

## **Graduate Certificate, Geographic Information Systems, (Community and Regional Planning)**

### **I. Mission Statement**

The Graduate Certificate in Geographic Information Systems (GIS) is an interdepartmental program developed to reinforce, broaden, and integrate GIS education into the curriculum and make ISU responsive to educational demands of a growing and advancing field in the information sciences.

The curriculum for the GIS Certificate program is designed to help students accomplish the following:

- Understand the principles (theory) and methodologies of GIS with emphasis on applications.
- Develop technical competence in creating, implementing and managing GIS databases.
- Apply spatial statistics and geo-visualization techniques and theory (principles), and understand how they are best used and interpreted.
- Apply conceptual and technical knowledge to a real-world research problem by selecting courses related to each student's area of interest.
- Describe the appropriate role of the professional and ethical standards in GIS.

### **II. Assessment Goals, Measures, Results and Changes**

Upon completion of the program, students are expected to develop the following knowledge and skills:

- 1) Foundations of GIS**
  - Understand the fundamental principles (theory) and concepts upon which GIS technology is based
  - Explain clearly the principles underlying spatial analysis in its common variations
- 2) GIS Tools and Techniques**
  - Acquire hands-on technical proficiency with several different GIS software
  - Develop skills and strategies in database management
  - Demonstrate high level skills in spatial problem solving and spatial analysis
  - Design maps that communicate effectively
- 3) GIS Applications**
  - Select courses related to their area of interest
  - Apply their conceptual and technical knowledge to a real-world research problem
  - Design and implement a substantial GIS project
  - Evaluate the accuracy and limitations of GIS
- 4) GIS Seminar**
  - Describe applications of GIS technology in different professions and disciplines, including public agencies, private industry and academic research
  - Understand recent and ongoing advances in GIS
  - Effectively communicate and present project deliverables

#### **Selected Relevant Required courses**

3 credits from the pool of Foundations of GIS courses, including

- CRP 551 Introduction to Geographic Information System

6 credits from the pool of GIS Tools and Techniques courses, including

- CRP 552 Geographic Data Management and Planning Analysis
- CRP 553 Analytical Planning and Visualization with GIS

3 credits from the pool of GIS Application courses, including

- CRP 590 Special Topics - Geographic Information Systems

1 credit in the following GIS Seminar

- CRP 595 Seminar in GIS Applications and Research