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 (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  
☐ 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 250 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.

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

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

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

Dean or Associate Dean Date Chair, Undergraduate Curriculum Committee Date

CATALOG COORDINATOR  REGISTRAR'S USE ONLY

Catalog Coordinator Date  SCACRSE  SOADTL  SCAPREQ  SCABASE

SCARRES  Operator Ext. Date

DISTRIBUTION: Florida Institute of Technology Office of the Registrar  
150 West University Boulevard, Melbourne, FL 32901-6915  Tel: 321-674-8136 Fax: 321-674-7827

RG-134-08011
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)
Storm and Cloud Dynamics, Cotton and Anthes, (1982a)
Synoptic-Dynamic Meteorology in Middle Latitudes Volume II: Observations and Theory of weather Systems, Bluestein
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