Program Assessment Plan
(Draft)

Center for Sustainability
Saint Louis University

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SAINT LOUIS UNIVERSITY

CENTER FOR SUSTAINABILITY

STUDENT OUTCOMES

Student Outcomes Definition:

Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program. Per the Higher Learning Commission and PAB requirements, program must have documented student outcomes that prepare graduates to attain the program educational objectives.

A. Student Outcomes

Master of Science in Sustainability Program:

Graduates of the Master of Science in Sustainability Program at Saint Louis University will be able to:

a) Define sustainability in terms of its evolution throughout a variety of social sectors
b) Identify how the concept of sustainability is connected to issues of social justice, environment protection, and economic viability
c) Compare and contrast a variety of theories and models of sustainability
d) Describe the history and evolution of sustainable development, sustainability, and sustainability science
e) Discuss key theoretical and methodological concepts and terminology associated with sustainability
f) Identify how local, regional, and national policies and actions have global impacts
g) Apply appropriate research design consisting of qualitative, quantitative, and/or spatial research methods to address sustainability problems
h) Demonstrate effective written and oral communication skills needed to disseminate information about sustainability among diverse audiences
i) Communicate effectively outside of one's respective disciplinary field
j) Apply a variety of practices and approaches for working effectively on transdisciplinary teams
k) Identify frameworks for collaborating with diverse stakeholders on sustainability issues
l) Examine resource limitations and opportunities and develop holistic and integrated approaches to resource management
m) Assess how laws, governance, and institutional approaches inform effective policy making and implementation
n) Evaluate environmental, economic, and social impacts of real-world projects.
o) Explain theoretical and practical concepts associated with sustainability science research approaches

Master of Science in Urban Planning and Development Program:

Graduates of the Master of Science in Urban Planning and Development Program at Saint Louis University will be able to:

a) The ability to blend a body of knowledge around planning and human settlement with continuous learning.
b) The ability to utilize financial and other analytical techniques to understand, evaluate, and estimate the impact of planning and development scenarios and outcomes.
c) The ability to demonstrate an understanding of social responsibility in planning and development.
d) The ability to develop creative strategies to address challenging planning and development scenarios.
e) The ability to utilize technology to perform complex analytical tasks in order to understand, evaluate, and estimate the impact of planning and development scenarios and outcomes.
f) The ability to demonstrate conceptual and technical expertise regarding a selected planning specialization.
g) The ability to use data to inform both public and private-sector decision-making as it relates to planning and human settlement.

Master of Science in Geographic Information Science Program:

Graduates of the Geographic Information Science Program at Saint Louis University will be able to:

a) Define Geographic Information Science in terms of its key scientific themes and fields of application.
b) Discuss how GIS and remote sensing is used to investigate problems related to sustainability and environmental science.
c) Demonstrate effective written and oral communication skills needed to disseminate geographic information.
d) Apply appropriate research design methods to address problems that are germane to the field of GIScience and applied geospatial analysis.
e) Demonstrate practices and approaches for working effectively on team-based projects.
f) Demonstrate effective cartographic/geovisualization skills employing principles of map design and graphic representation techniques.
g) Demonstrate knowledge of geospatial data in terms of Earth geometry, georeferencing systems, map projections, data quality, and metadata standards and practice.
h) Compare and contrast different approaches to geospatial data modeling involving vector, raster, or hybrid representations.
i) Demonstrate the use of relational database management systems as applied to geospatial data.
j) Apply geometric measurement techniques to quantify distance, direction, shape, area, proximity, and connectivity of geospatial features.

k) Apply basic analytical operations involving buffering, overlays, and map algebra.
l) Apply advanced analytical methods including point pattern analysis, kernel density estimation, spatial cluster detection, network analysis, and multi-criteria evaluation.
m) Apply surface analysis techniques to effectively represent continuous surfaces, calculate surface derivatives, analyze surface flow, and analyze intervisibility.
n) Apply spatial statistics and geostatistics involving measures of spatial autocorrelation and spatial interpolation techniques.
o) Explain the principles of active and passive remote sensing observation.
p) Describe and interpret remote sensing spectra and imagery.
q) Perform supervised, unsupervised and object based classification techniques using remote sensing data.
r) Apply image processing techniques including radiometric correction, atmospheric correction, change detection, target detection, data fusion.

CONTINUOUS IMPROVEMENT

Definitions

- *Assessment* is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods may be used as part of an assessment process.
- *Evaluation* is one or more processes for interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which student outcomes are being attained. Evaluation results in decisions and actions regarding program improvement.

A program must regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations must be systematically utilized as input for the continuous improvement of the program. Other available information may also be used to assist in the continuous improvement of the program.

A. Assessment and Evaluation of Student Outcomes

This section documents the processes for regularly assessing and evaluating the extent to which the student outcomes are being attained programs in the Center for Sustainability at Saint Louis University. A schematic of the continuous improvement process is shown by Figure 4-1. The overall continuous improvement process involves the following major components:

- Course evaluation (shown in blue): each time a course is offered, students are surveyed regarding the achievement of the student learning outcomes of the course that are included in each syllabus. Based on the student surveys and observations of the instructor, a Faculty Course Evaluation form is used to document continuous improvement of the class. Appendix ? contains an example faculty course evaluation form.
- Faculty Review (shown in orange): Faculty has the opportunity to review the program student outcomes, and curriculum at monthly meetings.
- Industry, Student, and Alumni Review (shown in green): Industry feedback is obtained from the program Advisory Board and from Employer Surveys. Student feedback is obtained at an annual town-hall meeting and alumni feedback is obtained from Alumni Surveys.
- Annual Outcome Assessment and Evaluation (shown in red): Each year, faculty will meet to evaluate student outcome achievement and program continuous improvement.

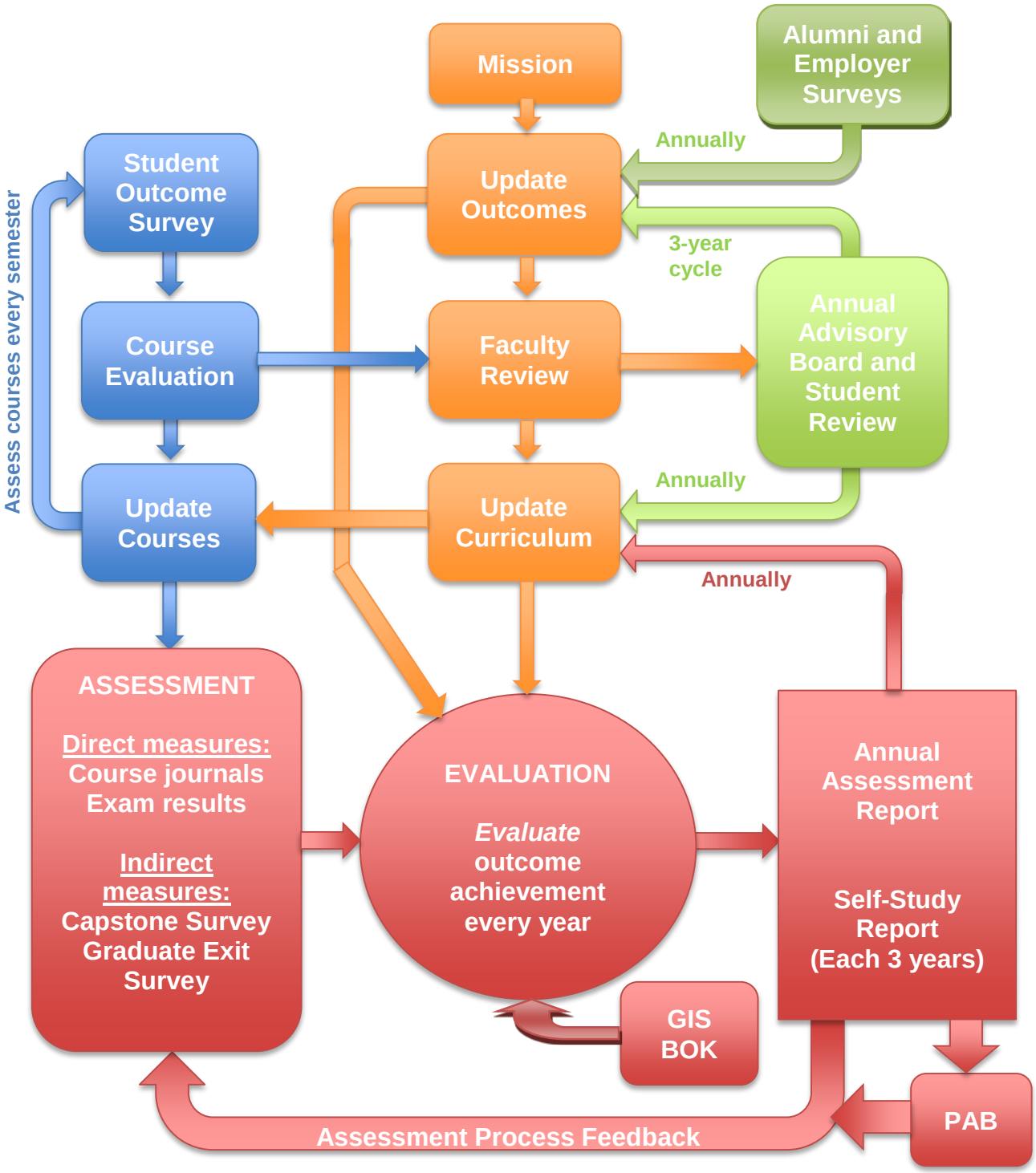

Figure 4-1: The Continuous Improvement Process

- Finally, the assessment and evaluation process can be revised through feedback from the faculty, PAB reviews, and resulting from revisions to the GIS Body of Knowledge (see bottom of the red section of Figure 4-1).

Effective data collection is a function of clearly defined performance criteria for each outcome. The methods used for collection of data can be classified as *Direct Methods* and *Indirect Methods*. The list of both direct and indirect methods used for the assessment and evaluation of the student outcomes are given below and are shown in the Figure 4-1.

Direct Methods

- Course journals (papers, exams, essays, projects, labs, evaluation of Capstone Projects by industry representatives etc...)
- Standardized exams (APA exam)

Indirect Methods

- Capstone surveys
- Graduate exit surveys

The following sections describe how these direct and indirect methods were used for assessment and evaluation of outcomes.

Assessment and Evaluation of Student Outcomes Using Course Journals

Our primary direct method for assessing and evaluating student outcomes involves faculty examination of graded papers, exams, essays, projects, and reports from the required courses in the program. A course journal is collected for each class every semester it is taught. In non-accreditation years, these course journals are collected electronically and are made available for all faculty to review on a shared departmental drive. In PAB review years, course journals are collected in printed and bound notebooks that will be available during the site visit.

Note: the first data collection for program assessment will start in the 2016-17 academic year. The first program assessment using this data will take place in the Spring of 2017.