

Department of Mathematical Sciences

Department Mission

The department of mathematical sciences at Bethel College is a community of Christian scholars and educators committed to preparing minds for action with the Kingdom of God. (1 Peter 1:13) Through its programs and curricula, the department addresses the long-term needs of students within the mathematical sciences, partner disciplines and the general student body by providing a balance between logical reasoning, conceptual understanding and computational skills appropriate to these diverse needs.

Department Objectives

To these ends, our goal is that students at all levels (in a manner appropriate to their level of study):

- Exhibit proficiency in problem solving and logical reasoning;
- Exhibit quantitative literacy in analyzing numerical data, and in applying technology appropriately to mathematical concepts;
- Communicate mathematics clearly, effectively, and precisely through both oral and written means;
- Appreciate the breadth of mathematical applications; and
- Understand how a Christian worldview impacts the practice of mathematics

Additionally, students majoring in a mathematical science are expected to:

- Appreciate the historical achievements of the mathematical sciences;
- Know how to formulate and test mathematical hypotheses;
- Listen to and read mathematics with understanding and discernment;
- Exhibit proficiency in the content areas outlined among the major courses required by the major.

Please note:

Any students considering a major in the mathematical sciences should plan on taking MATH 131 (Calculus 1) during their first semester freshman year. Students who do not have credit for MATH 131 and MATH 132 by the end of their freshman year will require more than four years to complete a mathematical science major.

Students who have passed the A.P. Calculus AB exam will receive credit for MATH 131 only, and will need to take MATH 132 during the spring semester of their freshman year. Those students who have taken and passed the A.P. Calculus BC exam will receive credit for both MATH 131 and MATH 132, and should plan on taking MATH 231 and MATH 241 during their first semester freshman year.

Mathematics Major

The Bachelor of Science in Mathematics program is designed to prepare students for either graduate studies in mathematics or applied mathematics in industry, including modeling, simulation, risk analysis (actuarial science), program development, cryptography and statistical analysis. Because of the wide variety of opportunities for graduates, the program does not train the student for any one specific career, but instead equips him/her with fundamental critical thinking, logical reasoning skills, as well as the foundational technological and mathematical tools, necessary for pursuing any of these choices. For more information on opportunities for employment, visit <http://www.ams.org/careers/mathapps.html> or <http://www.siam.org/careers/thinking.php>.

The program also explores the relationship between Christian faith and the practice of mathematics, both from a historical and from a contemporary perspective.

Mathematics Education Major

The secondary mathematics program at Bethel College enables the student to combine the strengths of in-depth preparation in mathematics with the professional teacher education skills necessary for success in the classroom. Students wishing to major in mathematics education should begin the calculus sequence as freshmen and follow the recommended four-year course

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sequence. Students seeking certification for grades 5-12 mathematics should consult the guidelines found in the Teacher Education section of this catalog.

Mathematics Major

			HOURS
General Studies			
COMM	171	Speech Communication	3
ENGL	101	Written Communication II	3
ENGL	102	Written Communication III	3
PSYC	182	General Psychology	3
PHED	100	Lifelong Physical Awareness	0.5
SOC	151	Principles of Sociology	3
BIBL	215	Old Testament Literature	3
BIBL	216	New Testament Literature	3
		Foreign Language (two semesters)	6
		History Elective	3
		Art/Drama/Music	3
		Literature	3
PHIL	150	Logic & Critical Thinking	2
PHIL	250	Introduction to Philosophy	3
THEO	110	Exploring the Christian Faith	3
PHIL	452	Senior Experience	1
PHED	112-136	Physical Education Activities	<u>1.5</u>
			47
Major			
MATH	131	Calculus I	4
MATH	132	Calculus II	4
MATH	210	Discrete Mathematics	3
MATH	231	Calculus III	3
MATH	232	Differential Equations	3
MATH	241	Linear Algebra	3
MATH	252	Probability & Statistics	3
MATH	293	Mathematical Proofs	3
MATH	331	Modern Geometry	3
MATH	341	Abstract Algebra	3
MATH	461	Real Analysis	3
ITSC	120	Introduction to Computing	3
ITSC	121	Computer Programming I	3
PHYS	121	General Physics I	4
PHYS	122	General Physics II	<u>4</u>
			49
		Electives needed to complete the degree	28

Mathematics Minor

MATH	131	Calculus I	4
MATH	132	Calculus II	4
MATH	210	Discrete Mathematics	3
MATH	241	Linear Algebra	3
MATH	252	Probability & Statistics	3
MATH	293	Mathematical Proofs	3
MATH	231	Calculus III, or	(3)
MATH	232	Differential Equations, or	(3)
MATH	331	Modern Geometry, or	3
MATH	341	Abstract Algebra, or	(3)
MATH	461	Real Analysis	<u>(3)</u>
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Mathematics Education Major

General Studies			
COMM	171	Speech Communication	3
ENGL	101	Written Communication II	3

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			HOURS
ENGL	102	Written Communication III	3
PSYC	182	General Psychology	3
PHED	100	Lifelong Physical Awareness	0.5
SOC	151	Principles of Sociology	3
THEO	110	Exploring the Christian Faith	3
BIBL	215	Old Testament Literature	3
BIBL	216	New Testament Literature	3
		Foreign Language (two semesters)	6
HIST		History Elective	3
LIT		Literature	3
		Art/Drama/Music	3
PHIL	150	Logic & Critical Thinking	2
PHIL	250	Introduction to Philosophy	3
PHIL	452	Senior Experience	1
PHED	112-136	Physical Education Activities	1.5
			<u>47</u>
Major			
MATH	131	Calculus I	4
MATH	132	Calculus II	4
MATH	210	Discrete Mathematics	3
MATH	231	Calculus III	3
MATH	232	Differential Equations	3
MATH	241	Linear Algebra	3
MATH	252	Probability & Statistics	3
MATH	293	Mathematical Proofs	3
MATH	331	Modern Geometry	3
MATH	341	Abstract Algebra	3
ITSC	120	Introduction to Computing	3
PHYS	121	General Physics I	4
			<u>39</u>
Professional Education			
EDUC	102	Foundations of Education	3
EDUC	204	Diversity in the Classroom	3
EDUC	205	Educational Pedagogy I	3
EDUC	305	Educational Pedagogy II	3
PSYC	285	Adolescent Growth & Development	2
SCED	446	Specific Methods in Math	3
SCED	448	Developmental Reading	3
SCED	449	Student Teaching	8
EDUC	441	Professional Education Seminar	0-2
			<u>28-30</u>
Electives needed to complete the degree			8-10

See *TEACHER EDUCATION* (page 140) for program admission and other information.