SCIENCE & ENGINEERING (SE)

SE 1000 - Problem Solving Fundamentals
1 Credit
This course is designed to benefit first-year SSE students who may struggle to meet their SSE program requirements due a gap in content specific problem-solving skills as identified during the University's initial placement process. The course is designed to keep students on track by reviewing their chemistry, physics, and engineering-based quantitative reasoning needed for success in introductory STEM classes. Additionally, this course will utilize community-based learning strategies and will focus on the professional competencies and skills required for student success at the University level. This course will prepare first-year SSE students for success by reinforcing: 1. Applied quantitative scientific problem-solving skills 2. Peer learning and community-based study strategies 3. Professional competencies including teamwork, timeliness, and technology use.

SE 1700 - Engineering Fundamentals
2 Credits
The course introduces engineering problem solving process. Algorithmic and visual skills and computer tools are introduced. It also exposes students to the engineering career paths.
Attributes: UUC:Ignite Seminar

SE 1701 - Engineering Fundamentals Studio
1 Credit
Companion course to Engineering Fundamentals.

SE 1702 - Engineering Studio: Self and Community
1 Credit
The course combines the key elements of ESCI 1701 (Engineering Fundamentals Studio) with the requirements of Cura Personalis 1. Students will learn the concepts and tools used for computer modeling of mechanical systems. They will apply those concepts to the exploration of self and the SLU community. This course complements the content of ESCI 1700 but can be taken independently.

SE 1709 - Introduction to Engineering
2 Credits
The course introduces the engineering profession and problem solving process. Algorithmic and visual skills and computer tools are introduced.

SE 1930 - Special Topics
1-4 Credits (Repeatable for credit)
Special Topics in Science and Engineering.

SE 2870 - Foundational Interdisciplinary Research Experience (FIRE) - Learn
1 Credit
FIRE Learn introduces undergraduate students to the foundational principles of research methodology and entrepreneurial mindset (EM). This course is designed to prepare students for participation in the FIRE Lab and FIRE Launch components of the FIRE program. Students will engage with the essentials of academic and applied research, including experimental design, data analysis, and ethical considerations, while also exploring the basics of entrepreneurship, including idea generation, product development, and market analysis. A focus will be placed on interdisciplinary collaboration and the integration of research with entrepreneurial ventures. By the end of the course, students will have a deeper understanding of how research and entrepreneurship complement each other and will be ready to engage in hands-on interdisciplinary projects.

SE 2930 - Special Topics
1-4 Credits (Repeatable for credit)
Special Topics in Science and Engineering.

SE 3870 - Foundational Interdisciplinary Research Experience (FIRE) - Lab
1 Credit (Repeatable up to 6 credits)
FIRE Lab is the core hands-on research component of the Foundational Interdisciplinary Research Experience (FIRE) program, where students participate in ongoing research projects led by faculty from various departments within the School of Science and Engineering. Students engage in both basic and applied research, contributing to experimental design, data collection, analysis, and reporting. This course is intended for students who are ready to engage in advanced research tasks, with an emphasis on collaboration, critical thinking, and problem-solving. Students will also gain experience in presenting and communicating their research to both technical and non-technical audiences.
Attributes: Special Approval Required

SE 3875 - Foundational Interdisciplinary Research Experience (FIRE) - Launch
1 Credit (Repeatable up to 6 credits)
FIRE Launch provides students the opportunity to move research projects into a real-world entrepreneurial context. Students will work in teams to develop, refine, and potentially commercialize their research projects in collaboration with the SLULaunch program. In this course, students will gain exposure to the process of entrepreneurship, including idea validation, product development, and market analysis. They will receive mentorship from faculty and industry professionals, learning how to navigate the complexities of launching a technology-based venture. FIRE Launch aims to bridge the gap between academic research and entrepreneurial application, empowering students to translate their discoveries into innovative solutions with market potential.
Corequisite(s): SE 2870

SE 3930 - Special Topics
1-4 Credits (Repeatable for credit)
Special Topics in Science and Engineering.

SE 4870 - Foundational Interdisciplinary Research Experience (FIRE) - Lab
1 Credit (Repeatable up to 6 credits)
FIRE Lab is the core hands-on research component of the Foundational Interdisciplinary Research Experience (FIRE) program, where students participate in ongoing research projects led by faculty from various departments within the School of Science and Engineering. Students engage in both basic and applied research, contributing to experimental design, data collection, analysis, and reporting. This course is intended for students who are ready to engage in advanced research tasks, with an emphasis on collaboration, critical thinking, and problem-solving. Students will also gain experience in presenting and communicating their research to both technical and non-technical audiences.
Attributes: Special Approval Required

SE 4875 - Foundational Interdisciplinary Research Experience (FIRE) - Launch
1 Credit (Repeatable up to 6 credits)
FIRE Launch provides students the opportunity to move research projects into a real-world entrepreneurial context. Students will work in teams to develop, refine, and potentially commercialize their research projects in collaboration with the SLULaunch program. In this course, students will gain exposure to the process of entrepreneurship, including idea validation, product development, and market analysis. They will receive mentorship from faculty and industry professionals, learning how to navigate the complexities of launching a technology-based venture. FIRE Launch aims to bridge the gap between academic research and entrepreneurial application, empowering students to translate their discoveries into innovative solutions with market potential.
Corequisite(s): SE 2870

SE 4930 - Special Topics
1-4 Credits (Repeatable for credit)
Special Topics in Science and Engineering.

SE 4970 - Advanced Independent Research in Science and Engineering
1-3 Credits (Repeatable for credit)
Individual or small group investigation of a topic.

SE 5810 - Experiential Entrepreneurship Studio Research - I
3 Credits
The experiential research coursework will be focused on innovation in STEM-focus areas, advancement of technology, and the development of products. In an effort to focus on advancing and developing technologies and taking them to market, this experience will join practicality and theory in the classroom with real life implications through experiential and hands-on learning. EESR will combine STEM technology developed on campus or through industry partners, experience of entrepreneurs and executives in residence, and the talent, curiosity and energy of students to create an experience that will lead to the launch of new ventures and the careers of our graduates. This course will cover topics such as ideation, team formation, sourcing technology, IP management, customer discovery, accounting fundamentals, and technology advancement / lab-work.
Attributes: Special Approval Required

SE 5820 - Experiential Entrepreneurship Studio Research - II
3 Credits
The experiential research coursework will be focused on innovation in STEM-focus areas, advancement of technology, and the development of products. In an effort to focus on advancing and developing technologies and taking them to market, this experience will join practicality and theory in the classroom with real life implications through experiential and hands-on learning. EESR will combine STEM technology developed on campus or through industry partners, experience of entrepreneurs and executives in residence, and the talent, curiosity and energy of students to create an experience that will lead to the launch of new ventures and the careers of our graduates. This course will cover topics such as business models, minimum viable products (MVPS), customer discovery, financial modeling, and technology advancement / lab-work.
Attributes: Special Approval Required

SE 5830 - Experiential Entrepreneurship Studio Research - III
3 Credits
The experiential research coursework will be focused on innovation in STEM-focus areas, advancement of technology, and the development of products. In an effort to focus on advancing and developing technologies and taking them to market, this experience will join practicality and theory in the classroom with real life implications through experiential and hands-on learning. EESR will combine STEM technology developed on campus or through industry partners, experience of entrepreneurs and executives in residence, and the talent, curiosity and energy of students to create an experience that will lead to the launch of new ventures and the careers of our graduates. This course will cover topics such as customer experiences, sales, fundable technology, raising capital, pitching, operations.
Attributes: Special Approval Required

SE 5930 - Special Topics
1-4 Credits (Repeatable for credit)
Special Topics in Science and Engineering.