

University of Memphis Vertically Integrated Projects (UofM-VIP) Program:

Improving Undergraduate STEM Education and Identity

The “UofM-VIP Program” project adapts, implements, researches, and evaluates the Vertically-Integrated Projects (VIP) model, a transformative approach to enhancing higher education by engaging undergraduate and graduate students in ambitious, long-term, large-scale, multidisciplinary project teams that are led by faculty, at the UofM. VIP has been implemented for over 20 years and has been adopted by more than 40 Universities of different size and diversity in the USA and abroad.

[Learn more here! www.memphis.edu/VIP](http://www.memphis.edu/VIP)

What is VIP?

The VIP model, based on active learning, allows students to engage in research while earning credit towards their degrees and enables tiered mentoring from students at all academic years, thereby providing the opportunity of role modeling from upper-level undergraduate and graduate students as well as faculty. By engaging students as early as the freshman year in team-based research and exposing them to initiatives designed to promote diversity and inclusion, UofM-VIP provides opportunities to all engineering students, but particularly to women and other underrepresented minorities, to experience engineering in an inclusive culture. The UofM-VIP program will include activities to foster an inclusive culture in engineering, such as training units, diversity workshops, innovation seminars and mentoring.

UofM-VIP Goals:

The project goals are to improve academic success, retention, diversity, and inclusion in engineering at the UofM by integrating educational interventions such as active learning (through project-based research opportunities) and peer mentoring (with networking and role modeling) designed to foster the development of engineering/STEM identity and self-efficacy in undergraduate students.

The successful implementation of the UofM-VIP program will create awareness and interest in engineering majors and provide a new approach to recruiting students with diverse backgrounds, including women and underrepresented minorities, in engineering.

The UofM-VIP program will generate new knowledge in STEM education by investigating a variety of mechanisms for supporting a diverse set of students in their development of a STEM identity.



Partial support for this work was provided by the National Science Foundation Improving Undergraduate STEM Education (I-USE) program under Award No. 2120819. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Why VIP?

Create the team you need to move your research forward, from *new ideas* to **sponsored projects**

Through VIP, student teams are embedded in faculty research projects. VIP provides faculty with a framework for effective management of large, multidisciplinary research projects - and the opportunity to work with undergraduates, growing local talent for graduate school. VIP offers a low-stakes environment in which to try new ideas, and to develop the preliminary research, data, etc. you need in order to pursue sponsored research. VIP is also a great way to connect "broader impacts" or educational components required by some sponsoring agencies within your research.

Teams evolve with their faculty member's research and become integral parts of the instructors' research portfolios.

Students can participate in VIP for multiple semesters, with returning students taking on additional technical and/or leadership responsibilities within their teams. This lessens the time faculty spend on-boarding new students, freeing them to focus on higher-order work.

UofM VIP Structure:

- Students are assigned to a research team with a faculty advisor and student mentors
- 1.0 hour research-intensive course experience taken in three consecutive semesters
- Students can earn up to 3.0 hours of technical elective credit upon successful completion of the 3 consecutive semesters
- Opportunity to continue VIP experience beyond the 3.0 hour credit via paid or volunteer experiences

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