



**Mathematics  
Bachelor of Science  
Arts & Sciences  
Traditional**

**Program Coordinator: W. Linderman**

The B.S. in Mathematics covers a wide variety of concepts and theories in mathematics. It develops the ability to think critically, analytically, and logically, and it examines applications of mathematics across the disciplines. The mission of the Mathematics program is to produce graduates with outstanding problem-solving skills and the ability to reason and communicate mathematical ideas in order to build meaningful lives of achievement for careers in business, education, engineering, statistics, actuarial science, and many other areas.

**Student Learning Outcomes**

1. Students will be able to utilize the techniques of undergraduate mathematics to solve problems.
2. Students will be able to construct proofs from a given set of mathematical hypotheses.
3. Students will be able to share their mathematical insights effectively with others in academic setting.

The Mathematics major at King requires fewer semester hours than most other majors, which makes it an ideal choice to combine with and enhance another major. Recent students' choices of double majors, in addition to Mathematics, have been Business, Biology, Chemistry, Physics, History, Security and Intelligence Studies, and Political Science.

Computer resources are available through campus computer labs. King has a site license for the computer algebra system *Mathematica*, giving students the opportunity to implement a wide variety of algorithms studied in their coursework.

All candidates for a B.S. in Mathematics are required to demonstrate competency in mathematics by either earning a passing grade on the Major Field Achievement Test in mathematics or on the PRAXIS, if they are pursuing secondary education licensure. MATH 4930 Mathematics Capstone is an optional one credit hour course designed specifically to help students prepare for these tests.

**Core Curriculum Requirements**

Mathematics majors should fulfill specified categories of the King Core Curriculum by taking the courses indicated below. See the "The Core Curriculum" section of the catalog for additional details.

**Quantitative Literacy**

MATH 2350

Calculus I..... 4 s.h.

### Mathematics Major Requirements

MATH 2360	
Calculus II.....	4 s.h.
MATH 2370	
Vector Calculus .....	4 s.h.
MATH 2410	
Discrete Mathematics .....	4 s.h.
MATH 2450	
Linear Algebra.....	4 s.h.
MATH 2480	
History of Mathematics .....	2 s.h.
MATH 4930	
Mathematics Capstone ( <i>optional</i> )	
MATH 4990	
Comprehensive Assessment .....	0 s.h.

### Track Requirements for a B.S. in Mathematics

Students will choose either the General Track or the Research Track.  
(Students who have an interest in attending graduate school in mathematics are highly encouraged to pursue the Research Track.)

### General Mathematics Track

*Choose one from the following courses* ..... 4 s.h.

- MATH 3510  
    Abstract Algebra (4 s.h.)
- MATH 3610  
    Analysis (4 s.h.)

*Choose additional electives from the following* ..... 8 s.h.

- MATH 2100  
    Programming with Graphics, Symbols, and Text (2 s.h.)
- MATH 3100  
    Graph Theory (4 s.h.)
- MATH 3110  
    Combinatorics (2-4 s.h.)
- MATH 3120  
    Number Theory (2 s.h.)
- MATH 3150  
    Mathematical Statistics (4 s.h.)
- MATH 3250  
    Geometry (4 s.h.)
- MATH 3430  
    Differential Equations (4 s.h.)
- MATH 3510  
    Abstract Algebra (4 s.h.)
- MATH 3520  
    Further Studies in Abstract Algebra (2 s.h.)
- MATH 3610  
    Analysis (4 s.h.)
- MATH 3620  
    Further Studies in Analysis (2 s.h.)

Additional Math or Natural Science Electives at or above 2100 level ..... 6 s.h.

**Research Mathematics Track**

MATH 3510	
Abstract Algebra.....	4 s.h.
MATH 3520	
Further Studies in Abstract Algebra .....	2 s.h.
MATH 3610	
Analysis .....	4 s.h.
MATH 3620	
Further Studies in Analysis.....	2 s.h.
MATH 4800	
Research in Mathematics.....	2 s.h.
Additional Math or Natural Science Electives at or above 2100 level .....	4 s.h.

**Summary of Total Credits**

Core Curriculum .....	42 s.h.
Major Requirements.....	36 s.h.
Electives/Minor/Second Major .....	46 s.h.
<b>Minimum to Earn Bachelor of Science in Mathematics.....</b>	<b>124 s.h.</b>

**Mathematics and Physics Double Major**

The B.S. in Mathematics and Physics is a double major that satisfies all of the requirements for both majors. Please see the Student Learning Outcomes listed with each major.

**Core Curriculum Requirements**

Mathematics and Physics double majors should fulfill specified categories of the King Core Curriculum by taking the courses indicated below. See the “The Core Curriculum” section of the catalog for additional details.

**Quantitative Literacy**

MATH 2350	
Calculus I.....	4 s.h.

**Science**

CHEM 1110	
General Chemistry I.....	4 s.h.

**Mathematics and Physics Double Major Requirements**

MATH 2360	
Calculus II.....	4 s.h.
MATH 2370	
Vector Calculus .....	4 s.h.
MATH 2410	
Discrete Mathematics .....	4 s.h.
MATH 2450	
Linear Algebra.....	4 s.h.
MATH 2480	
History of Mathematics .....	2 s.h.
MATH 3430	
Differential Equations.....	4 s.h.

<i>Choose from the following courses</i> .....	4 s.h.
MATH 3510	
Abstract Algebra (4 s.h.)	
MATH 3610	
Analysis (4 s.h.)	
PHYS 2210	
General Physics I .....	4 s.h.
PHYS 2220	
General Physics II .....	4 s.h.
PHYS 3010	
Theoretical Mechanics .....	4 s.h.
PHYS 3030	
Electricity and Magnetism .....	4 s.h.
PHYS 3060	
Introduction to Modern Physics .....	4 s.h.
PHYS 3502	
Experimental Methods .....	2 s.h.
PHYS 4201	
Advanced Topics .....	2 s.h.
PHYS 4080	
Quantum Mechanics .....	4 s.h.
<i>Choose additional electives from the following</i> .....	8 s.h.
CHEM 4000	
Physical Chemistry I (5 s.h.)	
MATH 2100	
Programming with Graphics, Symbols, and Text (2 s.h.)	
MATH 3100	
Graph Theory (4 s.h.)	
MATH 3110	
Combinatorics (2-4 s.h.)	
MATH 3120	
Number Theory (2 s.h.)	
MATH 3150	
Mathematical Statistics (4 s.h.)	
MATH 3250	
Geometry (4 s.h.)	
MATH 3470	
Applied Mathematics (2-4 s.h.)	
MATH 3510	
Algebra (4 s.h.)	
MATH 3520	
Studies in Abstract Algebra (2 s.h.)	
MATH 3610	
Analysis (4 s.h.)	
MATH 3620	
Further Studies in Analysis (2 s.h.)	
PHYS 3052	
Optics (4 s.h.)	
PHYS 3072	
Heat and Thermodynamics (4 s.h.)	

PHYS 3401	
Medical Physics (4 s.h.)	
PHYS 3500	
Computational Physics (4 s.h.)	
IDST 4500	
Interdepartmental Math and Science Seminar .....	2 s.h.
MATH 4930	
Mathematics Capstone ( <i>optional</i> )	
MATH 4990	
Comprehensive Assessment .....	0 s.h.
PHYS 4990	
Comprehensive Assessment .....	0 s.h.

**Summary of Total Credits for Mathematics and Physics (Double)**

Core Curriculum .....	42 s.h.
Major Requirements.....	64 s.h.
Electives/Minor/Second Major: .....	18 s.h.
<b>Minimum for Bachelor of Science in Mathematics and Physics...</b>	<b>124 s.h.</b>

**Teacher Education - MATHEMATICS**

The B.S. in Mathematics with Tennessee teaching licensure (Grades 6-12) is available with modifications to the Mathematics major and the King Core Curriculum as well as successful completion of the Secondary Education minor. Licensed teachers in secondary education are in great demand in all fifty states, and the areas of science and mathematics are considered critical need areas in K-12 public education by all states.

Declaration of the Education minor and early and frequent advisement is essential to timely completion of degree and licensure requirements. Students seeking teacher licensure will be assigned a secondary education advisor in the Department of Teacher Education, in addition to their major advisor. See the “Admission to the Teacher Education Program” section of this catalog or contact the Certification Advisor in the School of Education for eligibility criteria, admissions procedures, and timeliness.

**Student Learning Outcomes for Teacher Education**

In addition to the discipline specific student learning outcomes for Mathematics, teacher candidates will demonstrate mastery of the following Student Learning Outcomes, which are aligned with the both Tennessee Teacher Licensure Standards: Professional Education and InTASC Standards: Interstate Teacher Assessment and Support Consortium.

1. The pre-service teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make the discipline(s) accessible and meaningful for learners to assure mastery of the content.
2. The pre-service teacher uses understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.
3. The pre-service teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections and to build skills to apply knowledge in meaningful ways.

### Core Curriculum Requirement

Mathematics majors seeking teaching licensure should fulfill Quantitative Literacy in the King Core Curriculum by taking the course indicated below. “The Core Curriculum” section of the catalog for has additional details on fulfillment of other categories of the Core.

#### Quantitative Literacy

MATH 2350	
Calculus I .....	4 s.h.

### BS in Mathematics Major Requirements for Teaching Licensure

MATH 2100	
Programming with Graphics, Symbols, and Text.....	2 s.h.
MATH 2360	
Calculus II.....	4 s.h.
MATH 2410	
Discrete Mathematics .....	4 s.h.
MATH 2450	
Linear Algebra .....	4 s.h.
MATH 3120	
Number Theory.....	2 s.h.
MATH 3150	
Mathematical Statistics.....	4 s.h.
MATH 3250	
Geometry .....	4 s.h.
<i>Choose from the following courses</i> .....	4 s.h.
MATH 2370	
Vector Calculus (4 s.h.)	
MATH 3430	
Differential Equations (4 s.h.)	
MATH 3470	
Applied Mathematics (4 s.h.)	
MATH 3510	
Abstract Algebra (4 s.h.)	
MATH 3610	
Analysis (4 s.h.)	
Math or Natural Science Elective at or above 2100 level.....	4 s.h.

### Secondary Education Minor

EDUC 2030	
Introduction to Teaching: Grades K-12 .....	2 s.h.
EDUC 2031	
Introduction to Teaching Practicum: Grades PreK-12 .....	1 s.h.
EDUC 2100	
Survey of Exceptional Children .....	4 s.h.
EDUC 2370	
Reflective Teaching: Planning for Classroom Instruction.....	3 s.h.
EDUC 2900	
Foundations of Education .....	3 s.h.
EDUC 2950	
Technology for Teachers.....	2 s.h.

EDUC 3390*	
Secondary Curriculum and Methods .....	3 s.h.
EDUC 3590*	
Content Area Reading .....	3 s.h.
EDUC 3600*	
Assessment and Evaluation .....	3 s.h.
EDUC 4490*	
Student Teaching: Grades 6-10 .....	5 s.h.
EDUC 4500*	
Student Teaching: Grades 9-12 .....	5 s.h.
EDUC 4940	
Introduction to edTPA .....	1 s.h.
EDUC 4950*	
Capstone Seminar: Grades K-12 .....	2 s.h.
PSCI 2120	
Cultural Diversity in America .....	4 s.h.
PSYC 3320	
Adolescent Development.....	4 s.h.
EDUC 4990*	
Comprehensive Assessment (passing state-required Praxis II, successful portfolio completion, successful portfolio defense) .....	0 s.h.

\*Requires admittance to the Teacher Education Program

**Summary of Total Credits for Secondary Licensure in Mathematics**

Core Curriculum .....	42 s.h.
Major Requirements.....	32 s.h.
Secondary Education Minor.....	45 s.h.
Electives .....	<u>6 s.h.</u>
<b>Minimum to Complete BS in Math with Licensure.....</b>	<b>125 s.h.</b>