SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 24.0101

SEMESTER: DEPARTMENTAL SYLLABUS

COURSE TITLE: INTRODUCTION TO METEOROLOGY AND LAB

COURSE NUMBER: NASC0175

CREDIT HOURS: 4

INSTRUCTOR: DEPARTMENTAL SYLLABUS

OFFICE LOCATION: DEPARTMENTAL SYLLABUS

OFFICE HOURS: DEPARTMENTAL SYLLABUS

TELEPHONE: DEPARTMENTAL SYLLABUS

EMAIL: DEPARTMENTAL SYLLABUS

KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITE(S): College Algebra (MATH-0105) is recommended

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com, for the required texts for your particular class.

COURSE DESCRIPTION:
This course provides students with a comprehensive study of the principles of meteorology while simultaneously providing classroom and laboratory applications focused on current weather situations. It provides real experiences demonstrating the value of computers and electronic access to time-sensitive data and information. The structure and composition of the atmosphere, the general circulation pattern over the Northern Hemisphere and how it arises, winds in relation to pressure patterns, and weather maps and their analyses are among the topics covered.

METHOD OF INSTRUCTION:
A variety of methods is used depending on the content area. These include but not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I. Monitoring Weather.
II. Atmosphere: Origin, Composition, and Structure.
III. Solar and Terrestrial Radiation
IV. Heat, Temperature, and Atmospheric Circulation.
V. Air Pressure.
VI. Humidity, Saturation, and Stability.
VII. Clouds, Precipitation, and Weather Radar.
VIII. Wind and Weather.
IX. Atmosphere's Planetary Circulation.
X. Weather Systems of Middle Latitudes.
XI. Thunderstorms and Tornadoes.
XII. Tropical Weather Systems
XIII. Weather Analysis and Forecasting.
XIV. Atmospheric Optics
XV. Climate and Climate Change.

EXPECTED LEARNER OUTCOMES:
A. The student should be able to describe elements and processes contributing to the weather.
B. The student should be able to develop a basic understanding of the atmospheric environment.
C. The student should be able to interpret media weather forecasts.
D. The student should be able to become familiar with cloud patterns and what they mean.
E. The student should be able to establish a basic knowledge of atmospheric motions and the weather systems associated with them.
F. The student should be able to develop the basic physical processes associated with weather systems, including formation of rain and heat transfer.
G. The student should be able to describe the function of, or demonstrate, meteorological instrumentation and equipment.

COURSE COMPETENCIES:
The student should be able to describe elements and processes contributing to the weather.
1. The student will be able to list some sources of daily weather information.
2. The student will be able to identify the principal weather systems that are plotted on surface weather maps.
3. The student will be able to distinguish between visible and infrared satellite images.

The student should be able to develop a basic understanding of the atmospheric environment.
4. The student will be able to determine the origin, composition and structure of the atmosphere.
5. The student will be able to sketch the average vertical temperature profile of the atmosphere.
6. The student will be able to explain how solar altitude influences the intensity of solar radiation received at Earth's surface.
7. The student will be able to contrast solar radiation with terrestrial infrared radiation.
8. The student will be able to explain how heat is transported via conduction and convection.
9. The student will be able to describe the imbalances in radiation heating and cooling.
within the Earth-atmosphere system.

10. The student will be able to explain the significance of air pressure tendency for local weather forecasting.

_The student should be able to interpret media weather forecasts._

11. The student will be able to describe how air pressure and air density change with altitude.
12. The student will be able to compute the relative humidity from either the mixing ratio or the vapor pressure.
13. The student will be able to explain how and why relative humidity is temperature dependent.

_The student should be able to become familiar with cloud patterns and what they mean._

14. The student will be able to distinguish among the various cloud types.
15. The student will be able to explain how weather radar detects precipitation.
16. The student will be able to identify the forces that initiate and govern the circulation of air.
17. The student will be able to describe the circulation in cyclones and anticyclones.
18. The student will be able to describe the seasonal changes in the planetary-scale circulation.

_The student should be able to establish a basic knowledge of atmospheric motions and the weather systems associated with them._

19. The student will be able to list the changes that occur in the tropical Pacific Ocean and atmosphere during El Nino and La Nina.
20. The student will be able to identify the various air masses that regularly form over or invade North America.
21. The student will be able to distinguish between warm frontal weather and cold frontal weather.

_The student should be able to develop the basic physical processes associated with weather systems, including formation of rain and heat transfer._

22. The student will be able to describe the role of atmospheric stability in thunderstorm development.
23. The student will be able to distinguish between a tornado and a funnel cloud.
24. The student will be able to identify the oceanic and atmospheric conditions required for hurricane formation.
25. The student will be able to describe the basis of the Saffir-Simpson Hurricane Intensity Scale.
26. The student will be able to explain how and why forecast skill changes with length of the forecast period.
27. The student will be able to summarize how to make reasonably accurate single-station weather forecasts.

_The student should be able to describe the function of, or demonstrate, meteorological instrumentation and equipment._

28. The student will be able to define reflection, refraction, diffraction and scattering.
29. The student will be able to explain how halos and rainbows form.
30. The student will be able to generate a weather forecast.
31. The student will be able to describe climatology and climate changes.
32. The student will be able to determine various types of air pollution.
33. The student will be able to describe the general global patterns of temperature and precipitation.
34. The student will be able to describe acoustical phenomena.

ASSESSMENT OF LEARNER OUTCOMES:
Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is meant to provide and outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus in not intended to be a legal contract. Questions regarding the syllabus are welcome at any time.

Kansas City Kansas Community is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personal. Various laws, including Title IX of the Educational Amendments of 1972, require the college’s policy on non-discrimination be administrated without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center at 913-288-7670.