

Ross Crocker
Class of 2012
Interdisciplinary Major Proposal:
Applied Mathematics

While Hendrix College has a great math department, it is focused mostly on the area of pure mathematics. This is a problem for students like me who want to study math but are not interested in further study of pure mathematics. I loved Calculus 1 and 2, Multivariable Calculus, Differential Equations, etc., but over the last two years I have come to realize that courses involving heavy emphasis on proofs simply do not interest me as much as courses such as those listed above. As such, I feel that it would be more beneficial for me to focus on courses that place emphasis on applied mathematics. I am therefore proposing an interdisciplinary major in Applied Mathematics so that I may continue to study math at Hendrix while also pursuing an area of interest to me.

The Applied Mathematics major that I am proposing is actually not very different from the Mathematics major currently offered at Hendrix. Three courses would be added and two courses in the regular major would be replaced with what I feel better fits an Applied Mathematics major. The added courses would be PHYS 230 *General Physics I (Calculus-Based)*, PHYS 240 *General Physics II (Calculus-Based)*, and CSCI 150 *Foundations of Computer Science I*. The physics courses would add more substance to the major, since physics is very much involved in the application of mathematics. The course in computer science would serve to provide an introductory knowledge of programming, which would be helpful in the study and application of mathematics. The courses that would be omitted are the two-course sequence of either MATH 320 *Algebra* and MATH 420 *Seminar in Algebra* or MATH 350 *Real Analysis* and MATH 450 *Seminar in Analysis*. Since Hendrix does not offer upper-level courses in applied math, I would replace this sequence with a two-course sequence of MATH 4305 *Applied Mathematics I* and MATH 4306 *Applied Mathematics II* at the University of Central Arkansas. These courses would serve to enhance my skills in applied math and better prepare me for work and further study in the field of applied math. Essentially, the added and replaced courses would help me to gain a much vaster knowledge of the area in which I want to be involved.

The Capstone experience for this major would be the MATH 497 *Senior Seminar* course required of all Hendrix Mathematics majors. I believe that this capstone logically fits the proposed major, since a senior research project in applied math could be developed in much the same way projects for pure math are.

If I pursue this major, I feel that I will be graduating from Hendrix College with a much stronger background in applied mathematics than is currently available to me, along with a strong introductory background in pure mathematics. In general, I know that this major would contribute to a more enjoyable Hendrix experience for me and would better prepare me for the type of work I hope to pursue in the future.

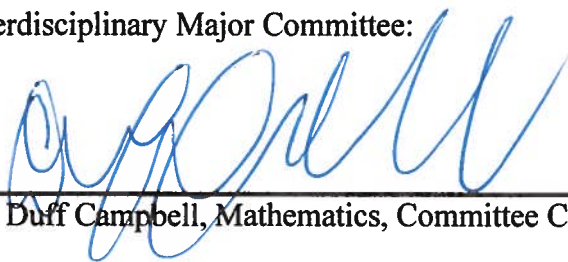
The courses included in the proposed major in Applied Mathematics are as follows:

- MATH 130 *Calculus I*
- MATH 140 *Calculus II*
- CSCI 150 *Foundations of Computer Science I*
- PHYS 230 *General Physics I (Calculus-Based)*
- PHYS 240 *General Physics II (Calculus-Based)*
- MATH 230 *Multivariable Calculus*
- MATH 240 *Discrete Mathematics*
- MATH 260 *Differential Equations*
- MATH 290 *Introduction to Advanced Mathematics*
- MATH 310 *Mathematical Probability and Statistics*
- MATH 340 *Combinatorics*
- One of the following:
 - MATH 490 *Advanced Topics in Mathematics*
 - An upper level math course taken at UCA numbered 3000 or higher
- A two-course sequence taken at UCA consisting of
 - MATH 4305 *Applied Mathematics I* and
 - MATH 4306 *Applied Mathematics II*

The senior capstone experience is the year-long MATH 497 *Senior Seminar* course.

These courses also satisfy the normal math major requirements, which require MATH 130, MATH 140, MATH 240, and MATH 290 as well as two math courses numbered 230 or higher (see MATH 230 and MATH 260) and three math courses numbered 300 or higher (see MATH 310, MATH 340, and either MATH 490 or MATH 3000+).

Interdisciplinary Major Committee:



Dr. Duff Campbell, Mathematics, Committee Chair



Dr. David Sutherland, Mathematics