

**ONLINE WEATHER STUDIES
AT A HISPANIC SERVING INSTITUTION (HSI):
ESTELLA MOUNTAIN COMMUNITY COLLEGE**

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1. BACKGROUND

Estrella Mountain Community College (EMCC) [<http://www.estrellamountain.edu/>] is one of ten individually accredited colleges within the Maricopa County Community College District (MCCD), one of the largest higher education systems in the world. EMCC, an integral part of MCCD, has been offering courses since 1990 and opened its Avondale, Arizona campus in 1992. Situated in what is called the Phoenix "West Valley" area approximately 30 miles west of Metropolitan Phoenix, Arizona, EMCC serves a population of over 285,000 residents. The West Valley area, dubbed one of the fastest growing regions of the country, is expected to grow to more than 1.6 million people by 2030.

2. CURRENT ENROLLMENT

At present, more than half of Estrella Mountain's service area is minority, with minority students comprising more than 42% of the college's total enrollment. The college's annual enrollment stands at more than 13,000 students and is projected to reach over 29,000 students by 2014. Envisioned to be a major comprehensive institution of higher education in the West Valley, by 2024 it is expected to serve over 40,000 students annually. EMCC has been designated a Hispanic Serving Institution (HSI) by the U.S. Department of Education and is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools.

3. EMCC'S COURSE AND PROGRAM OFFERINGS

The EMCC is the site for the National Aeronautics and Space Administration (NASA) Center for Success in Math and Science. The NASA Center serves as a resource hub for educators, students and families throughout the college's

service area, and fosters the idea of exploration and learning and encourages students in pursuing educational and career pathways in the math, sciences and engineering disciplines. EMCC offers Associate in Arts (AA), Associate in Elementary Education (AAEE), Associate in Science (AS), Associate in Business (ABUS), Associate in Applied Science (AAS) and Associate in General Studies (AGS) degrees. The college also offers an Associate in Transfer Partnership Degree, in cooperation with Arizona State University (ASU) Main and ASU West. EMCC also offers the Arizona General Education Curriculum (AGEC), a 35-credit hour general education program that fulfills lower general education requirements at any transfer partner institution.

4. ONLINE WEATHER STUDIES AND EMCC'S FUTURE

Estrella Mountain's long-term future is guided by a master plan that provides the capacity to build over 802,863 square feet of facilities on the college's 135 acres, an increase of over 570,000 square feet. A Maricopa County \$951 million voter approved bond issue for expanded and new campuses within the District guaranteed that future in 2004. In late 2005 construction began on a new, 32,000 sq. foot classroom complex called "Ocotillo Hall". This new classroom complex will provide West Valley citizens increased access to education, job training, and will include technology integration. This complex, the first capital project resulting from the voter approved bond issue, will open for its first series of classes beginning January 2006. Also with a look to its future, EMCC took a step forward in the Fall of 2005 by offering Physical Geography GPH 212/214, "Introduction to Meteorology I," a 3-credit lecture and a separate 1-credit laboratory course, thus expanding its selection of natural science courses. These two courses, GPH 212 (3 Cr.) and its corequisite GPH 214 (1 Cr.) are natural science courses within the MCCD data base whose official course outline matches the course formulated under the American Meteorological Society's (AMS) and National Weather Service's (NWS) Online Weather Studies (OWS) Diversity Project. Institutions serving large numbers of minority

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students are encouraged by the AMS to adopt usage of the OWS course which is supported by the National Science Foundation's Opportunities for Enhancing Diversity in the Geosciences (OEDG) and Course, Curriculum and Laboratory Improvement-National Dissemination (CCLI-ND) programs.

5. OWS COURSE OBJECTIVE

The objective of the OWS course, developed with National Science Foundation support, is to provide the student with background information on the properties of the atmosphere, the interactions between the atmosphere and other components of the Earth system, and to introduce the fundamental processes and elements associated with weather and climate. It is a descriptive and analytical introductory course covering the composition and structure of the atmosphere, the flows of energy to, from, and through the atmosphere. The physical principles of atmospheric phenomena ranging from the micro scale through the synoptic scale are stressed in understanding the impact of weather on humans. Topics covered include physical characteristics of the earth system, energy and moisture, atmospheric circulation, weather systems of middle latitudes, thunderstorms and tornadoes, monitoring weather, climate and climate change, atmospheric optics, and weather analysis and forecasting. The text *"Online Weather Studies"*, the companion study guide *"Online Weather Study Guide"* and an OWS Internet homepage are the foundations of an inquiry based approach designed to promote critical thinking as the student analyzes and interprets real-time weather information provided via the AMS and NWS sponsored Internet "Online Weather Studies" homepage.

6. OBSERVATIONS FROM IN FRONT OF THE CHALKBOARD

While this is not the first time the author has taught an Introduction to Meteorology course, it is the first time teaching the AMS OWS course and the first time teaching at EMCC. Immediately upon reading the description of the course and examining the course outline it was evident that the OWS course was a perfect fit for EMCC. Inquiries into the feasibility of teaching this course as an adjunct faculty member were greeted with enthusiasm and support for getting it approved within the College administration by the Mathematic and Sciences Division was outstanding.

The course is being taught as a traditional lecture/lab web-enhanced format. Only one section of the in-classroom course is currently being taught

on campus two afternoons per week. The first class was composed of 12 students, eleven of whom are taking both the 3-credit lecture portion and the 1-credit lab portion. This is one aspect of how the course is being offered that will be undergoing a re-evaluation, i.e., the efficacy of allowing a student to take only the lecture portion. Any student not taking the lab portion is at a disadvantage; however, current College procedures allow the practice for this course. Another minor stumbling block in teaching this course at EMCC is the fact that currently there is no mathematics prerequisite for the course. The author opines that for students to be as completely successful in this course as they should be, they must have a modicum of mathematical ability. At the Community College level, many students have returned to the academic scene after a lengthy respite from anything remotely resembling the mathematics they took in High School. They do this for any number of different legitimate reasons. Even though there is not a rigorous demand for mathematical skills in the OWS course, the average, highly motivated Community College student is at a disadvantage if he or she is not required to have re-energized their math skills since high school and prior to embarking on the OWS course.

A positive aspect of this OWS course that requires heralding is the professionalism of the AMS's employees involved with the program. They have constructed an excellent program that includes a voluntary training course for new OWS teachers. This voluntary training is an excellent start for anyone teaching the course for the first time regardless of the teacher's previous experience in the field of meteorology. The training course, conducted at the National Weather Service Training Center in Kansas City, MO., was and is a very positive experience. A very important part of that training was the introduction of all attendees to the staff off the AMS's Washington, D.C. Education Program office, key National Weather Service (NWS) employees, other new OWS teachers, and to a personal mentor in the field who is already teaching or otherwise involved with the course and a NWS contact in the course attendee's home area. The results of that contact for the EMCC students was a field trip to the NWS Phoenix Forecast Office, conducted as a part of the course, which provided them with insight into the normal day-to-day modus operandi of operational NWS meteorologists. Plans are currently being formulated to install a weather monitoring station on campus to be operational and in place as a part of the EMCC Internet web page during the Spring 2006 academic session.