

# North Central Michigan College

## NCMC MASTER COURSE SYLLABUS

Last Date Revised 5/13/10

**INSTRUCTIONAL AREA:** Liberal Arts

**DEPARTMENT:** Earth Science

**ASSOCIATE DEAN:** Samantha McLin

**ORIGINATOR:** Kurt Yuengling

**DEAN OF INSTRUCTION:** Christine Hammond, Ph.D.

**COURSE ALPHA/NUMBER:** ESC 210

**COURSE TITLE:** Remote Sensing

**HOURS OF INSTRUCTION:**

Credit hours: 3

Lecture: 2

Lab: 2

Clinical:

Variable Hours:

Total Hours of Instruction:

Total Contact Hours: 70.4

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

**CATALOG DESCRIPTION:** Exploration of the techniques used to study the Earth's surface from a distance. Topics will include the collection, processing, quality assessment, and interpretation of aerial and satellite imagery. Students will gain hands-on experience interpreting imagery and data gathered via a range of radiation types and sensors. This tool will be applied to the study of erosion, vegetation cover, water issues, land usage, and regional planning.

**PREREQUISITE(S):** GIS 110

**COREQUISITE(S):**

**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 technological evolution of remote sensing and the electromagnetic spectrum.
2. Explain the uses, limitations, errors, and overall quality of remotely gathered data and imagery.
3. Interpret images and data acquired with a variety of remote sensing techniques.
4. Apply remote sensing techniques to different fields/disciplines.

**METHODS OF INSTRUCTION:** Lectures, discussions, lab exercises.

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

**REQUIRED TEXT AT TIME OF COURSE ADOPTION/REVISION**

TEXTS: *Introduction to Remote Sensing*: 4<sup>th</sup> ed., James B. Campbell, Guilford Press, ISBN-13: 9781606230749

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)*

*(If you need more than one line for a week, hit enter at the end of row; second line will begin)*

WEEK 1	Introduction and the History of Remote Sensing Applications
WEEK 2	Discussion of Radiation and the Electromagnetic Spectrum
WEEK 3	Photographic Sensors and Platforms (Aerial and Satellite)
WEEK 4	Thermal Radiation
WEEK 5	LIDAR
WEEK 6	Microwaves and RADAR
WEEK 7	Preprocessing and Classifying Imagery
WEEK 8	Field Checking Data (Ground Truth)
WEEK 9	Assessing Accuracy and Quality
WEEK 10	Image Interpretation
WEEK 11	Geomorphology
WEEK 12	Water Bodies, Wetlands and Hydrologic Studies
WEEK 13	Vegetation and Land Cover
WEEK 14	Land Use and Regional Planning
WEEK 15	Remote Sensing and Geographic Information Systems (GIS)
WEEK 16	Examples from Local and Regional Studies

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