Infusing Undergraduate Research in Natural Sciences_Mathematics_Calculus_LARGE LECTURE

I. **Infusing Undergraduate Research in Natural Sciences_Mathematics_Calculus_LARGE LECTURE. MAC 2311 (Calculus 1), MAC 2312 (Calculus 2), MAC 2313 (Calculus3). Enrollment: up to 110.**

   a. [Shippensburg University](). In the Mathematics Department, we view undergraduate research as a collaborative effort on a problem whose solution is unknown, often even to the faculty mentor. Ideally, the research process involves literature review, original discoveries by the student, and ultimately, the public communication of results such as a journal publication or a presentation at a professional meeting. Committing to a research project is a valuable experience as it allows you to take the tools developed in class and apply them to real problems.

   b. Cornell Math Research Program. This is a new program offered and administered by the Cornell University College of Arts and Sciences that provides Cornell undergraduate students the opportunity to work on research projects *side-by-side with faculty members across the college including the Math Department.*

   c. [Summer 2023 undergraduate research programs, *REU and SPUR:*]() math.cornell.edu/undergraduate-research

   d. Harvard University. The Office of Undergraduate Research and Fellowships (URAF) is committed to creating *a diverse and inclusive undergraduate community* at Harvard College where each student has the tools, access to opportunities, and support to thrive.

   e. The Office of Undergraduate Research and Fellowships (URAF) supports the mission of Harvard College by strategically planning, developing, and realizing policies, programming, and funding to effectively steward formative, substantive research and postgraduate fellowship opportunities. Thus, URAF's practices serve *to augment the curricular choices and intellectual growth of all undergraduates as well as enhance scholarly relationships with their peers, Harvard faculty, and academic specialists around the world.*

II. **Research-Based Course Activities**

   a. Learning the material with active participation in class – SLO 1,2.

   b. Choose a topic about applications of Calculus in the real world (with the help of the instructor) – SLO 3,4.

   c. Work individually, or in groups, discuss it in the Discussion board, present their project in class, and a second time at a Workshop in front of Faculty and Advisors – SLO 5,6.

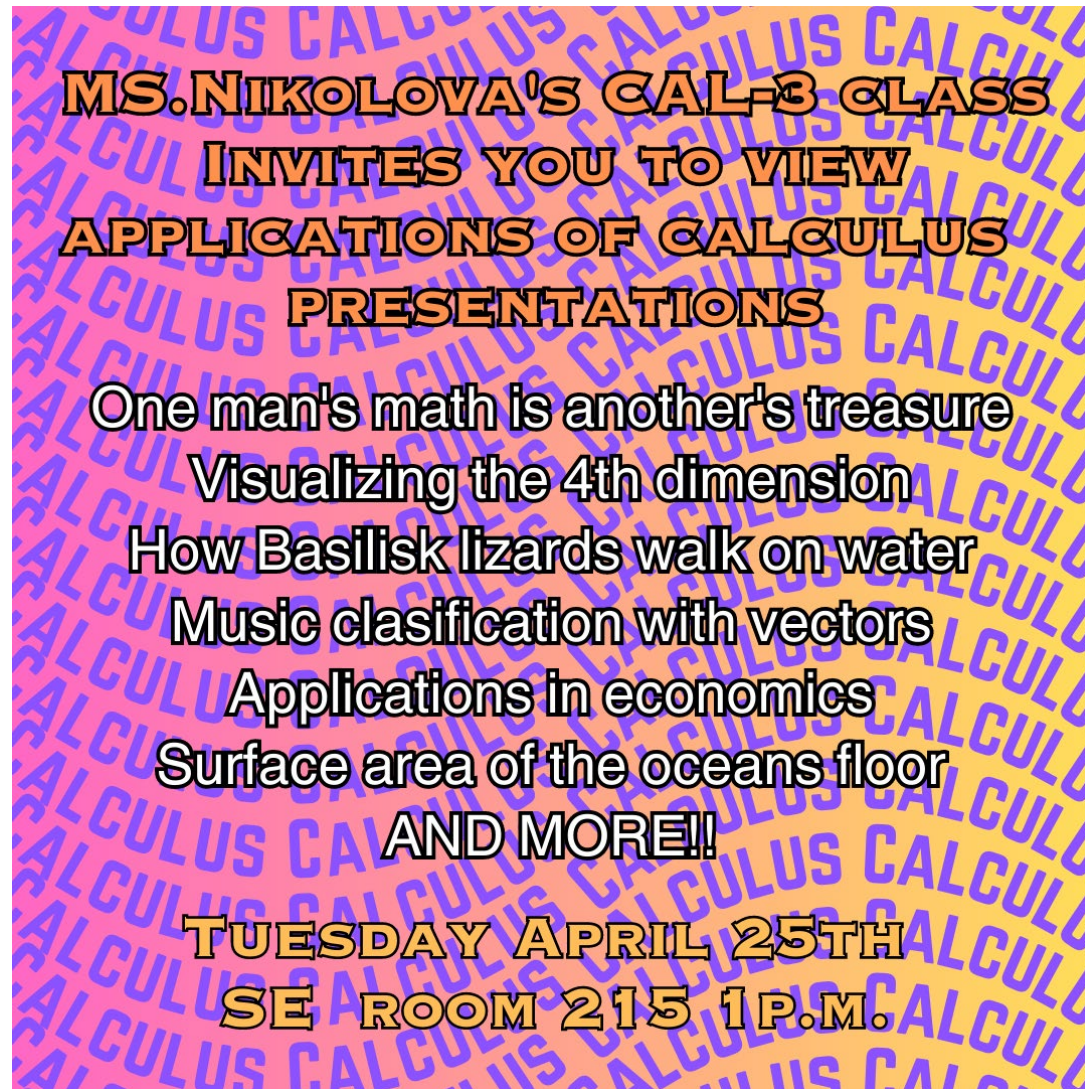III. **Assessing Undergraduate Research and Inquiry Activities**

   Use a bulleted list to describe how the research-based course activities will be assessed in your course.

   a. Rubric: Problem-related to Calculus; Mathematically correct; 2 Presentations.

   b. At the moment, students earn up to 10% extra credit. In the future, the class will be divided into RI, and standard, and the former will be accredited 40%. The RI work will be progressively distributed during the semester.

IV. **Additional Resources**

Here is the flyer for the upcoming Presentation Day of my Calculus 3 students.
We shall invite students, faculty and advisors to attend.

MS.Nikolova's CAL-3 class
Invites you to view
applications of calculus
presentations

One man's math is another's treasure
Visualizing the 4th dimension
How Basilisk lizards walk on water
Music clasification with vectors
Applications in economics
Surface area of the oceans floor
AND MORE!!

Tuesday April 25th
SE room 215 1p.m.

V.   Contact Dr. Daniela Nikolova (dpopova@fau.edu) for additional information about this course/discipline
        area.