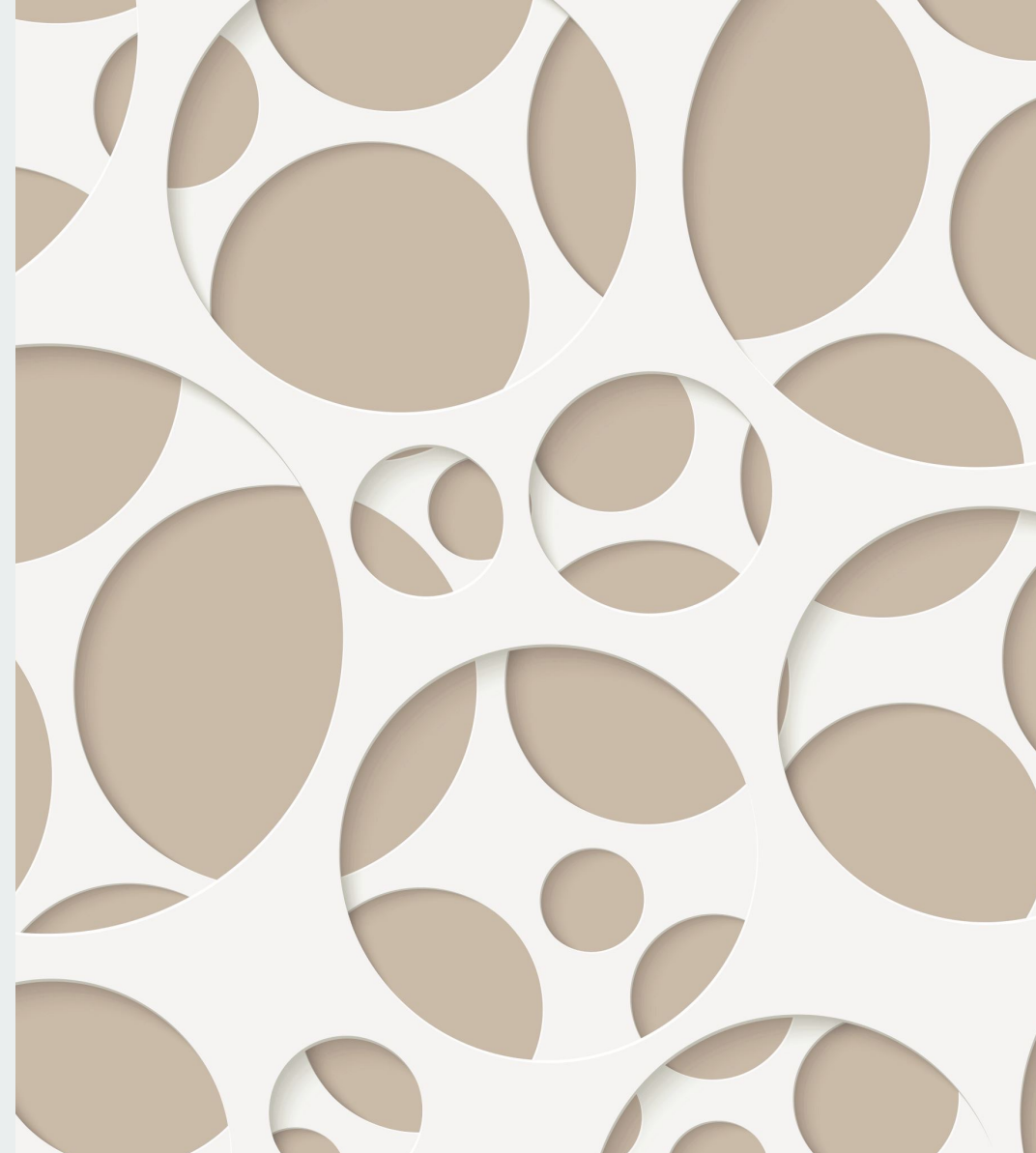


# Information for Math Majors

A Quick Introduction for Undergraduates

More detailed information available at:

<https://www.umb.edu/science-mathematics/academic-departments/mathematics/math-tutoring-advising/>



# 5 Quick Tips for Success

1. Declare your concentration ASAP, no later than the semester after which you will have earned 60 credits.
2. Plan your program out in advance/build contingency plans.  
(Try to finish MATH140, MATH141, MATH242, PHYSIC113, CS110, and MATH260 ASAP)
3. Aim to take MATH314 (Proofs) by end of second year, perhaps along with MATH242.
4. Try to take no more than two (2) MATH courses per semester.
5. Make use of tutoring, especially for 100 & 200-level courses.

# Concentrations

## **Applied and Pure Mathematics (BS) Program**

The Applied and Pure Mathematics Concentration is the most “traditional” concentration and students pursuing it will have a solid foundation for various math careers ahead of them. Students interested in going to graduate school in fields like mathematics or physics or working on mathematical modeling in industry or research laboratories, might want to consider the Applied and Pure Mathematics Concentration.

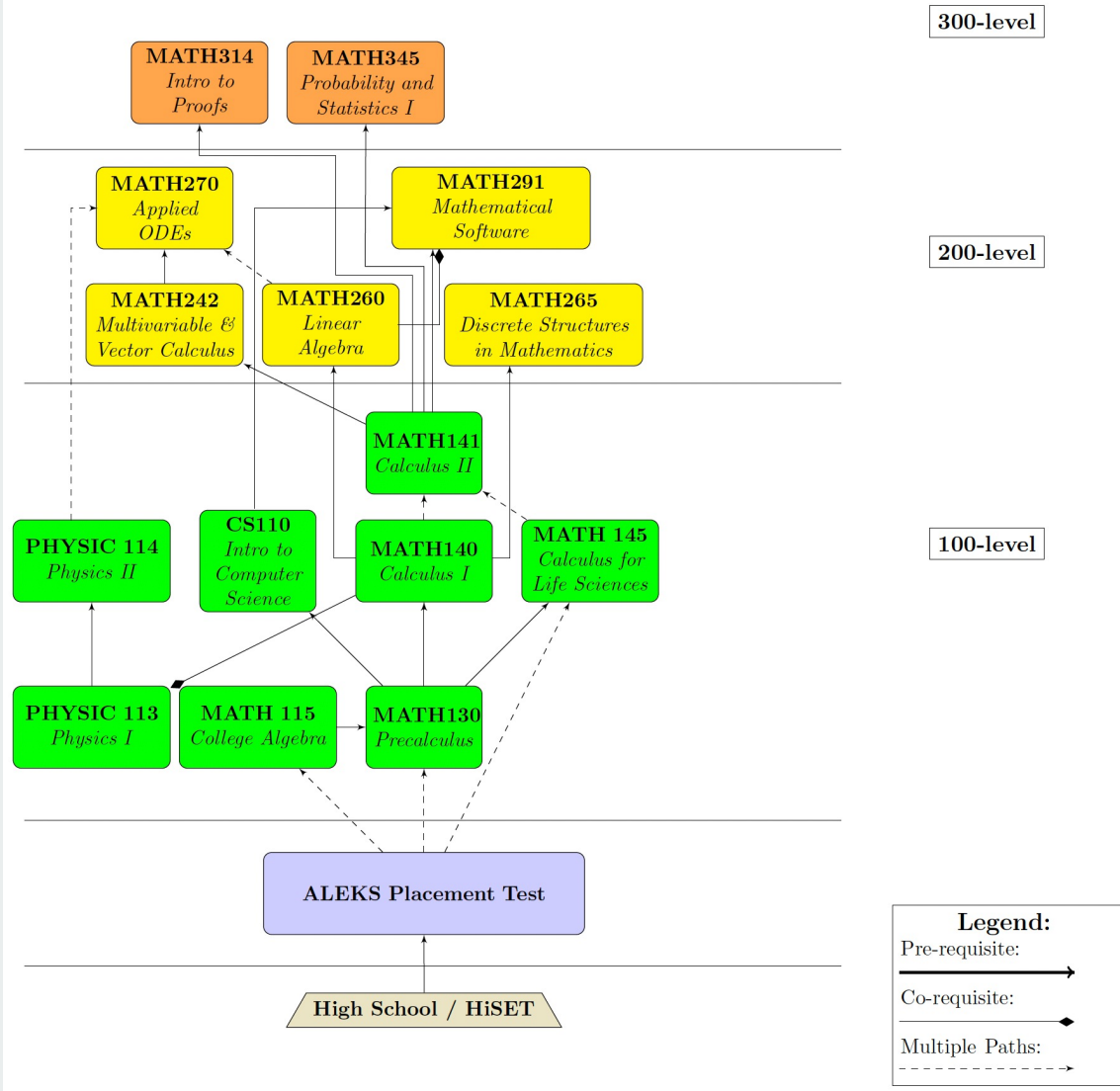
## **Computational Mathematics (BS) Program**

The Computational Mathematics Concentration provides broad math education with an emphasis on computer and mathematical models as tools to solve real-world problems. Students graduating in this concentration would be qualified to look for jobs, for example, in actuarial companies, finance, machine learning industry or apply to grad schools in computational and data-driven sciences, like computer science, engineering or medical research.

## **Mathematics for Teaching (BA) Program**

The Mathematics for Teaching Concentration provides broad math education with a focus on the development of math ideas and math reasoning. Students who are interested in teaching math, math education, developing educational software or other educational tools for math might consider this concentration.

# Concentrations



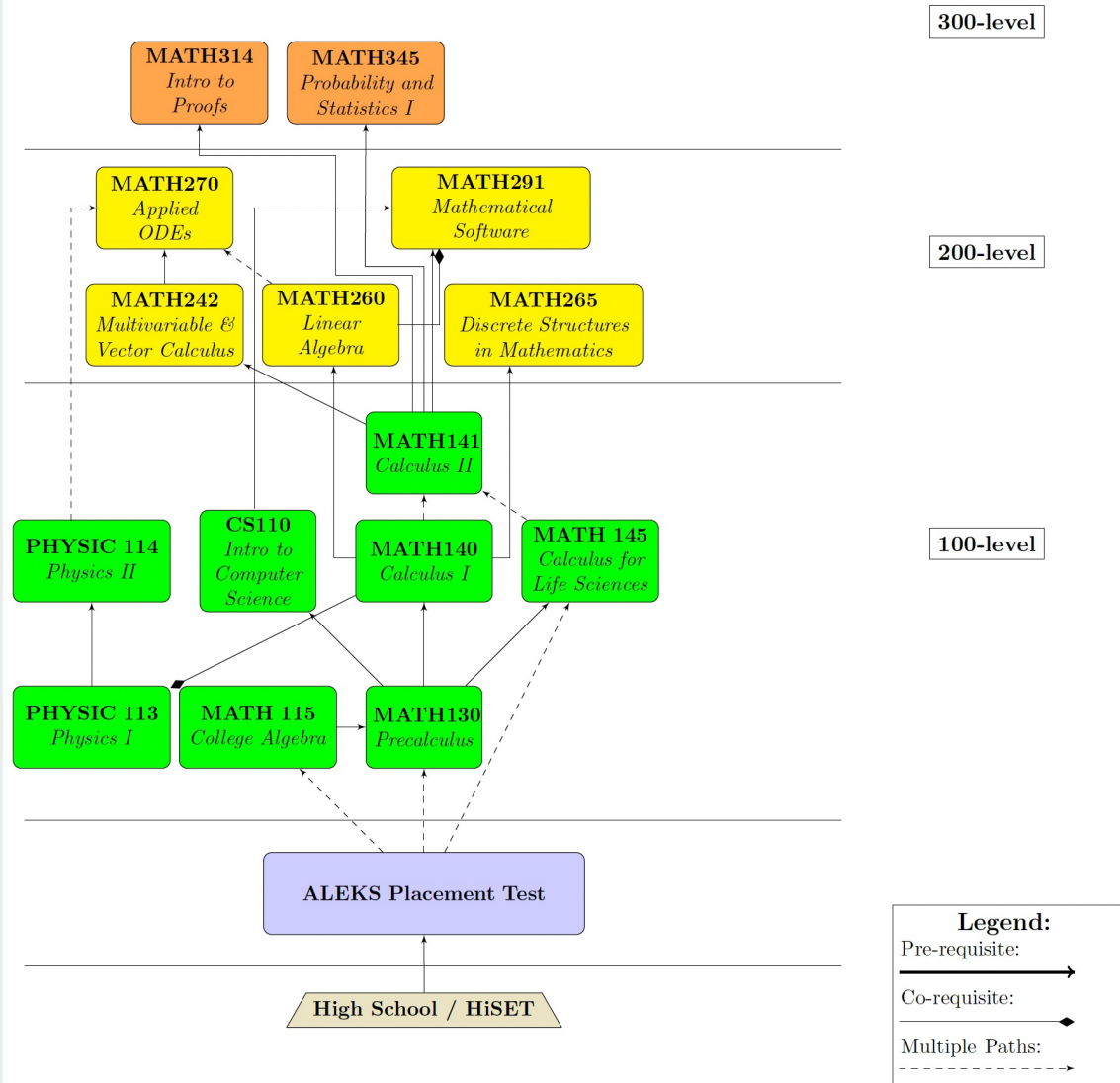
## Everyone takes these core courses: (38 cr.)

- MATH140 (Calculus I)\*§
- MATH141 (Calculus II)\*§
- MATH242 (Multivariable/Vector Calculus) §
- MATH260 (Linear Algebra) §
- MATH265 (Discrete Structures)\*<sup>x</sup>
- MATH270 (Ordinary Differential Equations)
- MATH291 (Mathematical Software)<sup>@</sup>
- MATH314 (Proofs)
- MATH345 (Probability & Statistics)\*<sup>§</sup>
- CS110 (Intro. to Programming)\*
- PHYSIC113 (Fund. Of Physics I)\*

\* Offered in SS1  
 @ Fall Only

§ Offered in SS2  
<sup>x</sup> Spring only

# Concentrations



## Bachelors of Science ONLY: (13-16 cr.)

- PHYSIC114 (Fund. of Physics II)
- Two (2) non-lab courses from Physics, Biology, CS, Engineering, or Chemistry that satisfy a major requirement for their department.\*
- One (1) non-lab **or** lab course from Physics, Biology, CS, Engineering, or Chemistry that satisfies a major requirement for their department.\*

\* Consult your degree audit for examples.

# Concentrations

## Applied/Pure BS

- MATH358 (Complex Analysis)\*
- MATH360 (Abstract Algebra I)\*
- MATH361 (Abstract Algebra II)§
- MATH450 (Real Analysis)§
- 1 300+ level elective
- 1 400+ level elective

## Computational Math

- MATH425 (Numerical Analysis)\*
- MATH426 (Numerical Lin. Alg.)§
- MATH447 (Probability Models)\*
- MATH448 (Computational Stats)§
- MATH360 (Abstract Algebra I)\* **or**  
MATH450 (Real Analysis)§
- 1 300+ or 400+ level elective

\* Fall Only

§ Spring Only

# Concentrations

## Math for Teaching

- MATH360 (Abstract Algebra I)\*
- MATH370 (History of Math)§
- MATH458 (Number Theory)§
- MATH460 (Survey of Geometry)\*
- 1 300+ level elective
- 1 400+ level elective

## UTeach (consult WISER for course availability)

- INTR-D 170 (Inquiry Appr. to Teaching)
- INTR-D 175 (Inquiry-Based Lesson Dsn)
- EDC U 270 (Knowledge/Learning Math/Science)
- EDC U 275 (Classroom Interactions)
- EDC U 370 (Perspectives Sci/Math)
- EDC U 375 (Functions/Modeling)<sup>⌘</sup>
- EDC U 451 (RETELL)
- EDC U 499 (Practicum)

\* Fall Only

§ Spring Only

<sup>⌘</sup> can be used as 300+ math elective



# Careers

More info: <https://www.bls.gov/ooh/math/>

- Statistician/Data Scientist
- Research mathematician
- Actuary
- Education/teaching
- Accounting
- Software engineering
- Financial planning
- Medicine/Medical Research
- Operations Research/Logistics
- Auditing
- Law