

Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

This course is available for student registration only after the approval process has been completed.

Subject MET Course No. 4410 Credit Hours 3 Term to be added to the file Spring 2007
Alpha Prefix (e.g., CSE) Number Choice (e.g., 1301) (e.g., Fall 2005)

Class Hours 3 Lecture Hours _____ Lab Hours _____ Contact Hours (CEU only) _____

Department Marine and Environmental Systems Schedule Type Lecture
(e.g., Computer Sciences) (e.g., lecture, lab or special project)

College/School College of Aeronautics-23 College of Psychology and Liberal Arts-25
(Please check appropriate box) College of Business-24 College of Science-26
 College of Engineering-01 University College/SEGS-90

Computer Title (restricted to 25 spaces, including blanks) Mesoscale Meteorology

Catalog Title Mesoscale Meteorology

Catalog Description of Course (limited to 350 characters, including spaces)

Surveys conceptual models and analyzes techniques for mesoscale phenomena. Includes mesoscale convective complexes, severe storms, atmospheric instability, mesoscale gravity waves, squall lines, drylines, topographic effects, mesoscale clouds and precipitation processes, coastal showers, the sea breeze and other local phenomena.

EMF

In addition, you may attach a course syllabus and/or more detailed description.

Restrictions Prerequisite OCN 2407 Corequisite _____ Grades to be issued
(course number) (course number) A, B, C, D, F
 Prerequisite _____ Corequisite _____ S, U
(course number) (course number) P, F
 Prerequisite _____ Corequisite _____ Other _____
(course number) (course number)

Additional Restriction _____
(e.g., major, class level, department head approval)

If this course replaces a course currently offered in BANNER, please indicate old course information

Subject Alpha Prefix (e.g., CSE) _____ Course No. (e.g., 1301) _____

APPROVALS

Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Coordinator.

Originator Date Chair, Graduate Council Date

Department Head/Program Chair OR

Dean or Associate Dean Date Chair, Undergraduate Curriculum Committee Date

CATALOG COORDINATOR

REGISTRAR'S USE ONLY

Catalog Coordinator Date SCACRSE _____ SCADETL _____ SCAPREQ _____ SCABASE _____
 SCARRRES _____ Operator Init _____ Date _____

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RG-134-3051

Florida Institute of Technology College of Engineering
DEPARTMENT OF MARINE AND ENVIRONMENTAL SYSTEMS

Course: Mesoscale Meteorology MET4410

Instructors: Dr. Sen Chiao, Dr. Steven Lazarus

Location: (multimedia equipped room)

Class meets: TBA

Office Hours: TBA

Office phone: Dr. Chiao x-8008, Dr. Lazarus x-2160

email: schiao@fit.edu, slazarus@fit.edu

Grading: Tests 50%, Homework 25%, term project 25%

Course description: See 'topics covered' below.

Textbooks: *In addition to lecture notes, material will be drawn primarily from the following:*
Mesoscale Meteorology and Forecasting, Edited by P. S. Ray (1986)
Cloud Dynamics, Robert A. Houze Jr. (1993)
Storm and Cloud Dynamics, Cotton and Anthes, (1982a)
Synoptic-Dynamic Meteorology in Middle Latitudes Volume II: Observations and Theory of weather Systems, Bluestein
Mid-Latitude Weather Systems, T.N. Carlson (1991).
Mountain Meteorology Fundamentals and Applications (2000)
Sea Breeze and Local Winds, John. E. Simpson, (1994)
Severe Convective Storms, C. A. Doswell, III, (2001)
Basic Journal Articles

Course Objectives: An improved understanding of the dynamic and thermodynamic aspects of mesoscale weather with an emphasis on mesoscale precipitating systems (e.g., organized deep convection, stratiform rainfall, etc.), and orographically forced phenomena (e.g., mountain/valley and sea breeze circulations, etc.). The relationship between the synoptic and mesoscale is explored using an integrated approach that combines radar, satellite, surface observations and mesoscale/synoptic scale model output. Tools include the following campus server graphic user interface software: McIDAS, GARP, NMAP2, and NSHARP. Meteorological modules from the COMET website will also be utilized to augment specific topics. Prerequisites: OCN2407, MET3401.

Specific Topics Covered:

Upper Air Sounding Basics: Parcel Theory, Indices, and the Capping Inversion
Severe Thunderstorm Dynamics
Mesoscale Convective Systems
Derechos, Bow Echoes, and Squall Lines
Dry Line
Wintertime Mesoscale Phenomenon (Lake Effect, Upslope, Cold Air Damming)
Sea breeze
Stratocumulus
Conditional Instability
Differential Terrain Heating, Drainage Flows
Gravity waves
Symmetric Instability