



# Aerospace Engineering • 2

\*Technical electives can be chosen from the following list. At least three credit hours must come from either AER/ME 501 OR AER/ME 590.

AER 380 Topics in Aerospace Engineering (Variable Topics)

AER/ME 530 Gas Dynamics

AER/ME 531 Fluid Dynamics I

AER/ME 532 Advanced Strength of Materials

AER 545 Aircraft Control and Simulation

AER/ME 548 Aerodynamics of Turbomachinery

AER/ME 563 Basic Combustion Phenomena

AER/ME 565 Scale Modeling in Engineering

AER/ME 590 Applied CFD and Numerical Heat Transfer

AER/ME 516 Systems Engineering

AER 599 Topics in Aerospace Engineering (Subtitle required)

AER 395 Independent Work in Aerospace Engineering

AER/ME 501 Mechanical Design with Finite Element Methods

AER/ME 506 Mechanics of Composite Materials

AER/ME 510 Vibro-Acoustic Design in Mechanical Systems

AER/ME 513 Mechanical Vibrations

AER/ME 514 Computational Techniques in Mechanical System Analysis

















# Electrical Engineering • 2

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\*\*EE Technical Electives (must be 500-level courses). Courses recommended as electrical engineering technical electives are listed below (each course is 3 credit hours):

EE 503 Power Electronics  
EE 511 Introduction to Communication Systems  
EE 512 Digital Communication Systems  
EE 513 Audio Signals and Systems  
EE 517 Advanced Electromechanics  
EE 518 Electric Drives  
EE 522 Antenna Design  
EE 523 Microwave Circuit Design  
EE 525 Numerical Methods and Electromagnetics  
EE 527 Electromagnetic Compatibility  
EE 531 Alternative and Renewable Energy Systems  
EE 532 Smart Grid: Automation and Control of Power Systems  
EE 533 Advanced Power System Protection  
EE 535 Power Systems: Generation, Operation and Control  
EE 536 Power System Fault Analysis and Protection  
EE 537 Electric Power Systems I  
EE 538 Electric Power Systems II  
EE 539 Power Distribution Systems  
EE 543 Solar Cell Devices and Systems for Electrical Energy Generation  
EE 546 Electric Power System Fundamentals  
EE 560 Semiconductor Device Design  
EE 566 Engineering Optics  
EE 567 Introduction to Lasers and Masers  
EE 568 Fiber Optics  
EE 569 Electronic Packaging Systems and Manufacturing Processes  
EE 571 Feedback Control Design  
EE 572 Digital Control of Dynamic Systems  
EE 582 Hardware Description Languages and Programmable Logic  
EE 584 Introduction of VLSI Testing and Design  
EE 585 Fault Tolerant Computing  
EE 586 Communication and Switching Networks  
EE 587 Microcomputer Systems Design  
EE 588 Real-Time Computer Systems  
EE 589 Advanced VLSI  
EE 599 Topics in Electrical Engineering (Subtitle required)







# Mining Engineering

## College of Engineering

### Freshman Year

First Semester	Hours
CHE 105 General College Chemistry I* .....	4
CIS/WRD 110 Composition and Communication I*Δ.....	3
EGR 101 Engineering Exploration I § †.....	1
EGR 102 Fundamentals of Engineering Computing .....	2
MA 113 Calculus I*.....	MATH 241...4
<b>Second Semester</b>	
CIS/WRD 111 Composition and Communication IΔ.....	3
EGR 103 Engineering Exploration II § †.....	2
MA 114 Calculus II*.....	MATH 242...4
PHY 231 General University Physics*.....	PHYS 211...4
PHY 241 General University Physics Laboratory (PHYS 213)	
or	
CHE 111 General Chemistry I Laboratory ¶□.....	1
UK Core – Social Sciences.....	3

### Sophomore Year

First Semester	Hours
EES 220 Principles of Physical Geology.....	4
EM 221 Statics.....	3
MA 213 Calculus III*.....	MATH 243...4
MNG 201 Mining Engineering Fundamentals .....	4
PHY 232 General University Physics.....	PHYS 212...4
<b>Second Semester</b>	
EES 230 Fundamentals of Geology I.....	3
EM 302 Mechanics of Deformable Solids.....	3
MA 214 Calculus IV .....	MATH 341 or 471...3
MNG 291 Elements of Mine Design .....	3
MNG 303 Deformable Solids Laboratory .....	1
MNG 322 Mine Safety and Health Management and Processes.....	2
MNG 331 Explosives and Blasting.....	2

### Junior Year

First Semester	Hours
EM 313 Dynamics .....	3
MNG 211 Mine Surveying .....	2
MNG 301 Minerals Processing.....	3
MNG 335 Introduction to Mine Systems Analysis†.....	3
MNG 463 Surface Mine Design .....	3
UK Core – Humanities.....	3
<b>Second Semester</b>	
CE 341 Introduction to Fluid Mechanics.....	4
MNG 311 Electrical Circuits and Mining Machinery .....	3
MNG 371 Professional Development of Mining Engineers ∞.....	3
MNG 435 Mine Systems Engineering and Economics .....	3
MNG 551 Rock Mechanics .....	4

### Senior Year

First Semester	Hours
MNG 332 Mine Plant Machinery .....	3
MNG 341 Mine Ventilation .....	3
MNG 351 Underground Mine Design .....	3
MNG 591 Mine Design Project I.....	1
UK Core – Citizenship - USA.....	3
<b>Second Semester</b>	
BAE 535/MNG 535 Environmental Control System Design and Reclamation .....	3
MNG 592 Mine Design Project II (UK Core – Arts and Creativity).....	3
Minerals Processing Technical Elective[1].....	3
Technical Elective** .....	3
UK Core – Global Dynamics.....	3

\*Courses are required for Engineering Standing. A cumulative UK GPA of at least 2.5 and successful completion of all pre-major courses. Successful completion of the following courses with at least a 2.5 GPA: CIS 110/WRD 110, CHE 105, MA 113, MA 114, MA 213, and PHY 231. If a course is repeated, the best grade will be used for calculation of GPA in the above listed courses.

Δ Students taking ENG 101 (ENCO 100, ENGL 100, or ENGL 111) and ENG 102 (ENGL 102 or 112) should also complete COM 252, COM 281, or COM 287.

§ Transfer students will take EGR 215, Introduction to the Practice of Engineering for Transfer Students, in place of EGR 101 and EGR 103.

† Students must complete both EGR 101 and EGR 103 to fulfill the UK Core Arts and Creativity requirement. Transfer students may satisfy the UK Core Arts and Creativity requirement by taking EGR 215.

¶ Students only required to take one lab. Consult with advisor.

[1] The Minerals Processing Technical Elective is to be chosen between MNG 575, Coal Preparation Design, and MNG 580, Mineral Processing Plant Design.

∞ Graduation Composition and Communication Requirement (GCCCR) course.

†† MNG 335 satisfies the Statistical Inferential Reasoning requirement in the UK Core.

\*\*Courses recommended as technical electives are listed below. These courses must be chosen with the approval of the student's advisor to ensure that the curriculum includes sufficient engineering design content.

**Technical Electives:** Students are required to select their technical elective from the departmental courses listed below:

- MNG 511 Mine Power System Design
- MNG/MFS 520 Industrial Automation and Control
- MNG 531 Advanced Blast Design and Technology
- MNG 541 Computer Design of Mine Ventilation Systems

\$ Online Chemistry courses do not transfer. Chemistry classes and labs must be in person.

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OPI '797'EqcnRtgrctcvqp'F guli p  
OPI '7: 2'O kpgt cn'Rtqegukpi 'Rrpv'F guli p  
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