

South Dakota State University

Programs with Sustainability Learning Outcomes

Program	Type	Learning Outcome
Graphic Design	Certificate	<p><u>Student Learning Outcomes</u></p> <p>Upon completion of the certificate, students are able to demonstrate the following outcomes through studio projects:</p> <ul style="list-style-type: none"> • Knowledge of basic principles of design, color, concept, media and formats related to graphic design and visual communication. This includes the basic traditions, conventions and evolutions of design and digital technologies. • Effective use of typography, image, layout, motion, interactivity incorporating the principles and elements of design. • Apply skills in basic design, techniques and technology sufficient to work from concept to finished product, including printed and digital applications. • Ability to critically evaluate about one's personal designs and the designs of others with regard to usefulness, desirability, utility, economic viability and sustainability.
Graphic Design	Major	<p><u>Student Learning Outcomes</u></p> <p>Upon graduation, majors demonstrate their competence in graphic design through senior projects and create portfolios needed for competing for professional positions. As defined by the American Institute of Graphic Arts (AIGA), upon completion of the degree, students are able to demonstrate the following outcomes through advanced writing and senior portfolio:</p> <ul style="list-style-type: none"> • Knowledge of design principles, theories, and history. • Knowledge of how visual communication is planned, produced and distributed. • Practice in new approaches to generate innovative visual communication solutions. • Ability to construct narratives and scenarios in the creation of the design solutions. • Effective use of typography, image, layout, motion, interactivity, and the principles and elements of design. • Practice of critical evaluation about one's own designs and the designs of others with regard to usefulness, desirability, feasibility, economic viability and sustainability. • Ability to work independently while learning and apply new technologies.
Civil Engineering	Major	<p><u>Student Learning Outcomes</u></p> <p>The program's mission and educational objectives are accomplished by providing undergraduate students with an educational program that will result in the following outcomes by the time of graduation:</p> <ol style="list-style-type: none"> a. an ability to apply knowledge of mathematics, science, and engineering b. an ability to design and conduct experiments, as well as to analyze and interpret data c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability d. an ability to function on multi-disciplinary teams e. an ability to identify, formulate, and solve engineering problems f. an understanding of professional and ethical responsibility g. an ability to communicate effectively

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		<p>h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context</p> <p>i. a recognition of the need for, and an ability to engage in lifelong learning</p> <p>j. a knowledge of contemporary issues</p> <p>k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.</p>
Civil Engineering	PhD	<p><u>Program Objectives</u></p> <p>The Ph.D. program's objectives are to prepare graduates to:</p> <ol style="list-style-type: none"> 1. Generate and disseminate new discovery in civil engineering disciplines 2. Develop resilient civil engineering infrastructure to withstand man-made and natural hazards 3. Advance sustainable civil engineering systems to serve the needs of future generations and preserve natural resources
Mechanical Engineering	Major	<p><u>Student Learning Outcomes</u></p> <p>Upon completing the Mechanical Engineering program, the student outcomes are:</p> <ol style="list-style-type: none"> a. an ability to apply knowledge of mathematics, science, and engineering b. an ability to design and conduct experiments, as well as to analyze and interpret data c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability d. an ability to function on multi-disciplinary teams e. an ability to identify, formulate, and solve engineering problems f. an understanding of professional and ethical responsibility g. an ability to communicate effectively h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context i. a recognition of the need for, and an ability to engage in lifelong learning j. a knowledge of contemporary issues k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
Sustainable Energy Systems	Minor	<p><u>Student Learning Outcomes</u></p> <p>Students completing the minor must understand how energy is produced, the fundamentals of energy conversion and efficiency, and demonstrate technical expertise in some area of sustainable energy systems. Upon completion of the minor, the student will be able to:</p> <ul style="list-style-type: none"> • Apply mathematics and engineering science to the analysis of energy conversion systems. • Understand and apply the concept of sustainability to the design of energy conversion systems. • Demonstrate competency in analysis and design of a particular type of energy converting device or system. • Demonstrate the ability to work effectively in an area of sustainable energy systems.
Interior Design	Major	<p>To expose students to contemporary issues affecting interior design, including the understanding of the concepts principles and theories of sustainability.</p>

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		The program has more learning outcomes, which are not listed here.
Agricultural & Biosystems Engineering	Major	<p><u><i>Student Learning Outcomes</i></u></p> <p>a. Graduates of the Agricultural and Biosystems Engineering program will:</p> <p>b. an ability to apply knowledge of mathematics, science, and engineering;</p> <p>c. an ability to design and conduct experiments, as well as to analyze and interpret data;</p> <p>d. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;</p> <p>e. an ability to function on multi-disciplinary teams;</p> <p>f. an ability to identify, formulate, and solve engineering problems;</p> <p>g. an understanding of professional and ethical responsibility;</p> <p>h. an ability to communicate effectively;</p> <p>i. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context;</p> <p>j. a recognition of the need for, and ability to engage in life-long learning;</p> <p>k. a knowledge of contemporary issues;</p> <p>l. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.</p>