

2011-12 PRE-COMBINED PLAN CURRICULUM GUIDE

for William and Mary students

DRAFT Version—subject to change

Foundation Courses required of all Majors:

- i. MATHEMATICS
 - Calculus, MATH 111, 112, and either 212 or 213
- ii. PHYSICS
 - Mechanics and Thermodynamics, PHYS 101
 - Electricity, Magnetism, and Optics, PHYS 102
- iii. CHEMISTRY
 - General Chemistry I, CHEM 103
- iv. LAB REQUIREMENT
 - One semester lab in any of PHYS 101, PHYS 102, CHEM 103L
 - Note: Labs are mandatory for PHYS 101 and 102 at W&M
- v. COMPUTER SCIENCE (choose one)
 - CSCI 141, Computational problem solving
 - PHYS 256, Practical Computing for Scientists, MATLAB
- vi. HUMANITIES AND SOCIAL SCIENCES
 - Complete all GER's
 - Economics, ECON 101 or 102
 - Writing, Freshman Seminar with writing component (150W), or WRIT 101
- vii. DEGREE REQUIREMENTS
 - All degree requirements for the student's major as listed in the W&M undergraduate catalog must be completed before entering the engineering program.

REQUIRED FOR MAJORS IN:

APPLIED MATHEMATICS or APPLIED PHYSICS

MATHEMATICS

Ordinary Differential Equations, MATH 302

PHYSICS

Modern Physics, PHYS 201

Physics Lab, PHYS 101 or 102 lab

CHEMISTRY/BIOLOGY (Choose one course listed below. Chemistry/Biology labs not required.)

General Chemistry I, CHEM 103

Molecular and Cellular Biology, BIOL 225

BIOMEDICAL ENGINEERING

ALL TRACKS

MATHEMATICS

Linear Algebra, MATH 211

Ordinary Differential Equations, MATH 302

PHYSICS

Modern Physics, PHYS 201

CHEMISTRY

General Chemistry II, CHEM 305 or 308

General Chemistry Lab, CHEM 103L

Organic Chemistry I, CHEM 206

ELECTRICAL ENGINEERING [*may be taken the summer before entering or while at Columbia*]

Electronics I, PHYS 252, or

Electronics II, PHYS 351

ENGINEERING MECHANICS [*may be taken the summer before entering or while at Columbia*]

Classical Mechanics, PHYS 208

COMPUTER SCIENCE

Practical Computing for Scientists, PHYS 256 (preferred), or

Computational Problem Solving, CSCI 141

CHEMICAL ENGINEERING

MATHEMATICS

Ordinary Differential Equations, MATH 302

PHYSICS

Physics Lab, PHYS 101 or 102 lab

CHEMISTRY

General Chemistry II, CHEM 305 or 308

General Chemistry Lab, CHEM 103L

Organic Chemistry I, CHEM 206

Organic Chemistry Lab, CHEM 206L

CIVIL ENGINEERING

MATHEMATICS

Linear Algebra, MATH 211

Ordinary Differential Equations, MATH 302

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab

Chemistry Lab, CHEM 103L

ENGINEERING MECHANICS [*may be taken the summer before entering or while at Columbia*]

Classical Mechanics, PHYS 208

COMPUTER SCIENCE

Practical Computing for Scientists, PHYS 256 (preferred), or

Computational Problem Solving, CSCI 141

COMPUTER ENGINEERING

MATHEMATICS

Linear Algebra, MATH 211
Ordinary Differential Equations, MATH 302

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab
Chemistry Lab, CHEM 103L

COMPUTER SCIENCE

Discrete Structures, CSCI 243

ELECTRICAL ENGINEERING *[may be taken the summer before entering or while at Columbia]*

Electronics I, PHYS 252, or
Electronics II, PHYS 351

COMPUTER SCIENCE

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab
Chemistry Lab, CHEM 103L

COMPUTER SCIENCE

Data Structures, CSCI 241
Discrete Structures, CSCI 243
Practical Computing for Scientists, PHYS 256, or
Computational Problem Solving, CSCI 141

EARTH AND ENVIRONMENTAL ENGINEERING

MATHEMATICS

Linear Algebra, MATH 211

Ordinary Differential Equations, MATH 302

CHEMISTRY

General Chemistry II, CHEM 305 or 308

General Chemistry Lab, CHEM 103L

OTHER SCIENCE ELECTIVE (*choose one course listed below*)

Organic Chemistry I, CHEM 206

Modern Physics, PHYS 201

Molecular and Cellular Biology, BIOL 225

EARTH AND ENVIRONMENTAL SCIENCE (*choose one course listed below*)

[may be taken while at Columbia]

The Dynamic Earth: Physical Geology, GEOL 101

Earth's Environmental Systems, GEOL 110

Weather, Climate and Change, GEOL 312

EARTH AND ENVIRONMENTAL ENGINEERING

Alternative Energy Resources, *[may be taken while at Columbia]*

ELECTRICAL ENGINEERING

MATHEMATICS

Linear Algebra, MATH 211
Ordinary Differential Equations, MATH 302

PHYSICS

Modern Physics, PHYS 201
Physics Lab, PHYS 101 or 102 lab

COMPUTER SCIENCE

Computational Problem Solving, CSCI 141, or
Practical Computing for Scientists, PHYS 256

ELECTRICAL ENGINEERING [*may be taken the summer before entering or while at Columbia*]

Electronics I, PHYS 252 or,
Electronics II, PHYS 351

IEOR: ENGINEERING SYSTEMS MANAGEMENT

MATHEMATICS

Linear Algebra, MATH 211

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab
Chemistry Lab, CHEM 103L

COMPUTER SCIENCE

Computational Problem Solving, CSCI 141
Data Structures, CSCI 241

ECONOMICS

Principles of Accounting, BAUD 203

PROBABILITY AND STATISTICS

Applied Statistics, MATH 351

IEOR: FINANCIAL ENGINEERING

Students cannot apply directly to IEOR: Financial Engineering because this concentration in Operations Research requires an application after one semester of study at Columbia. Students interested in this concentration must adhere to the following pre-requisite requirements:

MATHEMATICS

Linear Algebra, MATH 211

Ordinary Differential Equations, MATH 302

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab

Chemistry Lab, CHEM 103L

COMPUTER SCIENCE

Computational Problem Solving, CSCI 141

Data Structures, CSCI 241

ECONOMICS

Principles of Accounting, BAUD 203

PROBABILITY AND STATISTICS

Applied Statistics, MATH 351

IEOR: INDUSTRIAL ENGINEERING

MATHEMATICS

Linear Algebra, MATH 211

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab

Chemistry Lab, CHEM 103L

COMPUTER SCIENCE

Computational Problem Solving, CSCI 141

Data Structures, CSCI 241

ECONOMICS

Principles of Accounting, BAUD 203

PROBABILITY AND STATISTICS

Applied Statistics, MATH 351

IEOR: OPERATIONS RESEARCH

MATHEMATICS

Linear Algebra, MATH 211

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab

Chemistry Lab, CHEM 103L

COMPUTER SCIENCE

Computational Problem Solving, CSCI 141

Data Structures, CSCI 241

ECONOMICS

Principles of Accounting, BAUD 203

PROBABILITY AND STATISTICS

Applied Statistics, MATH 351

ENGINEERING MECHANICS

MATHEMATICS

Ordinary Differential Equations, MATH 302

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab

Chemistry Lab, CHEM 103L

ENGINEERING MECHANICS

Classical Mechanics, PHYS 208 [*may be taken the summer before entering or while at Columbia*]

MATERIALS SCIENCE ENGINEERING

MATHEMATICS

Ordinary Differential Equations, MATH 302

PHYSICS

Modern Physics, PHYS 201

Physics Lab, PHYS 101 or 102 lab

CHEMISTRY

General Chemistry II, CHEM 305 or 308

General Chemistry Lab, CHEM 103L

MECHANICAL ENGINEERING

MATHEMATICS

Linear Algebra, MATH 211

Ordinary Differential Equations, MATH 302

PHYSICS/BIOLOGY *(choose one course listed below)*

Modern Physics, PHYS 201

Introduction to Organisms, Ecology, Evolution, BIOL220

Introduction to Molecules, Cells, Development, BIOL 225

PHYSICS/CHEMISTRY LAB (choose one)

Physics Lab, PHYS 101 or 102 lab

Chemistry Lab, CHEM 103L

ENGINEERING MECHANICS *[may be taken the summer before entering or while at Columbia]*

Classical Mechanics, PHYS 208

ELECTRICAL ENGINEERING *[may be taken the summer before entering or while at Columbia]*

Electronics I, PHYS 252 or,

Electronics II, PHYS 351
