COURSE DESCRIPTION: EDCI 2414 is a unique course where students engage in technological/engineering design based biotechnical learning (T/E DBBL) as a way of exploring the integration of STEM (science, technology, engineering, and mathematics) content knowledge and practices. This course promotes learning through the design, construction, and testing of working biotechnical prototype systems. The course engages learners in minds-on, hands-on design challenges demonstrating the authentic disciplinary connections among STEM content and practice knowledge inherent to the design and construction of working biotechnical prototypes. The context for each biotechnical design challenge will address an authentic human need that emphasizes ethical decision-making based on the technological solutions being designed appropriately for local and/or global communities.

IN RESIDENCE: January 3 – 15, 2022

TIME: Daily from 9:00AM - 1:00 PM (M, T, W, TH, F, S)

PLACE: On Campus: 112 Seitz STEM Education Collaboratory

OBJECTIVES: as a result of participation in this course students will be able to:

- Apply concepts and practices of technological/engineering (T/E) design
- Demonstrate knowledge of techniques, tools, and quick prototyping methods needed in designing, constructing, and testing working biotechnical systems
- Demonstrate predictive analysis of prototype elements using principles/techniques of scientific inquiry
- Prepare artifact proposals (design journal, physical prototypes, etc.) demonstrating understanding of select STEM disciplinary concepts inherent to the designed solution
- Evaluate the performance of working biotechnical prototypes to improve on design solutions
- Deliver compelling oral presentations justifying ethical and functional biotechnical design choices
- Articulate the relevance of the designed biotechnical systems to ethical appropriate technologies required to meet current/pending global energy challenges

REQUIRED READINGS (provided):

- Other readings as assigned

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Course URL – https://canvas.vt.edu/

SPACE IS LIMITED – REGISTER EARLY!