

STEM CELL: An unspecialized **cell** that gives rise to differentiated **cells**.

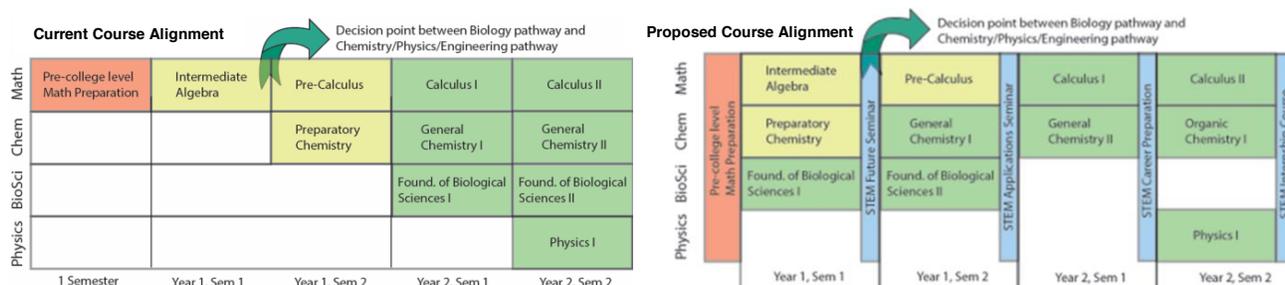
UWM STEM CELL: A program to help unspecialized under-privileged and under-represented students interested in STEM develop into differentiated, successful, and informed STEM majors.

The Natural Sciences Departments at the University of Wisconsin-Milwaukee are collaborating to develop a transformational framework to address pedagogical and socio-cultural issues at UWM that contribute to the lack of persistence and the flow of talented and interested students away from science, technology, engineering and mathematics (STEM) majors at the early-career undergraduate level. This collaboration has led to submission of a proposal to the National Science Foundation that will fund a pilot program to

- *intentionally link early career STEM courses;*
- *expose STEM interested students to STEM courses early;*
- *provide intrusive advising by a triad of faculty advisor, professional/career advisor, and peer advisor;*
- *provide explicit and individualized guidance to students regarding STEM major and career choices;*
- *immerse students in practical integrative early academic career experiences including research that will help them effectively narrow their chosen field of study and career paths;*
- *provide a scalable, sustainable template for early career science education in access institutions of higher education nationwide.*

The primary issue treated by the proposed project is the timing of decision points. Current early career STEM courses have multiple pre-requisites, requiring students to make decisions regarding their STEM majors and careers before taking any credit-level science courses at UWM. The proposed program intentionally links these early career courses, turning pre-requisites into co-requisites. It also explicitly seeks to inform the decision-making process for students through application and career-focused seminars and student-composed individual development plans that continually updated in conjunction with faculty, peer, and professional advisors.

→ *The outcome: improved persistence and reduced time to degree.*



Current (left) and proposed (right) early-career course alignment for UWM STEM students. In the current model, students reach a **decision point** regarding life or physical sciences track well before having had any courses in these subjects. Intentional alignment among the disciplines shifts science courses into earlier semesters, giving students discipline-specific exposure and reducing time to degree. This is complemented by weekly career development seminars, weekly academic & career advising, and continual monitored growth through **individual student development plans**.

The need: The pilot program targets 100 students (principally due to limitations in the amount NSF can offer for faculty and advisor time), we are ready for full implementation for all incoming students who profess an interest in STEM disciplines. The financial support needed for faculty and advisor release times and new positions will be more than offset by the increase in retention and the number of STEM graduates for the State!