DEPARTMENT OF MATHEMATICS

The Department of Mathematics provides students with opportunities to earn a Bachelor of Science degrees in mathematics. An Honors programs is offered in the mathematics disciplines. A minor is also available in mathematics. A degree in engineering is available through Lander University's dual-degree program with Clemson University. Students who complete this dual-degree program will receive a bachelor's degree in Engineering from Clemson University and a bachelor's degree in mathematics from Lander University.

The Department's webpage contains information about the individual programs of study, scholarships available for students majoring in mathematics, and a link to an on-line application for these scholarships (https://www.lander.edu/admissions/tuition-financial-aid/scholarships/departmental-scholarships.html).

Engineering Dual-Degree Program

Students who wish to combine study in mathematics with a liberal arts program with further study in an engineering discipline may do so under the Lander University-Clemson University Engineering Dual-Degree Program. Students who complete this program will gain the unique advantage of dividing their academic journey between the personalized liberal arts environment of a small university campus and the cutting-edge, technically focused atmosphere of a large engineering university. This distinctive combination offers exceptional preparation in engineering, enriched by a robust foundation in the humanities and social sciences. Additionally, the program integrates a strong emphasis on mathematics, equipping students with the analytical and problem-solving skills essential for excelling in both engineering and interdisciplinary fields.

This program can be applied to the following engineering disciplines at Clemson: civil, computer, electrical, industrial, mechanical, or automotive.

Students apply for admission to Clemson during their third academic year at Lander University. Acceptance into the Clemson engineering program is at the discretion of that university. Clemson recommends that prospective students enroll in a summer school session at Clemson following their sophomore or junior year at Lander.

A grade of "C" or better is required in all courses applied to the dual-degree program and in all courses that must transfer to Clemson University.

Dual-degree engineering majors enter Clemson University at a level competitive with students already at that university. Successful completion of the program will result in the student being awarded a Bachelor of Science degree in Engineering from Clemson University and a Bachelor of Science degree in their major from Lander University.

Students will have competency in the following areas prior to leaving for Clemson University:

A. MATHEMATICS/ENGINEERING DUAL DEGREE

The Foundations of Mathematics. This includes first and foremost a firm grounding in the major concepts of mathematics needed for continued learning in the field of engineering. Students must learn to analyze a given situation, extract the pertinent facts, and then draw correct conclusions. Specifically included are basic algebraic operations, the elements of set theory, and the fundamentals of logic.

Advanced Algebra. This includes knowledge of the basic constructs of linear algebra with possible further study in abstract algebra.

Analysis. This includes both calculus and differential equations. Students must have knowledge of continuity, differentiation, integration, sequences and series, and multivariable calculus. Students must be able to solve the basic differential equations that arise in engineering applications.

Probability and Statistics. This includes the acquisition and analysis of data, probability, discrete and continuous probability distributions, estimation using confidence intervals, tests of hypotheses, and linear regression.

Mathematics Major

Mathematics is fundamental to both the theoretical and the practical problem-solving components of virtually every field of study. The goal of the mathematics major at Lander University is to provide students with the opportunity and the direction to enjoy the intellectual challenges of mathematics and to develop the communication skills and the

mathematical knowledge necessary to function competently in graduate school and/or in employment in a variety of fields that require strong mathematical expertise. A successful graduate with a mathematics major will have specific competency in:

1. *The Foundations of Mathematics.* This includes first and foremost a firm grounding in the major concepts and applications of mathematics needed for successful continued learning in the field. Students must learn to analyze a given situation, extract the pertinent facts, and then draw correct conclusions. Specifically included are basic algebraic operations, the elements of set theory, and the fundamentals of logic.
2. *Advanced Algebra.* This includes the fields of linear and abstract algebra. Specifically, the student must know the basic concepts and applications in these fields, including a basic understanding of groups, rings, fields, and vector spaces.
3. *Analysis.* This includes calculus and at least one of the fields of real or complex analysis. Students must know the basic concepts and applications of continuity, differentiation, integration, sequences and series, and multivariable calculus. Additionally, all students will be able to solve the basic differential equations that arise in common applications.
4. *Probability and Statistics.* This includes the basic concepts and applications of acquisition and analysis of data, probability, discrete and continuous probability distributions, estimation using confidence intervals, tests of hypotheses, and linear regression.

The requirements for a degree in mathematics are as follows: twelve hours of calculus (MATH 141, 142, and 241), differential equations (MATH 242), linear algebra (MATH 308), probability and statistics (MATH 311), abstract algebra (MATH 421), real analysis (MATH 431), an introduction to Mathematical Proof (MATH 134), the capstone course (MATH 499), calculus-based physics (PHYS 211), CIS 130, completion of either the abstract algebra or analysis sequence (MATH 422 or MATH 432), nine hours of mathematics content electives at the 300 level or above (except MATH 450 and MATH 451), plus one of the following CIS 230, PHYS 212, MATH 212, or an additional three hours of mathematics content electives at the 300 level or above (except MATH 450 and MATH 451). Students obtaining secondary teacher certification are required to take courses in discrete mathematics, mathematics history, geometry, teaching technologies and teaching methods (MATH 325, MATH 350, MATH 351, MATH 450 and MATH 451, respectively).

A grade of "C" or better is required in all mathematics courses applied to the major with the following exception: a grade of "D" will be allowed in at most one mathematics course provided a GPA of 2.0 is maintained in mathematics courses applied to the major.

During their final year at Lander University, all students seeking a degree in mathematics are required to participate in program assessment activities including an assessment exam in mathematics and an exit interview with the mathematics faculty as part of the capstone course.

Mathematics, Secondary Teacher Certification

Students enrolled in Secondary (History, English, Chemistry, Mathematics) or PK-12 (PE, Art, Music):

Provisional Status

1. Always demonstrate professional behaviors and dispositions*.
2. Maintain a minimum 2.75 GPA on Lander coursework; achieve a grade of "B" or higher in each field experience; achieve a grade of "C" or higher in all EDUC, ECED, MONT, and SPED courses (see catalog for further details, including each department's GPA requirements within the specific content area).
3. Pass **ALL** 3 sections of Praxis Core or have exempting SAT/ACT scores on file at Lander University and confirmed by the Department of Teacher Education.
4. Successfully complete other reviews as required by departments in specific content areas.
5. Apply for admission to the professional program in teacher education (see Department of Teacher Education section of catalog for requirements).

Candidate Status

1. Enter candidacy with formal admission to the professional program in teacher education.
2. Always demonstrate professional behaviors and dispositions*.

3. Maintain a 2.75 GPA on Lander coursework; achieve a grade of "B" or higher in each field experience; achieve a grade of "C" or higher in all EDUC, ECED, MONT, and SPED courses (see catalog for further details, including each department's GPA requirements within the specific content area).
4. Take the Praxis II prior to the student teaching semester**
5. Take the PLT (Principles of Learning and Teaching) by the end of the student teaching semester **
6. Successfully complete other departmental requirements, reviews, projects, or milestones.

Students not meeting one or more of the requirements will not progress to Candidate Status.

*Lander University has high expectations for all teacher education majors. Teacher education majors who exhibit unacceptable dispositions may be removed from the program. Procedures for removal are outlined within the Department of Teacher Education handbook.

**Praxis II and PLT must be passed to apply for certification with the South Carolina Department of Education.

The following mathematics courses will be offered as indicated.

Every Fall	**Every Spring**
MATH 125	MATH 125
MATH 141	MATH 134
MATH 212	MATH 141
MATH 241	MATH 142
MATH 308	MATH 208
PHYS 211	MATH 212
	MATH 242
	MATH 499
	PHYS 212

Even Year Fall	**Odd Year Spring**
MATH 300	MATH 351
MATH 325	MATH 432
MATH 431	
MATH 451	

Odd Year Fall	**Even Year Spring**
MATH 311	MATH 350
MATH 421	MATH 422
MATH 450	

Mathematics Honors Program

Students majoring in mathematics may earn a "BS Degree with Honors" in mathematics. To qualify, a student must meet the following conditions:

1. In addition to the normal course requirements for a BS degree in mathematics, the student must complete the following courses:
   MATH 432, MATH 422, with a total of 30 credits of coursework in mathematics at the 300-level or above.
2. The student must complete six credit hours of a college level language. This language may not be English or the student's native language.
3. The student must submit a project proposal no later than January 15 of the junior year. The proposal must be approved by a majority of the full-time mathematics faculty and result in a finished product of sufficient quality to:
   a) Receive a grade of "A" or "B" (MATH 390) and
   b) Be accepted for publication or presented at a meeting of a mathematical society; or be presented as a seminar to mathematics faculty, students, and guests.
4. Upon graduation, the student must have a cumulative GPA of 3.5 or better in both overall coursework and in mathematics coursework.

NOTE: In lieu of requirement 1 above, the student may complete an engineering degree at Clemson University under the engineering/mathematics dual-degree program. The student may then substitute an approved engineering project at Clemson for requirement 3 above.

Special situations may require a deviation from these requirements (such as for students seeking teacher certification in mathematics or those in the engineering program). All deviations must be approved by a majority of the mathematics faculty.

Transfer students who wish to pursue an Honors Program in Mathematics must spend at least four full-time semesters (fall or spring) at Lander University and complete at least 21 credit hours of mathematics courses at Lander University. They must also have an overall GPA of 3.5 on all courses transferred and a GPA of 3.5 on mathematics courses transferred.

Mathematics Minor

A minor in mathematics consists of 21 credit hours distributed as follows:

- Twelve hours of Calculus (MATH 141, MATH 142, and MATH 241),
- Nine hours from the following: MATH 212, MATH 242, or any three-hour 300- or 400-level mathematics content course.

A grade of "C" or better is required in each course applied to the mathematics minor.

2025-2026 PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: MATHEMATICS

Credit Hours

GENERAL EDUCATION REQUIREMENTS
(For approved courses see General Education: www.lander.edu/gen-ed.)

A. Core Academic Skills (9 hours)
ENGL 101: Writing and Inquiry I 3
ENGL 102: Writing and Inquiry II 3
MATH 141: Calculus I 4

B. Humanities and Fine Arts 6
(6 hours selected from 2 different disciplines)

C. Behavioral and Social Perspectives 6
(6 hours selected from 2 different disciplines)
If you already have credit for HIST 111, do not take HIST 111R; if you already have credit for HIST 112, do not take HIST 112R; if you already have credit for POLS 101, do not take POLS 101R

D. Scientific and Mathematical Reasoning
(7 hours selected from 2 different disciplines, 1 lab science required)
MATH 142: Calculus II 4
PHYS 211: General Physics 4

E. Founding Documents of the United States 3
HIST 111R: United States History to 1877 or
HIST 112R: United States History since 1877 or
POLS 101R: American National Government
If you already have credit for HIST 111, do not take HIST 111R; if you already have credit for HIST 112, do not take HIST 112R; if you already have credit for POLS 101, do not take POLS 101R.

F. World Cultures 3

G. LINK 101: Leadership, Involvement, Networking and Knowledge 1

LINK 101 is required of all new transfer students who have earned less than 24 credit hours of college-level work and all first-time freshmen.

TOTAL GENERAL EDUCATION REQUIREMENTS 37

If all of the General Education requirements are met and/or waived, and the credit hours do not add up to at least 30, the General Education requirements are not complete. If below 30, additional General Education courses from any category must be taken until the total hours add up to at least 30 hours.

MAJOR PROGRAM CORE REQUIREMENTS

MATH 241: Calculus III 4
MATH 242: Differential Equations 4
MATH 308: Linear Algebra 3
MATH 311: Mathematical Statistics 3
MATH 499: Capstone 1

MAJOR PROGRAM ADDITIONAL REQUIREMENTS

CIS 130: Problem Solving and Programming Methods 4
MATH 134: Introduction to Mathematical Proof 3
MATH 421: Abstract Algebra I 3

MATH 431: Analysis I	3
MATH 422: Abstract Algebra II or MATH 432: Complex Analysis	3
MAJOR PROGRAM ELECTIVES	
300-level or above Mathematics content courses except MATH 450 or MATH 451.	9
A 300-level or above Mathematics content course (except MATH 450 or MATH 451) or one of the following MATH 212: Statistical Methods II CIS 230: Computer Programming Principles I PHYS 212: General Physics	3-4
TOTAL MAJOR PROGRAM REQUIREMENTS	43-44
ADDITIONAL ELECTIVES	**41-42**
Up to 5 credit hours may need to be 300-level or above. The remaining hours may be at any level.	
TOTAL FOR BS DEGREE	120

Coursework must include at least 30 credit hours earned at 300-level or above, of which 12 credit hours must be in the major.

See 4-year major guides for recommended order in which to take courses
https://www.lander.edu/academics/registrars-office/major-guides.html

2025-2026 PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: MATHEMATICS
PROGRAM: DUAL ENGINEERING

Credit Hours

GENERAL EDUCATION REQUIREMENTS
(For approved courses see General Education: www.lander.edu/gen-ed.)

A. Core Academic Skills (9 hours)
ENGL 101: Writing and Inquiry I 3
ENGL 102: Writing and Inquiry II 3
MATH 141: Calculus I 4

B. Humanities and Fine Arts
(6 hours selected from 2 different disciplines)
To satisfy Literature requirement at Clemson 3
ENGL 201, ENGL 202, ENGL 204, ENGL 205, ENGL 220, ENGL 241, or ENGL 251
To satisfy Non-Literature requirement at Clemson 3
HUMA 285, HUMA 330, PHIL 102, PHIL 103, PHIL 205, MUSI 101, MUSI 377, MUSI 378, MUSI 333, or THTR 201

C. Behavioral and Social Perspectives
(6 hours selected from 2 different disciplines) 6
HIST 101, HIST 102, HIST 113, ECON 101, ECON 201, ECON 202, PSYC 101, SOCI 101, SOCI 202, POLS 103, ANTH 104
If you already have credit for HIST 111, do not take HIST 111R; if you already have credit for HIST 112, do not take HIST 112R; if you already have credit for POLS 101, do not take POLS 101R.

D. Scientific and Mathematical Reasoning
(7 hours selected from 2 different disciplines, 1 lab science required)
MATH 142: Calculus II 4
PHYS 211: General Physics I 4

E. Founding Documents of the United States 3
HIST 111R: United States History to 1877 or
HIST 112R: United States History since 1877 or
POLS 101R: American National Government
If you already have credit for HIST 111, do not take HIST 111R; if you already have credit for HIST 112, do not take HIST 112R; if you already have credit for POLS 101, do not take POLS 101R.

F. World Cultures **3**
NOTE: MUSI 333 satisfies Non-Literature Humanities at Clemson

G. LINK 101: Leadership, Involvement, Networking and Knowledge 1

LINK 101 is required of all new transfer students who have earned less than 24 credit hours of college-level work and all first-time freshmen.

TOTAL GENERAL EDUCATION REQUIREMENTS 37

If all of the General Education requirements are met and/or waived, and the credit hours do not add up to at least 30, the General Education requirements are not complete. If below 30, additional General Education courses from any category must be taken until the total hours add up to at least 30 hours.
NOTE Clemson's Global Challenge (6 hours) requirement must be completed at Clemson.

MAJOR PROGRAM CORE REQUIREMENTS

MATH 241: Calculus III	4
MATH 242: Differential Equations	4
MATH 308: Linear Algebra	3
MATH 311: Mathematical Statistics	3
MATH 499: Capstone Course Mathematics	1

MAJOR PROGRAM ADDITIONAL REQUIREMENTS

CIS 130: Problem Solving and Programming Methods	4
CIS 202: Computer Applications for Engineers	3
MATH 134: Introduction to Mathematical Proof	3
MATH 421: Abstract Algebra I or MATH 431: Analysis I	3
PHYS 212: General Physics II	4
CHEM 111: General Chemistry I	4
Additional Science Requirement	0-4

CHEM 112: General Chemistry II (Electrical or Environmental Engineering)
GEOL 111: Physical Geology (Environmental or Civil Engineering)
BIOL 101: General Biology (Environmental Engineering)
CHEM 112, GEOL 111, or BIOL 101 may be used to complete lab science requirements for Industrial engineering
Mechanical, or Computer Engineering require only CHEM 111.

MAJOR PROGRAM ELECTIVES 9

MATH 212: Statistical Methods II or any 300-level or above math content courses
Students in Mechanical Engineering strongly encouraged to take MATH 300 Numerical Analysis.
Students in Electrical Engineering strongly encouraged to take MATH 325: Discrete Mathematics, MATH 431: Analysis I or MATH 432: Complex Analysis

TOTAL MAJOR PROGRAM REQUIREMENTS	45-49
ADDITIONAL ELECTIVES	**34-38**

Students in this program must complete Clemson University requirement for a BS in Engineering. Credits transferred from Clemson complete the required hours for graduation from Lander University.

TOTAL FOR BS DEGREE	120

NOTES: As schedule permits, the following courses are recommended as they can be used to fulfill degree requirements at Clemson, as noted.
SPCH 101 for students in Civil, Computer, Electrical, and Industrial engineering programs, as it fulfills the Oral Communication requirement at Clemson.
CIS 230 for Computer and Electrical Engineering.
WRIT 450 Technical Writing for Civil, Computer, Electrical, and Mechanical.

Coursework must include at least 30 credit hours earned in 300-level or above, of which 12 credit hours must be in the major.

See 4-year major guides for recommended order in which to take courses
https://www.lander.edu/academics/registrars-office/major-guides.html

2025-2026 PROGRAM REQUIREMENTS

DEGREE: **BACHELOR OF SCIENCE**
MAJOR: **MATHEMATICS**
CERTIFICATION: **SECONDARY TEACHER**

Credit Hours

GENERAL EDUCATION REQUIREMENTS

(For approved courses, see General Education: www.lander.edu/gen-ed.)

A. Core Academic Skills (9 hours)

ENGL 101: Writing and Inquiry I	3
ENGL 102: Writing and Inquiry II	3
MATH 141: Calculus I	4

B. Humanities and Fine Arts

(6 hours selected from 2 different disciplines)	6

C. Behavioral and Social Perspectives

(6 hours selected from 2 different disciplines)

PSYC 101: General Psychology	3
Behavioral and Social Perspectives elective	3

If you already have credit for HIST 111, do not take HIST 111R; if you already have credit for HIST 112, do not take HIST 112R; if you already have credit for POLS 101, do not take POLS 101R.

D. Scientific and Mathematical Reasoning

(7 hours selected from 2 different disciplines, 1 lab science required)

MATH 142: Calculus II	4
PHYS 211: General Physics	4

E. Founding Documents of the United States 3

HIST 111R: United States History to 1877 or
HIST 112R: United States History since 1877 or
POLS 101R: American National Government

If you already have credit for HIST 111, do not take HIST 111R; if you already have credit for HIST 112, do not take HIST 112R; if you already have credit for POLS 101, do not take POLS 101R.

F. World Cultures 3

G. LINK 101: Leadership, Involvement, Networking and Knowledge 1

LINK 101 is required of all new transfer students who have earned less than 24 credit hours of college-level work and all first-time freshmen

TOTAL GENERAL EDUCATION REQUIREMENTS 37

If all of the General Education requirements are met and/or waived, and the credit hours do not add up to at least 30, the General Education requirements are not complete. If below 30, additional General Education courses from any category must be taken until the total hours add up to at least 30 hours.

MAJOR PROGRAM CORE REQUIREMENTS

MATH 241: Calculus III	4
MATH 242: Differential Equations	4
MATH 308: Linear Algebra	3
MATH 311: Mathematical Statistics	3
MATH 499: Capstone	1

MAJOR PROGRAM ADDITIONAL REQUIREMENTS

CIS 130: Problem Solving and Programming Methods	4
MATH 134: Introduction to Mathematical Proof	3
MATH 325: Discrete Mathematics	3
MATH 350: Mathematics History	3
MATH 351: Geometry	3
MATH 421: Abstract Algebra I	3
MATH 431: Analysis I	3
MATH 422: Abstract Algebra II or MATH 432: Complex Analysis	3
MATH 450: Technology in Secondary Mathematics	3
MATH 451: Secondary Mathematics Methods	3
TOTAL MAJOR PROGRAM REQUIREMENTS	46

TEACHER CERTIFICATION REQUIREMENTS

** EDUC 203: Field Experience I	0.5
* EDUC 223: General Pedagogy	3
* EDUC 250: Adolescent Development and Learning Communities	3
* EDUC 320: Reading and Writing in the Content Area	3
* EDUC 321: Foundations of Reading	3
** EDUC 329: Field Experience II	0.5
** EDUC 429: Clinical Practice A	1
** EDUC 461: Clinical Practice B	11
* EDUC 499: Teacher Education Seminar	1
* SPED 223: PREK-12 Students with Diverse Learning Needs	3
TOTAL TEACHER CERTIFICATION REQUIREMENTS	29
ADDITIONAL ELECTIVES	**8**
TOTAL FOR BS DEGREE	120

* A Grade of "C" or better is required.
**A Grade of "B" or better is required.

Coursework must include at least 30 credit hours earned in 300-level or above, of which 12 credit hours must be in the major.

See 4-year major guides for recommended order in which to take courses
https://www.lander.edu/academics/registrars-office/major-guides.html