

North Central Michigan College

NCMC MASTER COURSE SYLLABUS

Last Date Revised 8/6/10

INSTRUCTIONAL AREA: Liberal Arts

DEPARTMENT: Geographic Information Systems

ASSOCIATE DEAN: Samantha McLin

ORIGINATOR: Kurt Yuengling

DEAN OF INSTRUCTION: Christine Hammond, Ph.D.

COURSE ALPHA/NUMBER: GIS 150

COURSE TITLE: Global Positioning Systems

HOURS OF INSTRUCTION: 3

Credit hours: 3

Lecture: 3

Lab: 0

Clinical: 0

Variable Hours: 0

Total Hours of Instruction: 52.8

Total Contact Hours: 52.8

(Total Contact Hours Formula: (lecture hours + lab hours) x 17.6

CATALOG DESCRIPTION: A study of the technology and uses of Global Positioning Systems (GPS). This course is intended as a foundation for students who will be working with GPS units or GPS data in their studies or employment. Topics covered will include the basic components of GPS, gathering positional data, assessing data quality, applications of GPS, and the future of GPS. Students will personally gather, process, and use GPS data using current technology and software applications.

PREREQUISITE(S): None

COREQUISITE(S): None

GENERAL EDUCATION DISTRIBUTION AREA:

Communications, Writing

Natural Science Group A

Communications, Communications

Natural Science Group B

Humanities Group A

Social Science Group A

Humanities Group B

Social Science Group B

Mathematics

Non Applicable

GENERAL EDUCATION OUTCOMES:

Write and Speak Effectively

Think Critically & Analytically

Write & Speak Effectively and Think Critically & Analytically

Non Applicable

COURSE OBJECTIVES AND OUTCOMES:

1. Demonstrate knowledge of the technology used with global positioning systems (GPS).
2. Explain the uses, limitations, errors, and overall quality of GPS data.
3. Successfully gather position data and navigate using a GPS receiver.
4. Apply GPS data to different fields/disciplines.
5. Acquire hands-on experience with currently available technology.

METHODS OF INSTRUCTION: Lectures, discussions, in-class exercises, field exercises

METHODS OF EVALUATION: Class Participation, Exams/Quizzes, Project(s)

REQUIRED TEXT AT TIME OF COURSE ADOPTION/REVISION:

TEXTS: *Global Positioning System (GPS): Systems, Technology, and Operation, 2nd Edition*

OPTIONAL SUPPLEMENTARY MATERIALS:

Reasonable accommodations can be provided for students with documented disabilities. Please contact Learning Support Services for assistance: (231)348-6817.

SUGGESTED TIME ALLOWANCE AND SEQUENCE OF INSTRUCTION:

(List general content description of what is being covered each week)

Depending on the students’ goals, some topics may be stressed more than others (technical aspects, data manipulation, or data collection). The following schedule is purposely intended to allow instructors flexibility, instead of dictating week to week topics.

	PART I
WEEKS 1-2	Introduction to GPS, present and future of GPS
	How GPS works (3 segments explained) Introduction to handheld GPS units
	PART II – UNDERSTANDING AND EVALUATING GPS DATA
WEEKS 3-4	Overview of Coordinate systems, Projection systems
	Basics of file structure, databases, simple editing tools, and creating a map in ArcGIS
	Creating and using Data Dictionaries and Data Files
	Data collection techniques using handheld GPS units
	PART III – GPS DATA COLLECTION AND PROCESSING
WEEKS 5-6	Differential correction of data using software tools
	Continuing data collection field activities and transfer of data to a GIS
	Exploring more software features and tools
	PART IV - PRACTICAL APPLICATIONS OF GPS BY OCCUPATION
WEEKS 7-8	Different uses of GPS by occupation

	Data collection and processing by occupation – field exercises
--	--

APPROVED FOR ADOPTION/REVISION BY THE CRD/AP COMMITTEE ON ___10/25/10_____