**Advising for Mathematics Courses**

The Bemidji State University Mathematics Program encourages all students to advance the breadth and depth of their mathematical experience during their time in college. This document is intended to summarize the program requirements and math program advice for incoming students. Parentheses mark alternatives for students who have taken the recommended course.

**Courses Referenced:**

\*MATH 1100 Mathematical Reasoning

\*MATH 1170 College Algebra

\*# MATH 1180 Trigonometry

\*# MATH 1470 Precalculus

\*# MATH 2471 Calculus I

\*# MATH 2472 Calculus II

# MATH 2210 Discrete Math

# MATH 2480 Multivariable Calculus

# MATH 2490 Differential Equations

# STAT 3660 Statistics for Health Sciences

\*STAT 1100 Statistical Reasoning

\*# STAT 2610 Applied Statistics

# STAT 3610 Time Series Analysis

*# Has a prerequisite*

\* *Satisfies Liberal education Goal Area 4 Goal Area 4*

(Reminder: a stats course from another department will not satisfy the Category 4 requirement.)

**Accounting B.S.**

Minimum: College Algebra

Advice: College Algebra (Precalculus, Calculus I)

**Aquatic Biology B.S. -** Aquatic Systems Emphasis

Minimum: Applied Statistics (to satisfy Category 4)

Advice: Applied Statistics with prerequisite College Algebra

**Aquatic Biology B.S. -** Wetland Ecology Emphasis

Minimum: Applied Statistics (to satisfy Category 4)

Advice: Applied statistics with prerequisite College Algebra

**Aquatic Biology B.S. -** Fisheries Emphasis

Minimum: 2 from GEOG 4265, MATH 2471, PSY 3401, PSY 4403, STAT 2610, STAT 3610

Advice: Applied Statistics with prerequisite College Algebra (Calculus I)

**Biology B.A.**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning **(**Applied Statistics, College Algebra, Precalculus, Calc I)

**Biology B.S. (with or without Medical Sciences emphasis)**

Minimum: Applied Statistics, Basic Statistics for Research, or Calculus I

Advice: Applied Statistics with prerequisite College Algebra (to satisfy Category 4)

**Biology B.S. - Medical Laboratory Science 3+1**

Minimum: College Algebra or Precalculus

Advice: College Algebra (Precalculus, Applied Statistics)

Major lists as elective: Statistical Reasoning, Applied Statistics with College Algebra prerequisite

**Biology B.S. - Medical Laboratory Science 4+1**

Minimum: Applied Statistics or Basic Statistics for Research

Advice: Applied Statistics (to satisfy Category 4) with prerequisite College Algebra

**Wildlife Biology B.S.**

Minimum: Applied Statistics or Basic Statistics for Research

Advice: Applied Statistics (to satisfy Category 4) with prerequisite College Algebra

**Biochemistry B.S. – Cellular and Molecular Biology emphasis**

Minimum: Applied Statistics

Advice: Applied Statistics with prerequisite College Algebra

**Biochemistry B.S. – Biochemistry emphasis B.S.**

Minimum: Calculus I

Advice: Calculus I

**Business Administration B.S.** (all emphases: Indigenous Business, Entrepreneurship, Marketing,

Finance, HR Management, Prof. Selling, Indigenous Nations and Marketing, Management)

Minimum: College Algebra

Advice: College Algebra (Applied Statistics, Precalculus, Calculus)

**Chemistry B.A.**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics, College Algebra, Precalculus, Calculus I)

**Chemistry B.S. (All emphases except Chemistry or Professional Education)**

Minimum: Calculus I

Advice: Calculus I

**Chemistry B.S. – Chemistry emphasis**

Minimum: Calculus I AND Calculus II

Advice: Calculus I AND Calculus II (Students entering with Calculus II completed should enroll in Applied Statistics, Discrete Mathematics, Multivariable Calculus, or Differential Equations.)

**Communication Studies B.A.**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Criminal Justice Studies B.S. (any emphasis)**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning

**Computer Information Systems B.S. (Business Dept.)**

Required: Discrete Mathematics

Advice: Calculus I, prerequisite to Discrete Mathematics

**Computer Science B.S.**
Minimum (4 courses): Precalculus or Calculus; Discrete Mathematics; Linear Algebra or Applied Statistics or Probability and Statistics; AND Numerical Methods

Advice: Precalculus (Students entering with credit for precalculus or beyond should enroll in the next required mathematics courses named under “minimum.”)

E**conomics B.S.**

Minimum: College Algebra and STAT 3610.

Advice: College Algebra (Precalculus)

Major lists as elective: Applied Statistics, Time Series Analysis, Calculus I

**English B.A., or B.F.A. in Creative Writing**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Environmental Communications B.S.**

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics with College Algebra prerequisite)

**Environmental Studies B.S. – Geohydrology**

Minimum: Precalculus

Advice: Precalculus or Calculus I (Suggested schedule provided in course catalog.)

Major lists as elective: Applied Statistics with College Algebra prerequisite

**Environmental Studies B.S. – Environmental Health & Toxicology B.S.**

Minimum: Precalculus

Advice: Precalculus or Calculus I (Suggested schedule provided in course catalog.)

Major lists as elective: Applied Statistics with College Algebra prerequisite

**Environmental Studies B.S. – Ecosystems**

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics with College Algebra prerequisite)

(Suggested schedule provided in course catalog.)

Major lists as elective: Applied Statistics with College Algebra prerequisite

**Environmental Studies B.S. - Policy and Planning**

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning

**Exercise Science B.S. – Medical Fitness emphasis**

Minimum: Calculus I (prerequisite to PHYS 2101)

Advice: Calculus I

**Exercise Science B.S. – Leadership & Promotion emphasis**

Minimum: Depends on PHYS course elected:

College Algebra (prerequisite to PHYS 1101)

Calculus I (prerequisite to PHYS 2101)

Advice: College Algebra or Calculus I

**Gender and Women’s Studies (minor)**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**General Studies**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Geography B.A. or B.S. – All emphases**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics with College Algebra prerequisite, Precalculus)

**Geology (minor)**

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra (Precalculus, Calculus I)

**Health B.S. – Community Health**

Minimum: College Algebra

Advice: Statistical Reasoning or Applied Statistics with its MATH 1170 prerequisite

**History B.A. or B.S.**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics with College Algebra prerequisite)

**Humanities (minor)**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Indigenous Studies B.A.**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Indigenous Sustainability Studies B.S.**

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics with College Algebra prerequisite)

**Individualized Studies**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning (Statistical Reasoning, Applied Statistics with College Algebra prerequisite)

**International Studies (minor)**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Leadership (minor)**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Liberal Studies**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Mathematics B.S. (Actuarial, Applied, or General emphasis)**

Advice: Precalculus, Calculus I, Calculus II, Multivariable Calculus, Discrete Math.

Students entering with any of these courses should be placed in the next higher course as soon as possible. Calculus I is the first course in the mathematics majors.

**Media, Integrated B.S. (Marketing Communication, Mass Communication)**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning (Statistical Reasoning, Applied Statistics with College Algebra prerequisite)

**Music B.A. (Vocal, Piano, or Instrumental)**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Nursing B.S. (Pre-Licensure Track, or RN to Baccalaureate Track)**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics with College Algebra prerequisite)

**Philosophy B.A. (Pre-Law, or general)**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning (Applied Statistics with College Algebra prerequisite)

**Physics (minor)**

Minimum: Calculus I AND Calculus II

Advice: Calculus I with prerequisites (Calculus II, Multivariable Calculus, Differential Equations)

**Political Science B.A. and Applied Public Policy (minor)**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Pre-Professional Studies**

Courses listed are needed for entrance into most professional schools. Students should investigate specific requirements for programs to which they wish to apply.

Occupational Therapy:

Advice: Statistical Reasoning (Applied Statistics with College Algebra prereq.)

Chiropractic, Dentistry, Optometry, Physical Therapy

Advice: Precalculus (Calculus I)

Engineering:

Advice: Calculus I (Calculus II, Multivariable Calculus, Differential Equations. Students entering with credit for any of these courses should be placed in the next higher course as soon as possible.)

Law:

 Advice: Mathematical Reasoning

Mortuary Science:

 Advice: College Algebra or Precalculus

Medical, Veterinarian: Math requirements vary for professional schools.

Osteopathic, Pharmacy, Podiatric: Precalculus (Calculus I, Calculus II)

Physician Assistant:

Advice: Applied Statistics

**Professional Education B.S.**

*Elementary Education – Math endorsement*

Minimum: Any liberal education Goal Area 4 math course

Advice: Precalculus and any prerequisite

(Mathematics for Elementary Teachers 1011 AND 1013, and Precalculus recommended.)

*Elementary Education – Other endorsements*

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite (Mathematical Reasoning, College Algebra, or Precalculus)

*English Education*

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite (Mathematical Reasoning, College Algebra, or Precalculus)

*Health Education*

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite (Mathematical Reasoning)

*Mathematics, Mathematics Education (secondary)*

Advice: Precalculus, Calculus I, Calculus II, Multivariable Calculus, Discrete Math

Students entering with any of these courses should be placed in the next higher course as soon as possible. Calculus I is the first course in the mathematics majors.

*Music Education (Vocal or Instrumental)*

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite (Mathematical Reasoning, College Algebra, Precalculus)

*Physical Education*

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite (Mathematical Reasoning)

*Science Education (*with or without *Chemistry* or *Earth and Space Science* *specialty)*

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra or Applied Statistics with College Algebra prerequisite (Precalculus, Calculus I)

[The Physics Specialty recommends Calculus I, required when opting for PHYS 2101 over 1101.]

*Social Studies Education*

Minimum: Any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite (Mathematical Reasoning, College Algebra, Precalculus)

**Psychology B.A. or B.S.**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite

**Social Studies B.A. – Psychology emphasis**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning (Statistical Reasoning, Applied Statistics with College Algebra prerequisite)

**Social Work B.S.**

Minimum: any liberal education Goal Area 4 math course

Advice: Statistical Reasoning OR Applied Statistics with College Algebra prerequisite (Mathematical Reasoning)

**Sociology B.A.**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning (Statistical Reasoning, Applied Statistics with College Algebra prerequisite)

**Space Studies (minor)**

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra (Precalculus, Calculus I)

**Spanish B.A.**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**Sports Management B.A.**

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra

**Sustainability and Resource Management B.S.**

Minimum: Applied Statistics

Advice: Statistical Reasoning, or Applied Statistics with College Algebra prerequisite

**TAD B.A.S. – Applied Engineering**

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra (Precalculus, Applied Statistics with College Algebra prerequisite)

**TAD B.A.S. – Applied Management**

Minimum: Mathematical Reasoning

Advice: Mathematical Reasoning

**TAD B.F.A. – 3-D Arts**

Minimum: Any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**TAD B.F.A. – ART Illustration**

Minimum: Any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**TAD B.S. – Engineering Technology**

Minimum: Precalculus
Advice: Precalculus (Calculus I, Applied Statistics with College Algebra prerequisite)

**TAD B.S. – Project Management – Operations Mgmt. or Constr.**

**& Fac. Mgmt. or Prod. Dev.**

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra (Mathematical Reasoning, Applied Statistics with College Algebra prerequisite)

**TAD B.S. – Exhibit & Experience Design**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**TAD B.S. – Event Planning & Project Mgmt**

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra (Mathematical Reasoning, Applied Statistics with College Algebra prerequisite)

**TAD B.S. – Creativity & Innovation**

Minimum: any liberal education Goal Area 4 math course

Advice: Precalculus (College Algebra, Mathematical Reasoning, Applied Statistics with College Algebra prerequisite)

**TAD B.S. – Prototype, Engineering, & Model Making**

Minimum: any liberal education Goal Area 4 math course

Advice: Precalculus (College Algebra, Mathematical Reasoning, Applied Statistics with College Algebra prerequisite)

**TAD B.S. – Interactive Multimedia Design**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**TAD B.S. – Graphic Design**

Minimum: any liberal education Goal Area 4 math course

Advice: Mathematical Reasoning

**TAD B.S. – Digital Illustration & Animation**

Minimum: any liberal education Goal Area 4 math course

Advice: College Algebra (Mathematical Reasoning, Applied Statistics with College Algebra prerequisite)