYS 485	Atomic Phys & Quantum Theory	3
PHYS 486	Quantum Physics I	4
PHYS 487	Quantum Physics II	4
SE 101	Engineering Graphics & Design	3
SE 261	Business Side of Engineering	1 or 2
SE 310	Design of Structures and Mechanisms	3
SE 311	Engineering Design Analysis	3
SE 312	Instrumentation and Test Lab	1
SE 320	Control Systems	4
SE 361	Emotional Intelligence Skills	3
SE 400	Engineering Law	3 or 4
SE 402	Comp-Aided Product Realization	3 or 4
SE 410	Component Design	3
SE 411	Reliability Engineering	3 or 4
SE 412	Nondestructive Evaluation	3 or 4

Code	Title	Hours
SE 413	Engineering Design Optimization	3 or 4
SE 420	Digital Control Systems	4
SE 422	Robot Dynamics and Control	4
SE 423	Mechatronics	3
SE 424	State Space Design for Control	3
SE 450	Decision Analysis I	3 or 4
SE 462	Course SE 462 Not Found	
TSM 233	Metallurgy & Welding Process	3
TE 461	Technology Entrepreneurship	3
TAM 212	Introductory Dynamics	3
TAM 252	Solid Mechanics Design	1
TAM 302	Engineering Design Principles	3
TAM 335	Introductory Fluid Mechanics	4
TAM 412	Intermediate Dynamics	4
TAM 413	Fund of Engrg Acoustics	3 or 4
TAM 424	Mechanics of Structural Metals	3 or 4
TAM 427	Mechanics of Polymers	3
TAM 428	Mechanics of Composites	3
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4
TAM 451	Intermediate Solid Mechanics	4
TAM 456	Experimental Stress Analysis	3
TAM 461	Cellular Biomechanics	4
TAM 470	Computational Mechanics	3 or 4

Electives

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

1

2

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

4 *The replacement of* IE 300 *with* STAT 400 *is not allowed for students in the Biomaterials Area unless one of their biomaterials area topical lectures and one of their topical lectures outside the*

biomaterials area are deemed by the Accreditation Board for Engineering and Technology (ABET) to be an engineering course. The extra hour of credit for STAT 400 may be used to help meet free elective requirements.

5The 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.

6The Grainger College of Engineering restrictions to free electives can be found here.

~~rigorous analysis and design principles practiced in the major subdisciplines of materials science and engineering embodied in the MatSE focus areas. For the Biomaterials Area For All Other Areas Topical Lectures The courses listed below have been approved by the department as topical lectures for all focus areas. General Education Requirements Non-Primary Language Requirement University Composition These courses teach fundamentals of expository writing. Free Electives~~

~~Course List~~

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

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~Choose one:~~		
~~RHET 105~~	~~Writing and Research~~	
~~CMN 111~~	~~Oral & Written Comm I~~	
~~& CMN 112~~	~~and Oral & Written Comm II~~	
~~ESL 111~~	~~Intro to Academic Writing I~~	
~~& ESL 112~~	~~and Intro to Academic Writing II~~	
~~ESL 115~~	~~Principles of Academic Writing~~	

~~Advanced Composition (satisfied by completing the sequence MSE 307 + MSE 308 in the Materials Science and Engineering Technical Core)~~

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~Completion of the third semester or equivalent of a non-primary language is required. Completion of three years of a single language in high school satisfies this requirement.~~		~~0-9~~

~~Course List~~

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

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~Introductory - No more than 2 introductory courses can count for Topical Lecture~~		

Code	Title	Hours
MSE 420	Ceramic Materials & Properties	3
MSE 441	Metals Processing	3
MSE 450	Polymer Science & Engineering	3 or 4
MSE 470	Design and Use of Biomaterials	3
ECE 340	Semiconductor Electronics	3
Biomaterials		
MSE 473	Biomolecular Materials Science	3
MSE 474	Biomaterials and Nanomedicine	3
ABE 446	Biological Nanoengineering	3 or 4
BIOE 416	Biosensors	3
BIOE 461	Cellular Biomechanics	4
BIOE 476	Tissue Engineering	3
BIOE 487	Stem Cell Bioengineering	3 or 4
CHBE 473	Biomolecular Engineering	3 or 4
ECE 380	Biomedical Imaging	3
ECE 414	Biomedical Instrumentation	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 472	Biomedical Ultrasound Imaging	3
ME 482	Musculoskel Tissue Mechanics	3 or 4
ME 483	Mechanobiology	4
Biomaterials Science - Can only count one science course for Topical Lecture Biomaterials		
BIOC 446	Physical Biochemistry	3
BIOC 455	Technqs Biochem & Biotech	4
BIOP 401	Introduction to Biophysics	3
All Other Areas		
MSE 403	Synthesis of Materials	3
MSE 421	Ceramic Processing	3 or 4
MSE 422	Electrical Ceramics	3
MSE 440	Mechanical Behavior of Metals	3
MSE 443	Design of Engineering Alloys	3
MSE 445	Corrosion of Metals	3 or 4
MSE 453	Plastics Engineering	3
MSE 455	Macromolecular Solids	3
MSE 456	Mechanics of Composites	3
MSE 457	Polymer Chemistry	3 or 4
MSE 458	Polymer Physics	3 or 4
MSE 460	Electronic Materials I	3
MSE 461	Electronic Materials II	3
MSE 466	Materials in Electrochem Syst	3
MSE 480	Surfaces and Colloids	3
MSE 481	Electron Microscopy	3
MSE 484	Composite Materials	3
MSE 485	Atomic Scale Simulations	3
MSE 487	Materials for Nanotechnology	3
MSE 488	Optical Materials	3 or 4

Code	Title	Hours
MSE 489	Matl Select for Sustainability	3
ABE 482	Package Engineering	3
CEE 401	Concrete Materials	4
CEE 460	Steel Structures I	3
CHBE 457	Microelectronics Processing	3
ECE 441	Physcs & Modeling Semicond Dev	3
ECE 444	IC Device Theory & Fabrication	4
ECE 481	Nanotechnology	4
ECE 485	MEMS Devices & Systems	3
ECE 487	Intro Quantum Electr for EEs	3
ECE 488	Compound Semicond & Devices	3
ECE 495	Photonic Device Laboratory	3
ECE 498	Special Topics in ECE (Section CB: LEDs and Solar Cells)	4
IE 431	Design for Six Sigma	3
ME 431	Mechanical Component Failure	3 or 4
ME 450	Modeling Materials Processing	3
ME 472	Introduction to Tribology	3 or 4
ME 487	MEMS-NEMS Theory & Fabrication	4
NPRE 470	Fuel Cells & Hydrogen Sources	3
SE 412	Nondestructive Evaluation	3 or 4
TAM 427	Mechanics of Polymers	3
TAM 451	Intermediate Solid Mechanics	4
TAM 456	Experimental Stress Analysis	3
Science - Can only count one science course for Topical Lecture		
CHEM 436	Fundamental Organic Chem II	3
PHYS 485	Atomic Phys & Quantum Theory	3
PHYS 486	Quantum Physics I	4
PHYS 487	Quantum Physics II	4

EP Documentation

Attach
Rollback/Approval
Notices

DMI Documentation

Attach Final
Approval Notices

Banner/Codebook
Name
BS:Materials Sci & Engr -UIUC

Program Code: 10KP0130BS

Minor Code	Conc Code	Degree Code	BS Major Code
0130			

Senate Approval Date

Senate Conference Approval Date

BOT Approval Date

IBHE Approval Date

Effective Date:

Attached Document

Justification for this request

Program Reviewer Comments

Deb Forgacs (dforgacs) (01/09/20 1:42 pm): Rollback: .

Key: 122

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