

Technical Elective Requirements – 18 total credit hours

See MNE Advising website for the full description of Technical Elective Requirements:

<https://www.mne.k-state.edu/students/undergraduate/advising>

ALL/General/Graduate School

CIS 209	C Programming for Engg. (3)	F, S, Su	MATH 220
STAT 490	Statistics for Engineers I (1)	F, S	
STAT 491	Statistics for Engineers II (1)	F, S	STAT 490
STAT 510	Intro Probability and Statistics I (3)	F, S	MATH 221
STAT 511	Intro Probability and Statistics II (3)	S	STAT 510
MATH 511	Intro to Algebraic Sys. (3)	F, S	MATH 222
MATH 512	Intro to Modern Algebra (3)	F	MATH 222
MATH 515	Intro to Linear Algebra (3)	S	MATH 222
MATH 520	Foundations of Analysis (3)	S	MATH 222
MATH 633	Advanced Calculus I (3)	F	MATH 222
MATH 630	Intro to Complex Analysis (3)	F	MATH 240
ME 760	Engineering Analysis I (3)	F	MATH 340 & senior standing
PHYS 325	Physics III, Relativity & Quantum Phys(4)	F	PHYS 224, PHYS 214, MATH 222
PHYS 506	Advanced Physics Laboratory (4)	S	PHYS 325
PHYS 522	Mechanics (4)	S	PHYS 224
PHYS 532	Electromagnetic Fields I (4)	F	PHYS 224, MATH 240
PHYS 694	Particle Physics (3)	S	PHYS 325

Aerospace

ME 563	Machine Design II (3)	F, S	ME 533
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 628	Aerodynamics (3)	F	ME 571, MATH 340
ME 631	Aircraft Propulsion (3)	S	ME 523, 571, MATH 340
ME 640	Control of Mechanical Systems II (3)	F	ME 570, MATH 551
ME 651	Introduction to Composites (3)	F	CE 533 & senior standing
ME 720	Intermediate Fluid Mechanics (3)	F	ME 571, MATH 340

Agriculture / Construction Machinery

BAE 345	Properties of Biological Materials (2)	S	CHM 210/220
BAE 350	Off Road Machinery Systems (2)	F	CHM 210
BAE 351	Machinery Systems Lab (1)	F	BAE 350
BAE 450	Off Road Machine Power Components (3)	S	PHYS 213
BAE 750	Anlys & Dsgn of Off-Highway Vehicles (3)	demand	BAE 536 or ME 574
ME 563	Machine Design II (3)	F, S	ME 533
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 656	Mechanical Vibrations I (3)	S	ME 512, MATH 340

Automatic Controls

CIS 209	C Programming for Engg. (3)	F, S, Su	MATH 220
ECE 241	Introduction to Computer Engg. (3)	F, S	
ECE 431	Microcontrollers (3)	F, S	ECE 241, CIS 200/209
ECE 441	Design of Digital Systems (3)	F, S	ECE 210, 241
ECE 631	Microcomputer Systems Design (3)	S	CIS 209/308 or ME 400, ME 519, ECE 431, 525/519
MATH 630	Intro to Complex Analysis (3)	F	MATH 340
ME 615	Applications in Mechatronics (3)	S	ME 400 or ECE 431, ME 535
ME 640	Control of Mechanical Systems II (3)	F	ME 570 & MATH 551
ME 656	Mechanical Vibrations (3)	S	ME 512 & MATH 340
ME 716	Intermediate Dynamics (3)	S	ME 512 & MATH 340
ME 730	Control Systems Analysis & Design (3)	S	ECE 530 or ME 640
ME 760	Engineering Analysis I (3)	F	MATH 340 & senior standing

Automotive

IMSE 251	Manufacturing Processes Lab (1)	F, S	IMSE 250
ME 563	Machine Design II (3)	F, S	ME 533
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 620	Internal Combustion Engines (3)	F	ME 523
ME 651	Intro to Composites (3)	F	CE 533 & senior. standing
ME 656	Mechanical Vibrations (3)	S	ME 512, MATH 340

Business / Management / Law / Technical Sales

ACCTG 231	Acct. for Business Ops (3)	F, S, Su	MATH 100
ACCTG 241	Acct for Investing & Financing (3)	F, S, Su	ACCTG 231
ENTRP 340	Intro to Entrepreneurship (3)	F, S	
ENTRP 350	Technology & Innovation Mangt (3)	S	ENTRP 340 or junior standing
ENTRP 540	Entrepreneurial Consulting (3)	F	ENTRP 340 or junior standing
FINAN 450	Principles of Finance (3)	F, S, Su	ECON 110/120, STAT 325/350/510, ACCTG 231
IMSE 501	Industrial Management (3)	F, S	
IMSE 541	Statistical Quality Control (3)	F	STAT 511
IMSE 605	Advanced Industrial Management (3)	F	IMSE 501 or MANGT 420
MANGT 420	Principles of Management (3)	F, S, Su	
MANGT 421	Intro to Operations Management (3)	F, S, Su	
MANGT 430	Business Law I (3)	F, S	MANGT 420 or junior standing
MANGT 520	Organizational Behavior (3)	F, S	MANGT 420
MANGT 522	Operations Planning & Control (3)	OD	MANGT 421
MANGT 530	Labor Relations & Negotiations (3)	F, S	MANGT 420 or junior standing
MKTG 400	Intro to Marketing (3)	F, S, Su	
MKTG 547	International Business (3)	OD	MKTG400 & MANGT 420
MKTG 550	Business to Business Marketing (3)	F, S	MKTG 400

Computer Science

CC 210	Fundamental Computer Programing (3)	F, S, Su	CC 110
CC 310	Data Structures & Algorithms I (3)	F, S, Su	CC 210, MATH 100
CC 315	Data Structures & Algorithms II (3)	F, S, Su	CC 310
CC 410	Advanced Programing (4)	F, S, Su	CC 315
CIS 200	Programing Fundamentals (4)	F, S	CIS 115 or ECE 241
CIS 209	Computer Programing for Engineers (3)	F, S, Su	MATH 220
CIS 300	Data and Program Structures (3)	F, S	CIS 200, MATH 205/220
CIS 301	Logical Foundations of Programing (3)	F, S	CIS 200
ECE 241	Intro to Computer Engineering (3)	F, S	

Consumer Products/Industrial Design

ENTRP 350	Technology & Innovation Mangt. (3)	S	ENTRP 340 or junior standing
IMSE 251	Manufacturing Processes Lab (1)	F, S	IMSE 250
IMSE 541	Statistical Quality Control (3)	F	STAT 511
IMSE 563	Manufacturing Processes Engineering(3)	S, odd	IMSE 251, CHE 356, CE 530
IMSE 564	Product and Process Engineering (3)	F	IMSE 251, IMSE 530
IMSE 610	Occupational Safety Engg. (3)	S even	IMSE 251
IMSE 623	Industrial Ergonomics (3)	F	STAT 510
IMSE 633	Production Plan & Inventory Control (3)	F	IMSE 250, IMSE 560
IMSE 641	Quality Engineering (3)	S	STAT 511
IMSE 643	Industrial Simulation (3)	F, S	STAT 511, IMSE 660
IMSE 662	Computer Aided Manufacturing (3)	F	IMSE 251, CIS 209/200 or ME 400
IMSE 685	Principles Manufacturing Info Systems(3)	S	IMSE 633
INDD 325	Human Factors in Industrial Design (3)	F	
INDD 350	Product Semantics (3)	S	
INDD 456	Intro to Product/Industrial Design (2)	F, S, Su	
INDD 500	Materials & Manufacturing Processes (3)	S	IMSE 250
ME 563	Machine Design II (3)	F, S	ME 533

Health Sciences / Biomedical

BME 200	Intro to Biomedical Engineering (3)		
BME 430	Biomaterials (3)	F	BIOL 198, CHM 230
BME 451	Biomechanical Engineering (3)	S	BIOL 198, MATH 222, PHYS 213
BIOL 198	Principles of Biology (4)	F, S, Su	
CHM 230	Chemistry II	F, S, Su	CHM 210 or CHM 220

Heating, Ventilating, Air Conditioning, Refrigeration

ME 523	Thermodynamics II (3)	F, S	ME 513
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 622	Indoor Environmental Engineering (3)	S	ME 571
ME 721	Thermal Systems Design (3)	F	ME 573
ME 722	Human Thermal Engineering (3)	F odd	ME 573
ME 773	Intermediate Heat Transfer (3)	S	ME 573

Manufacturing / Machine Tools

ECE 241	Introduction to Computer Engg. (3)	F, S	
ECE 431	Microcontrollers (3)	F, S	ECE 241, CIS 200/209
ECE 441	Design of Digital Systems (3)	F, S	ECE 210, 241
IMSE 251	Manufacturing Processes Lab (1)	F, S	IMSE 250
IMSE 252	Welding Laboratory (1)	F, S	
IMSE 253	Net Shape Manufacturing Lab (1)	F	IMSE 250, ME 212
IMSE 254	Machining Lab (1)	F	IMSE 250, ME 212
IMSE 255	Computer Numerical Control Lab (1)	F, S	IMSE 253/254
IMSE 541	Statistical Quality Control (3)	F	STAT 511
IMSE 563	Manufacturing Processes Engg. (3)	S odd	IMSE 251, CHE 356, CE 530
IMSE 564	Product & Process Engg. (3)	F	IMSE 250, 251, 530
IMSE 610	Occupational Safety Engg. (3)	S even	IMSE 251
IMSE 623	Industrial Ergonomics (3)	F	STAT 510
IMSE 664	Additive Manufacturing (3)	S	ME 212
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
IMSE 623	Industrial Ergonomics (3)	F	STAT 510
IMSE 662	Computer Aided Manufacturing (3)	F	IMSE 251, CIS 209/200 or ME 400
ME 730	Control Systems Analysis & Design (3)	S	ECE 530 or ME 640

Nuclear

BIOCH 521	General Biochemistry (3)	F, S, Su	CHM 350/531
BIOL 198	Principles of Biology (4)	F, S, Su	
BIOL 450	Modern Genetics (4)	F, S	BIOL 198, CHM 230, MATH 100
CHM 230	Chemistry II (4)	F, S, Su	CHM 210/220
CHM 350	General Organic Chemistry (3)	F, S, Su	CHM 230/250 <i>CHM 351 urged</i>
ECE 525	Electronics I (3)	F, S	ECE 410/519
ECE 581	Energy Conversion (3)	F, S	ECE 410/519
ME 760	Engineering Analysis I (3)	F	MATH 340 & senior standing
NE 350	Reactor Operations Laboratory (3)	F, S, Su	PHYS 214
NE 612	Principles of Radiation Detection (3)	S	NE 495
NE 630	Nuclear Reactor Theory (3)	F	MATH 340, NE 495
NE 640	Nuclear Reactor Thermalhydraulics	S	NE 495, ME 573
NE 648	Nuclear Reactor Laboratory (3)	S	NE 612, 630
NE 690	Radiation Protection & Shielding (3)	F	NE 495, PHYS 214, MATH 340
NE 691	Principles Radiation & Human Health (3)	S, Even	NE 690, ME 400 or CIS 200
NE 761	Radiation Measurement Systems (3)	F odd	NE 612

Energy Systems

BAE 651	Air Pollution Engineering (3)	S	ME 513, 571
ME 523	Thermodynamics II (3)	F, S	ME 513
ME 563	Machine Design II (3)	F, S	ME 533
ME 620	Internal Combustion Engines (3)	F	ME 523
ME 631	Aircraft Propulsion (3)	S	ME 523, 571, MATH 340
ME 633	Thermo of Modern Power Production (3)	F	ME 523
ME 720	Intermediate Fluid Mechanics (3)	F	ME 571, MATH 340
ME 721	Thermal Systems Design (3)	F	ME 573
ME 773	Intermediate Heat Transfer (3)	S	ME 573
NE 630	Nuclear Reactor Theory (3)	F	MATH 240, NE 495

Project Management & Construction

ACCTG 231	Acct. for Business Ops (3)	F, S, Su	MATH 100
ACCTG 241	Acct for Investing & Financing (3)	F, S, Su	ACCTG 231
CNS 220	Construction Materials (2)	F, S	ARE 100 or CNS 100
FINAN 450	Principles of Finance (3)	F, S	ECON 110/120, STAT 325/350/510, ACCTG 231, AGEC 120
IMSE 501	Industrial Management (3)	F, S	
IMSE 541	Statistical Quality Control (3)	F	STAT 511
IMSE 605	Advanced Industrial Management (3)	F	IMSE 501 or MANGT 420
MANGT 420	Principles of Management (3)	F, S, Su	
MANGT 421	Intro to Operations and Supply Chain (3)	F, S, Su	
MANGT 520	Organizational Behavior (3)	F, S, Su	MANGT 420, junior standing
MANGT 522	Operations Planning & Control (3)	S OD	MANGT 421
MANGT 530	Labor Relations & Negotiations (3)	F, S	MANGT 420 or junior standing
MKTG 400	Intro to Marketing (3)	F, S, Su	

Solid Mechanics / Machine Design

BAE 345	Properties of Biological Materials (2)	S	CHM 210/220
BAE 350	Off Road Machinery Systems (2)	F	CHM 210
BAE 351	Machinery Systems Lab (1)	F	BAE 350
BAE 450	Off Road Machine Power Components(3)	S	PHYS 213
BAE 750	Anlys & Dsgn of Off-Highway Vehicles (3)	OD	BAE 536 or ME 574
CE 534	Mechanics & Materials Laboratory (1)	F, S	CE 533
CHE 356	Fundamentals of Electrical Prop. (1)	F, S	CHE 354
CHE 661	Proc. of Mat. For Solid State Devices (3)	F, S	CHE 350/352
CHE 681	Engineering Materials II (3)	F, S, Su	CHE 350/352
IMSE 251	Manufacturing Processes Lab (1)	F, S	IMSE 250
IMSE 252	Welding Laboratory (1)	F, S	
IMSE 253	Net Shape Manufacturing Lab (1)	F	IMSE 250, ME 212
IMSE 254	Machining Lab (1)	F	IMSE 250, ME 212
IMSE 255	Computer Numerical Control Lab (1)	F, S	IMSE 253/254
IMSE 563	Manufacturing Processes Engg. (3)	S odd	IMSE251, CHE356, CE530
IMSE 564	Product & Process Engg. (3)	F	IMSE 250, 251, 530
IMSE 610	Occupational Safety Engg. (3)	S even	IMSE 251
IMSE 623	Industrial Ergonomics (3)	F	STAT 510
IMSE 662	Computer Aided Manufacturing (3)	F	IMSE 251, CIS 209/200 or ME 400
ME 563	Machine Design II (3)	F, S	ME 533
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 651	Intro to Composites (3)	F	CE 533 & sen. standing
ME 656	Mechanical Vibrations (3)	S	ME 512, MATH 340
ME 716	Intermediate Dynamics (3)	S	ME 512, MATH 340
ME 738	Experimental Stress Analysis (3)	F even	CE 533
ME 760	Engineering Analysis I (3)	F	MATH 340 & senior standing

Thermal Science / Fluid Mechanics

BAE 651	Air Pollution Engineering (3)	S	ME 513, 571
CHM 230	Chemistry II (4)	F, S, Su	CHM 210/220
ME 523	Thermodynamics II (3)	F, S	ME 513
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 620	Internal Combustion Engines (3)	F	ME 523
ME 622	Indoor Environmental Engineering (3)	S	ME 571
ME 628	Aerodynamics (3)	F	ME 571, MATH 340
ME 631	Aircraft Propulsion (3)	S	ME 523, 571, MATH 340
ME 633	Thermo of Modern Power Production (3)	F	ME 523
ME 720	Intermediate Fluid Mechanics (3)	F	ME 571, MATH 340
ME 721	Thermal Systems Design (3)	F	ME 573
ME 722	Human Thermal Engineering (3)	F odd	ME 573
ME 760	Engineering Analysis I (3)	F	MATH 340 & senior standing
ME 773	Intermediate Heat Transfer (3)	S	ME 573
NE 640	Nuclear Reactor Thermalhydraulics	S	NE 495, ME 573

Technical Electives for GRADUATE SCHOOL (See: All/General)

MATH 632	Elementary Partial Differential Eq. (3)	S	MATH 340
MATH 713	Advanced Applied Matrix Theory (3)	Su	MATH 551 or 630
ME 563	Machine Design II (3)	F, S	
ME 610	Finite Element Applications in ME (3)	F, S	
ME 656	Mechanical Vibrations I (3)	S	ME 533
ME 760	Engineering Analysis I (3)	F	CE 533
NE 640	Nuclear Reactor Thermalhydraulics (3)	S	ME 512, MATH 340 MATH 340 & senior standing NE 495, ME 573

This is not an all-inclusive listing. Use your DARS report and consult your advisor.