Southern Illinois University Carbondale

STARS Credit AC-2: Learning Outcomes

Total Southern Illinois University Graduates, 2018-2019: (FY2019): 4226
Graduates with Degrees from Programs with Sustainability Learning Outcomes: 304

Degree Programs with Sustainability Learning Outcomes:

Department: Architecture **– B.S.**
The four-year curriculum in architectural studies offers the beginning level of education for those who intend to pursue a career in the profession or a related field. A structured sequencing of courses is included which provides for a gradual interactive development of required knowledge and skills. This pre-professional preparation is combined with the core curriculum courses to provide a comprehensive scholarly foundation for advancement.

Program Goals
Goal 1: To provide educational opportunities that prepare students for effective and productive careers in the professions of architecture, fashion design and merchandising, and interior design. Toward this goal, the School offers three undergraduate programs leading to the degrees Bachelor of Science in Architectural Studies, Bachelor of Science in Fashion Design and Merchandising, and Bachelor of Science in Interior Design.
Goal 2: To conduct research related to the discovery, innovation, and development of methods, technologies, and historical understanding that improves the practice of Architecture, Fashion Design and Merchandising, and Interior Design and related areas of endeavor; to complete creative activities that engages the Faculty in the practice of architecture, fashion design and merchandising, interior design, and kindred subjects. Research and creative activities are essential functions of the Faculty. The Faculty conducts research in theoretical and applied aspects of architecture, fashion design and merchandising, and interior design, the practice of the professions of architecture, fashion design and merchandising, and interior design, historical and cultural understanding of those professions, interdisciplinary research exposing relationships with other areas of study or professional practice, and in areas related to the teaching of the professions. The Faculty conducts activities that enhance productivity in the areas of research, creative activity, and teaching. In addition, the Faculty completes peer-reviewed creative activities of varying scope and complexity that engages the Faculty in the practice of architecture, fashion design and merchandising, interior design, or in related areas.
Goal 3: To provide service to the University, the people of our region, and to the professions of architecture, fashion design and merchandising, and interior design. The Faculty participates in the governance of the University through a variety of committees and organizations at the School, College, and University levels. In addition, the School provides support to a number of profession-related student organizations. Service to the region is accomplished through active participation and membership in community organizations, providing outreach and educational activities in the region, and by providing consultation on matters related to architecture, fashion design and merchandising, and interior design. Service to the professions is accomplished through active participation and membership in professional groups, associations, and societies, as well as by presentation and publication of papers and programs with and related to the concerns of those organizations.

Program Student Learning Outcomes/Objectives (SLOs)
Note: due to a large number of SLOs within this department, we have only included an excerpt here.
SLO14 B. 3: Sustainability: Ability to design projects that optimize, conserve, or reuse natural and built resources, provide healthful environments for occupants/users, and reduce the environmental impacts

of building construction and operations on future generations through means such as carbon-neutral design, bioclimatic design, and energy efficiency.
SLO15 B. 4: Site Design: Ability to respond to site characteristics such as soil, topography, vegetation, and watershed in the development of a project design.
SLO17 B. 6: Comprehensive Design: Ability to produce a comprehensive architectural project that demonstrates each student's capacity to make design decisions across scales while integrating the following SPCs: • A.2. Design Thinking Skills • A.4. Technical Documentation • A.5. Investigative Skills • A.8. Ordering Systems • A.9. Historical Traditions and Global Culture • B.2. Accessibility • B.3. Sustainability • B.4. Site Design • B.5. Life Safety • B.8. Environmental Systems • B.9. Structural Systems
SLO18 B. 8: Environmental Systems: Understanding the principles of environmental systems' design such as embodied energy, active and passive heating and cooling, indoor air quality, solar orientation, daylighting and artificial illumination, and acoustics; including the use of appropriate performance assessment tools.

Department: Architecture**– Master of Architecture**
The Master of Architecture program at Southern Illinois University is a combined undergraduate Bachelor of Science in Architectural Studies and Graduate professional program leading to the accredited Master of Architecture degree. Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree that, when earned sequentially, constitute an accredited professional education.

We are proud of our broad-based program which focuses on the study of:
the architecture of the Upper Mississippi Delta Region
global architecture
the development of technical tools that will achieve excellence in architecture
ecologically responsive architecture

Students are required to develop their individual research theses and/or design projects augmented by selected seminars and interdisciplinary courses.

Program Goals
Goal 1: To provide educational opportunities that prepare students for effective and productive careers in the professions of architecture, fashion design and merchandising, and interior design. Toward this goal, the School offers three undergraduate programs leading to the degrees Bachelor of Science in Architectural Studies, Bachelor of Science in Fashion Design and Merchandising, and Bachelor of Science in Interior Design.
Goal 2: To conduct research related to the discovery, innovation, and development of methods, technologies, and historical understanding that improves the practice of Architecture, Fashion Design and Merchandising, and Interior Design and related areas of endeavor; to complete creative activities that engages the Faculty in the practice of architecture, fashion design and merchandising, interior design, and kindred subjects. Research and creative activities are essential functions of the Faculty. The Faculty conducts research in theoretical and applied aspects of architecture, fashion design and merchandising, and interior design, the practice of the professions of architecture, fashion design and merchandising, and interior design, historical and cultural understanding of those professions, interdisciplinary research exposing relationships with other areas of study or professional practice, and in areas related to the teaching of the professions. The Faculty conducts activities that enhance productivity in the areas of research, creative activity, and teaching. In addition, the Faculty completes

peer-reviewed creative activities of varying scope and complexity that engages the Faculty in the practice of architecture, fashion design and merchandising, interior design, or in related areas.
Goal 3: To provide service to the University, the people of our region, and to the professions of architecture, fashion design and merchandising, and interior design. The Faculty participates in the governance of the University through a variety of committees and organizations at the School, College, and University levels. In addition, the School provides support to a number of profession-related student organizations. Service to the region is accomplished through active participation and membership in community organizations, providing outreach and educational activities in the region, and by providing consultation on matters related to architecture, fashion design and merchandising, and interior design. Service to the professions is accomplished through active participation and membership in professional groups, associations, and societies, as well as by presentation and publication of papers and programs with and related to the concerns of those organizations.
Program Student Learning Outcomes/Objectives (SLOs)
Note: due to a large number of SLOs within this department, we have only included an excerpt here.

SLO14 B. 3: Sustainability: Ability to design projects that optimize, conserve, or reuse natural and built resources, provide healthful environments for occupants/users, and reduce the environmental impacts of building construction and operations on future generations through means such as carbon-neutral design, bioclimatic design, and energy efficiency.
SLO15 B. 4: Site Design: Ability to respond to site characteristics such as soil, topography, vegetation, and watershed in the development of a project design.
SLO17 B. 6: Comprehensive Design: Ability to produce a comprehensive architectural project that demonstrates each student's capacity to make design decisions across scales while integrating the following SPCs: • A.2. Design Thinking Skills • A.4. Technical Documentation • A.5. Investigative Skills • A.8. Ordering Systems • A.9. Historical Traditions and Global Culture • B.2. Accessibility • B.3. Sustainability • B.4. Site Design • B.5. Life Safety • B.8. Environmental Systems • B.9. Structural Systems
SLO18 B. 7: Financial Considerations: Understanding of the fundamentals of building costs, such as acquisition costs, project financing and funding, financial feasibility, operational costs, and construction estimating with an emphasis on life-cycle cost accounting.
SLO19 B. 8: Environmental Systems: Understanding the principles of environmental systems' design such as embodied energy, active and passive heating and cooling, indoor air quality, solar orientation, daylighting and artificial illumination, and acoustics; including the use of appropriate performance assessment tools.

Department: Biology - B.S.
The Biological Sciences B.S. program offers specializations in Biology Education (for student seeking licensure as secondary biology teachers), Biomedical Science (for students seeking to enter the human health professions), and Ecology (for students planning graduate work in community or ecosystem ecology). The Biological Sciences Program also offers core courses for all life science majors at SIUC, along with a UCC course in the Human Health area.

Program Goals
Goal 1: Provide majors with coursework and mentoring in Biology Education. This specialization is for students seeking Illinois licensure as secondary (6-12) science teachers with a designation in biology. Requirements of the track are aligned with standards for biology teachers developed by the Illinois State Board of Education and the National Science Teachers Association. Students must be admitted to SIUC's

STARS Credit AC-2: Learning Outcomes

Teacher Education Program and complete the University Core Curriculum (UCC), science requirements, and a professional education sequence. The BS is conferred by the College of Education and Human Services. This track serves the documented need for qualified biology teachers in Illinois and the U.S.
Goal 2: Provide majors with coursework and mentoring in Biomedical Science. This specialization is for students seeking entry into health-care professions and/or research careers in biomedicine. It was designed to match the requirements for admission to medical school, but is broadly applicable to other professional- and graduate-school programs in human health and biomedical research. The track serves the documented need for health care workers and researchers in Illinois and the U.S.
Goal 3: Provide majors with coursework and mentoring in Ecology. This specialization is for students seeking interdisciplinary preparation for research careers in community, ecosystem, restoration, landscape, and global ecology, as well as environmental biology and natural resources management. Requirements prepare students for graduate study in any of these disciplines. The track serves the documented need for ecologists with interdisciplinary training to understand and respond to global environmental change.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Content Knowledge. Biological Sciences majors will demonstrate competence in most of the following core subjects: introductory biology, evolutionary biology, genetics, cell biology, ecology, developmental biology.
SLO2: Professional Skills. Biological Sciences majors will demonstrate the following abilities: reading comprehension of biological literature; application of content knowledge to solve problems in biology; quantitative reasoning about biology; written and oral communication about biology; use of computer technology relevant to biology.
SLO3: Professional Dispositions. Biological Sciences majors should demonstrate the following characteristics: professionalism, including personal responsibility and academic ethics; collaboration with diverse peers and professional colleagues; commitment to personal growth in the profession, including life-long learning.

Department: Civil and Environmental Engineering - B.S.
In accordance with the university and college mission statements, the Department of Civil and Environmental Engineering has worked with its constituency groups to establish a mission statement, a vision statement, and a values statement that support education in our profession. Vision: We envision a productive synergy between traditional and innovative research and teaching in Civil and Environmental Engineering. Our focus in education and research will be in the areas of environmental engineering, water resources engineering, structural engineering, geotechnical engineering, and surveying. We foresee being a Department comprised of approximately 15 faculty that are recognized for their dedication to excellence in teaching and research/scholarship in these areas. Enrollment in the undergraduate and graduate programs will approach 300 and 60 students, respectively, and the Department will approach a target of $1.0 million in annual research expenditures, derived primarily through collaborative and interdisciplinary research encompassing sustainable infrastructure systems.

Program Goals
Goal 1: Our graduates will be able to apply technical knowledge and skills to formulate solutions to problems that are fundamental to civil engineering analysis and design.
Goal 2: Our graduates will be prepared to successfully pursue advanced degrees.

Southern Illinois University Carbondale

STARS Credit AC-2: Learning Outcomes

Goal 3: Our graduates will understand the value of public health, safety and welfare, professional ethics, and the sustainable use of resources.
Goal 4: Our graduates will recognize and value the importance of professional licensure, the need for life-long learning, and their contribution in shaping public environmental and infrastructure policy.
Goal 5: Our graduates will possess the skills necessary to contribute to multidisciplinary teams.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Graduates will demonstrate how mathematics and the sciences together are used in the analysis, modeling and understanding of engineering systems, processes and/or facilities.
SLO2: Graduates will recognize the variable nature of experimentally determined values and be able to perform data reduction as well as interpret and use experimental data with the appropriate statistical analysis.
SLO3: Graduates will have the ability to generate multiple design solutions based on specified criteria in compliance with appropriate standards and relevant constraints, and select the most appropriate design and document the design solution.
SLO4: Graduates will have the ability to work with and lead a multi-disciplinary team and employ teamwork principles.
SLO5: Graduates will have the ability to construct a problem statement as well as solve defined and open-ended engineering problems with an understanding of risk and uncertainty.
SLO6: Graduates will interpret and apply ethical standards and responsibilities as demanded by the civil engineering profession and defined by the ASCE and NSPE Codes of Ethics.
SLO7: Graduates will prepare effective written and graphical communications and make effective formal presentations.
SLO8: Graduates will have a background in social science and humanities that provides them with a foundation for understanding the impact of engineering solutions in a global, economic, environmental, and societal context.
SLO9: Graduates will recognize that a BSCE degree is the beginning of their professional career, and will recognize the importance of life-long learning, professional licensure, and their contribution in shaping public policy.
SLO10: Graduates will demonstrate the knowledge of sustainable use of resources and be aware of emerging technologies and professional practice issues important for civil engineering practitioners.
SLO11: Graduates will demonstrate competence in the use of modern engineering tools necessary for engineering practice.

Department: Civil and Environmental Engineering - M.S.
The mission of the Department is to provide educational opportunities that will prepare students for effective and productive careers in the Civil Engineering profession. The profession is characterized by continued professional growth, research related to the discovery, innovation and development of technologies and methods that improve the practice of Civil Engineering and related areas, and service to the university, society and the profession of Civil Engineering. This contributes significantly to the University's research and service mission through engineering education and advancement activities. Technological problem solving and academic skills developed through department activities are central to the University mission. The service component of the mission is through professional training, education and service in Civil Engineering.

Program Goals

Southern Illinois University Carbondale

STARS Credit AC-2: Learning Outcomes

Goal 1: Develop in the students an ability to articulate and synthesize knowledge in one or more of the following specialty areas of Civil Engineering: Environmental, Geotechnical, Hydraulics and Water Resources, Structural, Engineering Materials, and Engineering Mechanics.
Goal 2: Develop in the students an ability to conduct directed research or complete a portion of a real-world project in their area of specialization.
Goal 3: Develop in the students an ability to effectively communicate their research results or project design to peers and faculty members.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Ability to articulate and synthesize knowledge
SLO2: Ability to conduct directed research or complete a portion of a real-world project
SLO3: Ability to effectively communicate their research results or project design

Department: Environmental Resources & Policy - Ph.D.
Students who complete the Ph.D. program will have acquired an advanced understanding of the interrelationships among human beings, environmental systems, and public policy impacting the environment. Furthermore, they will have demonstrated the ability to think independently and critically as a problem solver with the capacity to design and carry out independent and original research. They will be capable of generating new scientific or policy-relevant knowledge and be able to make important decisions related to the interaction between people and the physical environment. They will also demonstrate habits of critical analysis, effective dialogue, scholarship and professionalism.

Program Goals
Goal 1: The student will demonstrate an advanced understanding of the primary environmental problems that societies face, the causes of those problems, and the public policy processes through which societies try to solve them.
Goal 2: The student will demonstrate the ability to apply appropriate analytic skills including the use of primary and secondary resource materials, appropriate techniques of research design, data acquisition and statistical/numerical analysis, and the ability to derive evaluations and conclusions consistent with the available data and results of data analysis.
Goal 3: The student will exhibit professional communicative skills in reporting scientific results in both written and oral formats.
Goal 4: The student will demonstrate conduct that will promote success as a professional.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Students will demonstrate an advanced understanding of the scope and societal relevance of environmental problems.
SLO2: Students will demonstrate an advanced ability to comprehend the environmental problems and to critically appraise the associated scientific arguments.
SLO3: Students will demonstrate an advance understanding of critical issues and analytical approaches in environmental sciences and policy.
SLO4: Students will demonstrate the ability to identify a research problem, design and implement a research strategy and an ability to develop multiple working hypotheses about the problem to formulate new methodology(s) for rigorous hypothesis testing.

Southern Illinois University Carbondale

STARS Credit AC-2: Learning Outcomes

SLO5: Students will demonstrate the ability to design a dissertation proposal that specifies hypotheses to be tested, data to be collected, a methodology for data collection and a strategy for data analysis based on appropriate statistical/numerical methods.
SLO6: Students will demonstrate the ability to apply research tools through the preparation and defense of original research in the student's dissertation.
SLO7: Students will demonstrate the ability to communicate orally through their performance as teaching assistants in appropriate courses and during their presentation in seminar courses.
SLO8: Students will demonstrate the ability to use written and oral communication at a standard used in research journals and professional meetings.
SLO9: Students will learn to take individual responsibility and to become reliable.
SLO10: Students will display professional and intellectual activity by displaying an "intellectual life" appropriate to a professional and a researcher.
SLO11: Students will demonstrate the ability to set professional goals and pursue those goals by acquiring the necessary educational background and networking with leading professionals in the selected field by communication and information exchange.

Department: Forestry - B.S.
The mission of the Department of Forestry at SIU is to foster responsible stewardship of forest resources in Illinois, the Midwest, the Nation, and the world. In pursuit of this mission, the departmental faculty engage in a coordinated program of teaching, research, and service that is dedicated to developing and disseminating appropriate technology, practices, and information. Priorities include maintaining national accreditation by the Society of American Foresters.

Program Goals
Goal 1: The Department will provide a comprehensive, relevant, and interdisciplinary education that prepares students for active roles in the diverse profession of forestry.
Goal 2: SIU Forestry strives to engage our constituents from the forestry profession, regionally, nationally, and internationally, to help define the parameters and guide the modifications of our curricula that reflect changing social, environmental, economic, and ethical values and needs.
Goal 3: The faculty and staff of the Department seek to effectively provide the coursework, mentoring, and educational environment needed for students to develop the skills, abilities, and attitude to gain entry into Forestry as a profession.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Utilize modern technologies, skills, and tools in the practice of forest management.
SLO2: Understand the scientific, social, political, and economic framework within which the forestry professional must operate.
SLO3: Listen, write, and speak effectively and apply communication skills in the context of modern forestry.
SLO4: Recognize that forest resources are important to the long-term welfare of society and that foresters must maintain the highest professional and ethical standards.

Department: Forestry - M.S.
The mission of the Department of Forestry at SIU is to foster responsible stewardship of forest resources in Illinois, the Midwest, the Nation, and the world. In pursuit of this mission, the departmental faculty

engage in a coordinated program of teaching, research, and service that is dedicated to developing and disseminating appropriate technology, practices, and information.

Program Goals
Goal 1: The Department will provide a comprehensive, relevant, and interdisciplinary education that prepares students for active roles in the diverse profession of forestry.
Goal 2: SIU Forestry strives to engage our constituents from the forestry profession, regionally, nationally, and internationally, to help define the parameters and guide the modifications of our curricula that reflect changing social, environmental, economic, and ethical values and needs.
Goal 3: The faculty and staff of the Department seek to effectively provide the coursework, mentoring, and educational environment needed for students to develop the skills, abilities, and attitude to gain entry into Forestry as a profession.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Utilize modern technologies, skills, and tools in the practice of forest management
SLO2: Understand the scientific, social, political, and economic framework within which the forestry professional must operate.
SLO3: Listen, write, and speak effectively and apply communications skills in the context of modern forestry.
SLO4: Recognize that forest resources are important to the long-term welfare of society and that foresters must maintain the highest professional and ethical standards.

Department: Geography and Environmental Resources - B.S.
The primary mission of the Department of Geography and Environmental Resources is the dissemination of fundamental concepts in Geography through the teaching of undergraduate courses. In addition, the department focuses on three main areas or concentrations within geography: Climate and Water Resources, Geographic Information Science, and Environmental Sustainability. All areas of Geography are intended to reinforce general undergraduate education at Southern Illinois University Carbondale through the promotion of appropriate oral and written communication and analytical skills. The use of primary and secondary resource materials and the teaching of techniques of data analysis, including the derivation and evaluation of conclusions consistent with class assignments and assigned projects, is viewed as an integral part of the undergraduate teaching mission of this department.

Program Goals
Goal 1: Provide our student with the knowledge of the major biophysical and social patterns in the world and the key drivers which produce these patterns;
Goal 2: Help our students learn how to identify and use geospatial techniques to analyze spatial data for environmental problem-solving or modeling;
Goal 3: Teach our student the skills to critically analyze geospatial problems, develop research questions, and conduct research; and
Goal 4: Help our student develop effective written and verbal communication skills.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Knowledge of physical, natural, and cultural worlds (Goal 1)
SLO2: Proficiency in information literacy and evaluating sources and evidence (Goals 2 and 3)
SLO3: Problem Solving (Goal 2)

Southern Illinois University Carbondale

STARS Credit AC-2: Learning Outcomes

SLO4: Inquiry and analysis (Goal 3)
SLO5: Written and Verbal Communication (Goal 4)

Department: Geography and Environmental Resources - M.S.
To develop an advanced understanding of the primary environmental problems facing societies and develop research skills among graduate students. Emphasis is placed on teaching graduate students to gather, describe, and analyze data through the use of advanced techniques. The skills are used to develop and execute research projects consistent with graduate school criteria for the awarding of graduate degrees.

Program Goals
Goal 1: For our MS program, we have established learning objectives that allow us to assess the success of our students in terms of our performance indicators. These objectives and their corresponding Indicators and means of Evaluation are noted below. For each objective, success is measured as earning 80% or higher (grade of B) for at least 70% of students.
Goal 2: Overall, we expect students who complete the MS in Geography and Environmental Resources to demonstrate competence in the concepts of geography and of the subject matter of their research specialization, competence in research methods, and professional conduct, as follows: They must complete a thesis or research paper that demonstrates the ability to identify a research problem, design and implement a research strategy, and report on the research results using standards of written and oral communication applied in research journals and professional meetings. They should attend and participate in professional meetings, as appropriate. They must display behavior that is appropriate in the professional world, including attending required classes and other appointments, completing course and graduate assistantship assignments, courtesy, showing initiative and creativity in research endeavors, displaying an "intellectual life" appropriate to a professional and researcher.

Program Student Learning Outcomes/Objectives (SLOs)
SLO1: Knowledge of geographic techniques. GEOG 401 and 404 are required of all incoming MS students who are deficient in geographic techniques. Indicator: Performance on course exams Evaluation: Competency in statistical techniques as measured by homework assignments in GEOG 404; competency in GIS skills as measured in lab exercises in GEOG 401.
SLO2: Identify and develop a Masters level thesis/research paper project in GEOG 500 and 501. Indicator: Completion of a written thesis/research paper proposal (including a robust methodology) and presentation to the faculty. Evaluation: Proposal will be written in the format accepted by the National Science Foundation (NSF) and will be evaluated in accordance with these specifications. Proposals are reviews by the GEOG 500 and 501 instructors, the student's advisor and committee. Presentations are held before the entire faculty.
SLO3: Execute the proposed research project (GEOG 593 and 599) Indicator: Thesis research is accomplished in close collaboration with the MS faculty advisor. Given that student needs vary and advisors' styles vary, the criteria to meet this objective will vary. Nevertheless, there are commonalities: students hold periodic informal meetings with their advisor. Frequency of meetings is congruent with individual students' needs. Evaluation: Written communication skills are assessed to evaluate whether the thesis has the appropriate elements: Is there a sufficient literature review? Is there a sharp research question? Is appropriate methodology (identified in Objective 2) being carried out? Are conclusions valid based on the research completed?

Southern Illinois University Carbondale

STARS Credit AC-2: Learning Outcomes

SLO4: Successful public defense of the thesis/research paper project. Indicator: The culmination of the research project is the public thesis/research paper defense. Evaluation: Evaluation of oral communication skills. Students must show the ability to answer questions related to the thesis/research paper.

Department	Number of Undergraduate Degrees Conferred	Number of Graduate Degrees Conferred	Number of Certificates Awarded
Architecture	43	33	
Biology	88		
Civil and Env Engineering	51	15	
Environmental Resources and Policy		4	
Forestry	54	8	
Geography and Environmental Resources	7		1
Total	243	60	1
Grand Total	304		