

COMPUTATIONAL MATHEMATICS (B.S.) - ENGINEERING - ONLINE

Important: This degree plan is effective for those starting this degree program in fall 2024 through summer 2025. This degree plan will remain in effect for students who do not break enrollment or who do not change degree programs, concentrations, or cognates.

General Education/Foundational Skills Requirements

Code	Title	Hours
Communication & Information Literacy ¹		
ENGL 101	Composition and Rhetoric	3
	Communications Elective	3
	Information Literacy Elective	3
	Information Literacy Elective	3
Technological Solutions & Quantitative Reasoning ¹		
UNIV 104	Instructional Technology for Successful Online Learning	0-3
	Math Elective MATH 114 or higher	3
Critical Thinking ¹		
RLGN 104	Christian Life and Biblical Worldview ²	4
	Critical Thinking Elective	3
Civic & Global Engagement ¹		
	Cultural Studies Elective	3
Social & Scientific Inquiry ¹		
	Natural Science Elective	3
	Social Science Elective	3
Christianity & Contexts ¹		
BIBL 104	Survey of Old and New Testament	4
THEO 104	Introduction to Theology Survey ²	4
Total Hours		39-42

¹ Refer to the list of approved general education electives before enrolling in foundational skill requirements

² Students transferring in 45 or more UG credit hours will have the requirement of RLGN 104 waived; Students transferring in 60 or more UG credit hours will also have the requirement of THEO 104 waived

Major Requirements

Code	Title	Hours
Major Foundational Courses		
CSIS 110	Introduction to Computer Science ¹	3
MATH 131	Calculus and Analytic Geometry I ¹	4
Total Hours		7

¹ Course may fulfill select general education requirements

Code	Title	Hours
Major Core		
MATH 132	Calculus and Analytic Geometry II	4
MATH 211	Introduction to Statistical Analysis	3
MATH 250	Introduction to Discrete Mathematics	3
MATH 345	Introduction to the History of Mathematics	3
MATH 410	Matrix and Linear Algebra	3
MATH 423	Abstract Algebraic Structures	3
MATH 430	Multivariable Calculus	3
MATH 432	Applied Differential Equations	3
MATH 441	Probability I	3
MATH 460	Mathematical Modeling and Simulation	3
MATH 491	Computational Mathematics Capstone	3
STAT 420	Regression and Forecasting I	3
	Elective ¹	3
Total Hours		40

¹ Choose any MATH, PHYS, or STAT course not already applying to the degree.

Code	Title	Hours
Cognate		
	Engineering Elective ^{1,2}	3
	Engineering Elective ^{1,2}	3
	Engineering Elective ^{1,2}	3
	Engineering Elective ^{1,2}	3
	Engineering Elective ^{1,2}	3
Total Hours		15

¹ Choose a course not already applying to the degree from one of the following disciplines: ENGL, ENGR, or ENGV

² A minimum of 15 hours total is required for the Cognate

Code	Title	Hours
Free Electives		
	Choose 16-26 credit hours of Free Electives ¹	16-26
Total Hours		16-26

¹ May need up to 3 hours of 300-400 level electives to fulfill upper-level requirement; this is dependent upon courses chosen for the Natural Science Electives and the Cognate Electives. Student should contact an academic advisor for more information.

All applicable prerequisites must be met

Graduation Requirements

- 120 Total hours
- 2.0 Overall grade point average
- 30 Hours must be upper-level courses (300-400 level)
- **Grade of 'C'** Minimum required for all major foundational courses and all upper-level courses in the major
- 25% Of major and concentration taken through Liberty University
- 30 Hours must be completed through Liberty University

- **Grad App** Submission of Degree Completion Application must be completed within the last semester of a student's anticipated graduation date

Course Sequence

Course	Title	Hours
First Year		
First Semester		
BIBL 104	Survey of Old and New Testament	4
ENGL 101	Composition and Rhetoric	3
UNIV 104	Instructional Technology for Successful Online Learning	0-3
Communications Elective ¹		3
Math Elective (MATH 131) ¹		4
Hours		14-17
Second Semester		
RLGN 104	Christian Life and Biblical Worldview	4
Critical Thinking Elective ¹		3
Information Literacy Elective (CSIS 110) ¹		3
MATH 132	Calculus and Analytic Geometry II	4
MATH 250	Introduction to Discrete Mathematics	3
Hours		17
Second Year		
First Semester		
Information Literacy Elective ¹		3
Natural Science Elective ¹		3
MATH 211	Introduction to Statistical Analysis	3
MATH 430	Multivariable Calculus	3
Elective		3
Hours		15
Second Semester		
THEO 104	Introduction to Theology Survey	4
Cultural Studies Elective ¹		3
Social Science Elective ¹		3
Elective		3
Elective		3
Hours		16
Third Year		
First Semester		
MATH 410	Matrix and Linear Algebra	3
STAT 420	Regression and Forecasting I	3
Engineering Elective ^{2,3}		3
Elective		3
Elective		3
Hours		15
Second Semester		
MATH 345	Introduction to the History of Mathematics	3
MATH 423	Abstract Algebraic Structures	3
Core Elective ⁴		3
Engineering Elective ^{2,3}		3
Elective		3
Hours		15

Course	Title	Hours
Fourth Year		
First Semester		
MATH 432	Applied Differential Equations	3
MATH 441	Probability I	3
Engineering Elective ^{2,3}		3
Engineering Elective ^{2,3}		3
Elective		1
Hours		13
Second Semester		
MATH 460	Mathematical Modeling and Simulation	3
MATH 491	Computational Mathematics Capstone	3
Engineering Elective ^{2,3}		3
Elective ⁵		3
Elective		3
Hours		15
Total Hours		120-123

¹ Refer to the list of approved general education electives at www.liberty.edu/gened before enrolling foundational skills requirements.

² Choose a course not already applying to the degree from one of the following disciplines: ENGI, ENGR, or ENGV.

³ A minimum of 15 hours total is required for the Cognate.

⁴ Choose any MATH, PHYS, or STAT course not already applying to the degree.

⁵ May need up to 9 hours of 300-400 level electives to fulfill upper-level requirement; this is dependent upon courses chosen for the Natural Science Electives. Student should contact academic advisor for more information.