

Technical Elective Requirements – 18 total credit hours
This is not an all-inclusive listing. Use your DARS report and consult your advisor.

- MNE Credits** **9 credit hours – three** technical elective courses from the MNE department with at least one of those three courses at the 600-level or above. Students are allowed to transfer one MNE technical elective, but the >600-level course requirement must be taken at K-State.
- COE Credits** **3 credit hours – one** technical elective course from the 200-level or above College of Engineering (including MNE) classes.
- "Other" Credits** **6 credit hours – two** technical elective credits from 200-level or above College of Engineering (including MNE), Math, Chemistry, Physics, Biology, Business Administration classes, 400-level or above Statistics classes, or a maximum of 3 credit hours of 300-level or above AERO or MSCI courses for students who successfully complete the ROTC program. Other classes that strengthen a student's program of study will be considered and require advisor and department head approval.

Technical Electives by SUBJECT AREA

Automatic Controls

CHM 230	Chemistry II (4)	F, S, Su	CHM 210/220
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, ECE 431, 525/519
MATH 630	Intro to Complex Analysis (3)	F	MATH 340
ME 640	Control of Mechanical Systems II (3)	F	ME 570 & MATH 551
ME 656	Machine Vibrations I (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
STAT 490	Statistics for Engineers I (1)	F, S	
STAT 491	Statistics for Engineers II (1)	F, S	STAT 490
STAT 510	Intro Probability & Statistics I (3)	F, S	MATH 221
STAT 511	Intro Probability & Statistics II (3)	S	STAT 510

Business / Management / Law

ACCTG 231	Acct. for Business Ops (3)	F, S, Su	MATH 100 & GENBA 110 or sophomore standing
ACCTG 241	Acct for Investing & Financing	F, S, Su	ACCTG 231
ENTRP 340	Intro to Entrepreneurship (3)	F, S	
ENTRP 350	Technology & Innovation Mangt. (3)	S	ENTRP 340 or junior
ENTRP 540	Entrepreneurial Consulting (3)	F	ENTRP 340 or junior
FINAN 450	Principles of Finance (3)	F, S	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	Management Concepts (3)	F, S, Su	
MANGT 421	Intro to Operations Management (3)	F, S, Su	
MANGT 520	Organizational Behavior (3)	F, S, Su	MANGT 420
MANGT 522	Operations Planning & Control (3)	S OD	MANGT 421
MANGT 530	Industrial & Labor Relations (3)	F, S	MANGT 420 or junior
MKTG 400	Intro to Marketing (3)	F, S, Su	ECON 110/120
MKTG 547	International Business (3)	OD	MKTG400 & MANGT 420
MKTG 550	Business Marketing (3)	OD	MKTG 400

Nuclear

BIOCH 521	General Biochemistry (3)	F, S, Su	CHM 350
BIOL 198	Principles of Biology (4)	F, S, Su	Advisor approv. req'd
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, CHM 351 <i>urged</i>
CIS 209	C Programming for Engineers (3)	F, S, Su	MATH 220
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
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 761	Radiation Measurement Systems (3)	F odd	NE 612
STAT 490	Statistics for Engineers I (1)	F, S	
STAT 491	Statistics for Engineers II (1)	F, S	STAT 490
STAT 510	Intro Probability & Statistics I (3)	F, S	MATH 221
STAT 511	Intro Probability & Statistics II (3)	S	STAT 510

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 450	Off Road Machine Power Comp (3)	S	PHYS 213
BAE 750	Anlys & Dsgn of Off-Highway Vehicles (3)	S 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 650	Hazardous Waste Engg. Seminar (1)	F, S, Su	CHM 230
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
CIS 209	C Programming for Engineers (3)	F, S, Su	MATH 220
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. (4)	S odd	IMSE251, CHE352, 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	Machine Vibrations I (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 even	MATH 340 & senior standing
STAT 490	Statistics for Engineers I (1)	F, S	
STAT 491	Statistics for Engineers II (1)	F, S	STAT 490
STAT 510	Intro Probability & Statistics I (3)	F, S	MATH 221
STAT 511	Intro Probability & Statistics II (3)	S	STAT 510

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
CIS 209	C Programming for Engineers (3)	F, S, Su	MATH 220
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 & Missile Propulsion (3)	S	ME 523, 571, MATH 340
ME 633	Thermo of Modern Power Cycles (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
STAT 490	Statistics for Engineers I (1)	F, S	
STAT 491	Statistics for Engineers II (1)	F, S	STAT 490
STAT 510	Intro Probability & Statistics I (3)	F, S	MATH 221
STAT 511	Intro Probability & Statistics II (3)	S	STAT 510

Technical Electives by INDUSTRY

Aerospace

BAE 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 & Missile 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 & sen. 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 450	Off Road Machine Power Comp (3)	S	PHYS 213
BAE 750	Anlys & Dsgn of Off-Highway Vehicles (3)	S OD	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	Machine Vibrations I (3)	S	ME 512, MATH 340

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 & sen. standing
ME 656	Machine Vibrations I (3)	S	ME 512, MATH 340

Consulting

ME/NE ### Upper Level Technical Electives

Consumer Products

ENTRP 340	Intro to Entrepreneurship (3)	F, S	
ENTRP 350	Technology & Innovation Managt. (3)	S	ENTRP 340 or jr standing
IMSE 610	Occupational Safety Engg. (3)	S even	IMSE 251
IMSE 623	Industrial Ergonomics (3)	F	STAT 510
ME 563	Machine Design II (3)	F, S	ME 533
MKTG 400	Intro to Marketing (3)	F, S, Su	ECON 110/120

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

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 610	Occupational Safety Engg. (3)	S even	IMSE 251
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 640	Control of Mechanical Systems II (3)	F	ME 570 & MATH 551
ME 730	Control Systems Analysis & Design (3)	S	ECE 530 or ME 640

Manufacturing

IMSE 541	Statistical Quality Control (3)	F	STAT 511
IMSE 563	Manufacturing Processes Engg. (4)	S odd	IMSE251, CHE352, CE530
IMSE 623	Industrial Ergonomics (3)	F	STAT 510

Nuclear

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 761	Radiation Measurement Systems (3)	F odd	NE 612

Oil & Gas Engineering

ME 720	Intermediate Fluid Mechanics (3)	F	ME 571, MATH 340
ME 773	Intermediate Heat Transfer (3)	S	ME 573

Power Generation

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 & Missile Propulsion (3)	S	ME 523, 571, MATH 340
ME 633	Thermo of Modern Power Cycles (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

Processing

ME 523	Thermodynamics II (3)	F, S	ME 513
ME 720	Intermediate Fluid Mechanics (3)	F	ME 571, MATH 340
ME 773	Intermediate Heat Transfer (3)	S	ME 573

Project Management & Construction

ACCTG 231	Acct. for Business Ops (3)	F, S, Su	MATH 100 & GENBA 110 or sophomore standing
ACCTG 241	Acct for Investing & Financing	F, S, Su	ACCTG 231
FINAN 450	Principles of Finance (3)	F, S	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	Management Concepts (3)	F, S, Su	
MANGT 421	Intro to Operations Management (3)	F, S, Su	
MANGT 520	Organizational Behavior (3)	F, S, Su	MANGT 420
MANGT 522	Operations Planning & Control (3)	S OD	MANGT 421
MANGT 530	Industrial & Labor Relations (3)	F, S	MANGT 420 or junior standing
ME/NE ###	Upper Level Technical Electives		
MKTG 400	Intro to Marketing (3)	F, S, Su	ECON 110/120

Research & Development

ME/NE ###	Upper Level Technical Electives		
ME 760	Engineering Analysis I (3)	F	MATH 340 & senior standing

Technical Sales

MKTG 400	Intro to Marketing (3)	F, S, Su	ECON 110/120
MANGT 421	Intro to Operations Management (3)	F, S, Su	STAT 350
MKTG 547	International Business (3)	OD	MKTG400 & MANGT 420
MKTG 550	Business Marketing (3)	OD	MKTG 400

Technical Electives for GRADUATE SCHOOL

MATH 630	Introduction to Complex Analysis (3)	F	MATH 340
MATH 632	Elementary Partial Differential Eq. (3)	S	MATH 340
MATH 713	Advanced Applied Matrix Theory (3)	Su	MATH 551 or 630
MANGT 420	Management Concepts (3)	F, S, Su	
MANGT 421	Intro to Operations Management (3)	F, S, Su	STAT 350
ME 563	Machine Design II (3)	F, S	ME 533
ME 610	Finite Element Applications in ME (3)	F, S	CE 533
ME 656	Machine Vibrations I (3)	S	ME 512, MATH 340
NE 640	Nuclear Reactor Thermalhydraulics	S	NE 495, ME 573