

**Approved BME Electives  
(Updated 11/2/2015)**

***Department of Chemical and Biological Engineering***

CHE 302 (Heat and mass transfer operation)  
CHE 402 (Introduction to microelectronics fabrication technology)  
CHE 406 (Transport phenomena)  
CHE 430 (Petrochemical process operations and design)  
CHE 431 (Artificial intelligence applications in engineering)  
CHE 433 (Process modeling and system theory)  
CHE 435 (Process control)  
CHE 437 (Discrete time systems and computer control)  
CHE 439 (Numerical and data analysis)  
CHE 451 (Thermodynamics II)  
CHE 455 (Polymer Processing)  
CHE 461 (Aerosol measurement principles, techniques and applications)  
CHE 465 (Electrochemical energy conversion)  
CHE 467 (Fuel cell system design)  
CHE 470 (Introduction to polymer science)  
CHE 481 (Flow through porous media and fundamentals of reservoir engineering)  
CHE 483 (Synthetic energy)  
CHE 489 (Fluidization)  
CHE 501 (Transport phenomena)  
CHE 503 (Thermodynamics)  
CHE 505 (Fluid properties)  
CHE 508 (Process design optimization)  
CHE 510 (Fluid dynamics)  
CHE 512 (Heat transfer)  
CHE 514 (Process analytical technology)  
CHE 518 (Mass transfer)  
CHE 519 (Biosensors)  
CHE 522 (Fundamentals of combustion)  
CHE 525 (Chemical reaction engineering)  
CHE 530 (Advanced process control)  
CHE 533 (Statistical analysis of systems)  
CHE 535 (Applications of mathematics to chemical engineering)  
CHE 536 (Computational techniques in engineering)  
CHE 538 (Polymerization reaction engineering)  
CHE 541 (Renewable energy technologies)  
CHE 542 (Fluidization and gas-solids flow systems)  
CHE 545 (Metabolic engineering)  
CHE 551 (Advanced transport phenomena)  
CHE 552 (Bionanotechnology and interfacial phenomena)  
CHE 553 (Advanced thermodynamics)  
CHE 555 (Polymer processing)  
CHE 560 (Statistical quality and process control)

CHE 565 (Electrochemical engineering)  
CHE 566 (Fundamentals of electrochemistry)  
CHE 567 (Fuel cell fundamentals)  
CHE 573 (Bioseparations)  
CHE 575 (Polymer rheology)  
CHE 577 (Bioprocess engineering)  
CHE 580 (Biomaterials)  
CHE 582 (Interfacial and colloidal phenomena with applications)  
CHE 583 (Pharmaceutical engineering)  
CHE 584 (Tissue Engineering)  
CHE 585 (Drug delivery)  
CHE 586 (Particulate technology)

***Department of Electrical and Computer Engineering***

ECE 307 (Electrodynamics)  
ECE 311 (Electronics)  
ECE 319 (Fundamentals of power engineering)  
ECE 401 (Communication electronics)  
ECE 403 (Communication systems)  
ECE 404 (Digital and data communications)  
ECE 405 (Communication systems with laboratory)  
ECE 406 (Digital and data communications with laboratory)  
ECE 407 (Introduction to computer networks with laboratory)  
ECE 408 (Introduction to computer networks)  
ECE 411 (Power electronics)  
ECE 412 (Electric motor drives)  
ECE 415 (Solid-state electronics)  
ECE 416 (Industrial electronics design and automation)  
ECE 417 (Power distribution engineering)  
ECE 418 (Power system analysis)  
ECE 419 (Power systems analysis with laboratory)  
ECE 420 (Analytical methods in power systems)  
ECE 421 (Microwave circuits and systems)  
ECE 423 (Microwave circuits and systems with laboratory)  
ECE 425 (Analysis and design of integrated circuits)  
ECE 429 (Introduction to VLSI design)  
ECE 436 (Digital signal processing I with laboratory)  
ECE 437 (Digital signal processing I)  
ECE 438 (Control systems)  
ECE 441 (Microcomputers)  
ECE 446 (Advanced logic design)  
ECE 448 (Mini/micro computer programming)  
ECE 449 (Object-oriented programming and computer simulation)  
ECE 470 (Photonics)  
ECE 481 (Image processing)  
ECE 485 (Computer organization and design)

**Department of Mechanical, Materials, and Aerospace Engineering**

MMAE 304 (Mechanics of aerostructures)  
MMAE 305 (Dynamics)  
MMAE 306 (Analysis and design of machine elements)  
MMAE 311 (Compressible flow)  
MMAE 312 (Aerodynamics of aerospace vehicles)  
MMAE 315 (Aero Lab I)  
MMAE 322 (Heat and mass transfer)  
MMAE 361 (Fundamentals of crystalline solids)  
MMAE 362 (Physics of solids)  
MMAE 363 (Metallurgical and materials thermodynamics)  
MMAE 365 (Structure and properties of materials I)  
MMAE 370 (Materials laboratory I)  
MMAE 371 (Engineering materials and design)  
MMAE 406 (Mechanical vibrations)  
MMAE 407 (Biomechanics: solids)  
MMAE 415 (Aero lab II)  
MMAE 425 (Direct energy conversion)  
MMAE 430 (Engineering measurements)  
MMAE 431 (Design of machine elements)  
MMAE 432 (Design of mechanical systems)  
MMAE 433 (Design of thermal system)  
MMAE 434 (Design of mechanical reliability)  
MMAE 436 (Design of aerospace vehicles)  
MMAE 437 (Design of aerospace vehicles II)  
MMAE 440 (Introduction to robotics)  
MMAE 441 (Spacecraft and aircraft dynamics)  
MMAE 442 (Aircraft and spacecraft response and control)  
MMAE 443 (Systems analysis and control)  
MMAE 445 (CAD/CAM with numerical control)  
MMAE 451 (Finite element methods in engineering)  
MMAE 452 (Aerospace propulsion)  
MMAE 463 (Structure and properties of materials II)  
MMAE 464 (Physical metallurgy)  
MMAE 465 (Electrical, magnetic and optical properties of materials)  
MMAE 466 (Microstructural characterization of materials)  
MMAE 468 (Introduction to ceramic materials)  
MMAE 470 (Introduction to polymer science)  
MMAE 473 (Corrosion)  
MMAE 474 (Metal processing)  
MMAE 475 (Powder metallurgy)  
MMAE 476 (Materials laboratory II)  
MMAE 477 (Commercial alloys)  
MMAE 478 (Service failure analysis)

MMAE 480 (Forging and forming)  
MMAE 481 (Introduction to joining process)  
MMAE 482 (Composites)  
MMAE 483 (Structure/property relationship in polymers)  
MMAE 486 (Properties of ceramics)  
MMAE 487 (Fiber reinforced polymeric composite materials)  
MMAE 489 (Ferrous products: metallurgy and manufacture)  
MMAE 490 (Crystallography and crystal defect)  
MMAE 501 (Engineering analysis I)  
MMAE 502 (Engineering analysis II)  
MMAE 503 (Advanced engineering analysis)  
MMAE 507 (Introduction to continuum mechanics)

***Department of Civil, Architectural and Environmental Engineering***

CAE 303 (Structural design I)  
CAE 304 (Structural analysis I)  
CAE 307 (Structural design II)  
CAE 310 (Structural design II)  
CAE 351 (Structures II: steel and timber design)  
CAE 352 (Structures III: reinforced concrete and masonry design)  
CAE 403 (Sound and vibration control in buildings)  
CAE 408 (Bridge and structural design)  
CAE 410 (Introduction to wind and earthquake engineering)  
CAE 420 (Dynamics of structures)  
CAE 424 (Introduction to fire dynamics)  
CAE 426 (Computer fire modeling theory and applications)  
CAE 430 (Probability concepts in civil engineering design)  
CAE 442 (Finite element methods in framed structures)  
CAE 482 (Hydraulic design of open channel systems)

***Department of Computer Science***

CS 331 Data Structures and Algorithms  
CS 330 Discrete Structures  
CS 351 Systems Programming  
CS 450 Operating Systems I  
CS 411 Computer Graphics  
CS 422 Data Mining  
CS 425 Database Organization  
CS 429 Information Retrieval  
CS 430 Introduction to Algorithms  
CS 440 Programming Languages & Translators  
CS 442 Mobile Applications Development  
CS 443 Compiler Construction  
CS 445 Object Oriented Design & Programming  
CS 447 Distributed Objects

CS 455 Data Communications  
CS 456 Introduction to Wireless Networks & Performance  
CS 458 Information Security  
CS 470 Computer Architecture  
CS 480 Artificial Intelligence Planning & Control  
CS 481 Artificial Intelligence Language Understanding  
CS 482 Information & Knowledge Management Systems  
CS 487 Software Engineering I

**General Engineering**

ENGR 497