LOWER DIVISION GENERAL EDUCATION
(Tracks A, B, E. Track C- ref to Physics Education, Track D- ref to Electrical Engineering)

A. Skills
Written Communication
ENGL 110C (ENG 111) 3
ENGL 211C or 231C (See transfer guide) 3

Oral Communication
Satisfied in major.

Mathematics
Satisfied in major.

Language and Culture
Proficiency through 102F 0-6 (See transfer guide)

Information Literacy and Research
CS 120G or 121G (See transfer guide) 3

B. Ways of Knowing
Human Creativity (See transfer guide) 3

Interpreting the Past
HIST 100H, 101H, 102H, 103H, 104H, or 105H

Literature
ENGL 112L, 114L, or FLET 100L

Philosophy & Ethics
PHIL 110P, 120P, 140P, 230E, 250E, 303E, 344E, 345E, 441E, or Philosophy & Ethics

The Nature of Science
Satisfied in major

Human Behavior
AAST 100S; ANTR 110S; COMM 200S; CRJS 215S; ECON 200S, 201S, 202S; FIN 210S; GEOG 100S, 101S; POLS 100S, 101S, 102S; PSYC 201S, 203S; SOC201S; WMST 201S

Impact of Technology
COMM 372ST, CS 300T, DNTH 440T, or ENGL 307T, GEOG 306T, HIST 300T, 304T, 386T, 389T, IT 360T, MUSC 335T, SCI 302T, PHIL 383T, POLS 350T, STEM 110T, 370T, or WMST 390T (satisfied by TLED 430 for teacher education)

MATH 312 (285) Calculus III 4
MATH 316 or 401 or 421 or 422 3
CHEM 121N/122N-123N/124N 8 (CHM 111 and 112)*

Foundations of Chemistry I & II

CHEM 137N-138N Accelerated General Chemistry I & II may be taken instead

CS 150 Problem Solving and Programming I

Physics Major/Research and Professional Tracks

Track B- Professional Track

MATH 211 Calculus I 4 (MTH 173, 273)*
MATH 212 Calculus II 4 (MTH 174, 274)*
MATH 307 (280) Ordinary Differential Equations 3

MATH 312 (285) Calculus III 4
MATH 316 or 401 or 421 or 422 3
CHEM 121N/122N-123N/124N 8 (CHM 111 and 112)*

Foundations of Chemistry I & II

CHEM 137N-138N Accelerated General Chemistry I & II may be taken instead

CS 150 Problem Solving and Programming I

Track C – Education Track

Departmental Requirements

MATH 211 Calculus I 4 (MTH 173, 273)*
MATH 212 Calculus II 4 (MTH 174, 274)*
MATH 307 (280) Differential Equations __3________
CHEM 121N/122N* and 123N/124N* __8 (CHM 111 and 112)*
Foundations of Chemistry I and II __4 (CSC 201, EGR 126)*
CS 150 Intro to Programming __4 (CSC 201, EGR 126)*
PHYS 103N Introductory Astronomy __4
PHYS 231N University Physics I and II __8 (PHY 231, 241 and PHY 232, 242)*
PHYS 323 Modern Physics __3 (PHY 243)*
PHYS 319 Analytical Mechanics __3
PHYS 320 Electricity & Magnetism __3
Approved Physics Elective; 300 and above __3
PHYS 303 Laboratory __3
PHYS 120 or 309 Seminar __1
PHYS 355 Mathematical Meth of Physics __3
PHYS 413 Methods of Exp Physics __3
PHYS 499W Senior Thesis __3
*CHEM 137N/138 may be taken instead of CHEM 121N/122N and 123N/124N

The Professional Education core courses and requirements are as follows:
TLED 301 Foundations and Assessment Education __3
TLED 360 Classroom Management and Discipline __2
SPED 406 Students with Diverse Learning Needs- Gen Ed Class __3
TLED 408 Reading and Writing in Content Areas __3
TLED 430 PK-12 Instructional Technology (satisfies Impact of Technology requirement) __3
SPED 313 Fundamentals – Human Growth and Development __3
(PSY 231-232 at the VCCS will transfer for SPED 313 credit)
STEM 454 Developing Instructional Strategies for Teaching: Science __3
TLED 483 Seminar in Teacher Education (corequisite with STEM 454) __1
TLED 485 Teacher Candidate Internship (student teaching) __12

Track D - Dual degree in Physics & Electrical Engineering

Common Course Requirements
Approved Physics Seminar __1
MATH 211 Calculus I __4 (MTH 173, 273)*
MATH 212 Calculus II __4 (MTH 174, 274)*
MATH 307 Ordinary __3
Differential Equations
MATH 312 Calculus III __3
MATH 316 or 401 or 421 or 422 __3 (CHM 111)*
CHEM 121N/122N __4 (CHM 111)*
Foundations of Chemistry I __4 (CSC 201, EGR 126)*
CS 150 Problem Solving and Programming I __4 (CSC 201, EGR 126)*
PHYS 231N-232N University Physics __8 (PHY 231, 241 and PHY 232, 242)*

Physics Course Requirements
MATH 316 or 401 or 421 or 422 __3
CHEM 123N/124N __4 (CHM 112)*
Foundations of Chemistry II __3 (PHY 243)*
PHYS 323 Modern Physics __3
PHYS 319 Analytical Mechanics __3
PHYS 320 Electricity and Magnetism __3
PHYS 352 Intro to Quantum mechanics __3
PHYS 303 or ECE 287 Laboratory __3
PHYS 350 or 478 Light & Lasers __3
PHYS 413 Methods of Exp Physics __3
PHYS 454 Thermal Physics __3
PHYS 420 Comp. Physics __3
PHYS 453 EM Radiation & Optics __3
PHYS 456 Intern. Quant. Mech. __3
PHYS 499W Senior Thesis __3
PHYS elective (Choose from: 411, 415, 416, 417) __3

Engineering Course Requirements
(see Electrical & Computer Engineering for more detail)

Track E - B.S. in Physics and M.B.A.
MATH 211 Calculus I __4 (MTH 173, 273)*
MATH 212 Calculus II __4 (MTH 174, 274)*
MATH 307 Ordinary __3
Differential Equations
PHYS 312 Calculus III __4
MATH 316 or 401 or 421 or 422 __3
CHEM 121N/122N-123N/124N __8 (CHM 111 and 112)*
Foundations of Chemistry I & II __4
CS 150 Problem Solving and Programming I __4 (CSC 201, EGR 126)*
PHYS 231N-232N University Physics __8 (PHY 231, 241 and PHY 232, 242)*
PHYS 323 Modern Physics __3 (PHY 243)*
PHYS 319 Analytical Mechanics __3
PHYS 320 Electricity and Magnetism __3
PHYS 352 Intro to Quantum mechanics __3
PHYS 303 Laboratory __3
PHYS 355 Mathematical Meth of Physics __3
PHYS 413 Methods of Exp Physics __3
PHYS 420 or 453 or 456 __3
PHYS 454 Thermal Physics __3
PHYS 499W Senior Thesis __3
Approved PHYS Seminar __1
PHYS electives (Choose 2 from: 311, 313, 325, 350, 411, 415, 416, 417. One class must be at the 400-level.) __6
*UPPER DIVISION GEN ED met by MBA core.

UPPER DIVISION GENERAL EDUCATION
Option A. Approved Disciplinary Minor (a minimum of 12 hours determined by the department), or second degree or second major
Option B. Interdisciplinary Minor (specifically 12 hours, 3 of which may be in the major)
Option C. International Business and Regional Courses or an approved Certification Program such as teaching licensure
Option D. Two Upper-Division Courses from outside the College of Sciences and not required by the major (6 hours)

Requirements for graduation include a minimum cumulative grade point average of 2.50 overall and in the major, 120 credit hours, passage of the Exit Examination of Writing Proficiency, and completion of Senior Assessment.