STEM Student Interest Groups (SSIGs):
Connecting Learning in Gateway Courses with STEM Majors

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SSIG Purpose
The SSIGs courses are designed to help students succeed in their gateway courses and increase retention for STEM majors. SSIGs accomplish this by...
1. Relating the material from gateway courses to students’ major coursework
2. Guiding habits of mind in learning how to learn

*Gateway courses are prerequisites for science and engineering majors that are outside of students’ major disciplines. These “Killer courses” are significant challenges to student persistence in science and engineering majors.

Component 1- Connecting Major and Gateway Course
Seminar courses are taught by graduate TA’s in the major disciplines. These classes emphasize active learning through the use of:
- In-class practice problems, individual and group work, class discussions, real-world application problems
- Lab visits, guest speakers, journals/blogs between class meetings
- Small class sizes for student-instructor and student-student interaction, student feedback
- Use major-to-gateway connections with Learning-to-Learn modules

SSIGs also support students in their majors by providing professional development:
- paper reading/writing
- experimental design

Students are exposed to various aspects of their STEM majors earlier in their college careers.

Students’ Responses to Relating Gateway material to STEM Major topics:
“What I liked about the course was the application of both scientific and mathematical equations to solve real-world problems and predict outcomes of the future.”

Component 2- Guiding Learning How to Learn
Lesson Plans:
- Metacognition: Determining What You Do and Do Not Know
- Recognizing the Required Thinking and Learning Using Bloom’s Taxonomy
- Understanding and Adapting Learning Styles
- Polya’s Problem-Solving Strategies
- Science Literacy
- Perry’s Developmental Stages of the Brain

Students’ Responses to Learning-to-Learn Strategies:
“My brain now appreciates ambiguity as a quality of the most interesting challenges. I have fun by discovering and using evidence.”

“Greatly increased
Somewhat increased
About the same
Somewhat decreased
Greatly decreased

Students responses: To: As a result of taking this course, my understanding of how to be a proficient learner can best be described as...”

“Greatly increased
Somewhat increased
About the same
Somewhat decreased
Greatly decreased

Students responses to: As a result of taking this course, my ability to analyze and solve a problem can best be described as...”

“Greatly increased
Somewhat increased
About the same
Somewhat decreased
Greatly decreased

Students responses to: As a result of taking this course, I would love to get myself to the create section. I hope that I can get there and perhaps publish my research.”

SSIG Outcomes
As a result of completing a SSIG, students will...
1. Be able to apply gateway-course concepts to one or more topical areas within the major field
2. Demonstrate the ability to analyze a problem in order to determine the type of thinking that is required in order to solve the problem
3. Demonstrate increased science literacy, which is the comprehension of and utilization of the conceptual process employed in understanding the natural world
4. Become proficient learners