

# ATSC - ATMOSPHERIC SCIENCE

## ATSC 1112 Understanding the Weather (3-0-3)

This course explains the basic processes which control and influence atmospheric conditions, both on a local and global scale. The course will address the composition, origin, and structure of the atmosphere, earth-sun relationships, the atmosphere and energy, atmospheric moisture and state changes in water, air pressure and atmospheric circulation, fog, clouds, air masses, air pollution, climate and climate change, atmospheric optics, and the interaction of all these physical phenomena to produce the weather we experience on our planet.

## ATSC 1112L Understanding the Weather Lab (0-2-1)

This course is the lab component of ATSC1112 Understanding the Weather. Lab exercises cover geographic coordinate systems and maps, temperature and pressure changes in Earth's atmosphere, interactions between solar radiation and the Earth, factors which control temperature, daily and annual changes in temperature and precipitation, atmospheric moisture and humidity, formation of clouds, utilization of data charts in understanding and predicting weather conditions, and construction and utilization of weather maps. Additionally, the course will introduce the various instruments used in meteorology: thermometers, barometers, psychrometers, and anemometers.

**Prerequisite(s):** ATSC 1112 (may be taken concurrently)

## ATSC 4175 Undergraduate Research ((0-3)-(0-6)-(1-6))

Open to students of demonstrated academic ability and capable of performing independent study, including planning, conducting and reporting atmospheric science research. Significant time conducting research outside scheduled class may be required. This course may be repeated for credit (S/U grading). Variable hours.

**Restriction(s):**

Enrollment limited to students in the Department Prerequisite college.

## ATSC 5109G Environmental Air Quality (3-0-3)

Study of the structure and composition of the atmosphere, methods of analysis of pollutants in the atmosphere, and ozone depletion. Emphasis on transport and diffusion of atmospheric pollutants from the micro scale to the global scale, as well as an examination of global climate change.

## ATSC 5109U Environmental Air Quality (3-0-3)

Study of the structure and composition of the atmosphere, methods of analysis of pollutants in the atmosphere, and ozone depletion. Emphasis on transport and diffusion of atmospheric pollutants from the micro scale to the global scale, as well as an examination of global climate change.

**Prerequisite(s):** ATSC 1112 with a minimum grade of C and MATH 1113 with a minimum grade of C

## ATSC 5116G Meteorology (3-2-4)

This course will examine concepts that include: properties and circulation of the atmosphere, the scientific principles that govern weather and climate, interactions between the atmosphere and the other components of the Earth system, and the implications of those interactions for humankind.

**Restriction(s):**

Enrollment is limited to Graduate Level level students.

## ATSC 5116U Meteorology (3-2-4)

This course will introduce concepts that include: properties and circulation of the atmosphere, the scientific principles that govern weather and climate, interactions between the atmosphere and the other components of the Earth system, and the implications of those interactions for humankind.

**Prerequisite(s):** (MATH 1113 with a minimum grade of C and ATSC 1112 with a minimum grade of C)

## ATSC 5117G Global and Climate Change (3-0-3)

This course examines climate and global change from a modern and historical perspective. The basic science of the natural controls over both present and past climate, as well as the methods of studying past climates are included, with some focus on the evidence for climate change using quantitative analysis. The course also addresses concerns over human influences on our present climate and the potential impacts of climate change globally, as well as possible solutions or adaptations.

**Restriction(s):**

Enrollment is limited to Graduate Level level students.

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**Prerequisite(s):** (MATH 1111 with a minimum grade of C or MATH 1131 with a minimum grade of C or MATH 1113 with a minimum grade of C or MATH 1132 with a minimum grade of C or MATH 1125 with a minimum grade of C) and (ATSC 1112 with a minimum grade of C or GEOL 1121 with a minimum grade of C or GEOL 1122 with a minimum grade of C or ENVS 1105 with a minimum grade of C or ENVS 1205K with a minimum grade of C)

## ATSC 5125G Severe and Hazardous Weather (3-0-3)

Severe weather comes in many forms and brings with it different hazards for both life and property. This course will provide students with an overview of the types and characteristics of severe weather, the hazards associated with different forms of severe weather, and the environments and conditions that support the formation of severe weather. While multiple forms of severe weather will be discussed in this lecture course, emphasis will be placed on severe local storms and tornadoes.

**Restriction(s):**

Enrollment is limited to Graduate Level level students.

## ATSC 5125U Severe and Hazardous Weather (3-0-3)

Severe weather comes in many forms and brings with it different hazards for both life and property. This course will provide students with an overview of the types and characteristics of severe weather, the hazards associated with different forms of severe weather, and the environments and conditions that support the formation of severe weather. While multiple forms of severe weather will be discussed in this lecture course, emphasis will be placed on severe local storms and tornadoes.

**Prerequisite(s):** ATSC 1112 with a minimum grade of C

**ATSC 5175G Hydrometeorology (3-0-3)**

Hydrometeorology involves intersection between meteorology and hydrology. This includes the forecasting and observation of heavy rainfall, flooding, and flood mitigation. At the other end of the spectrum, hydrometeorology involves the issues associated with drought. Also of interest are exchanges of moisture and energy between the surface and the atmosphere. This course emphasizes remote sensing applications to meteorology and, therefore, makes use of some basic knowledge about weather patterns and phenomena.

**Prerequisite(s):** ATSC 5116G with a minimum grade of C

**ATSC 5175U Hydrometeorology (3-0-3)**

Hydrometeorology involves intersection between meteorology and hydrology. This includes the forecasting and observation of heavy rainfall, flooding, and flood mitigation. At the other end of the spectrum, hydrometeorology involves the issues associated with drought. Also of interest are exchanges of moisture and energy between the surface and the atmosphere. This course emphasizes remote sensing applications to meteorology and, therefore, makes use of some basic knowledge about weather patterns and phenomena.

**Prerequisite(s):** ATSC 1112 with a minimum grade of C and (MATH 1113 with a minimum grade of C or MATH 1125 with a minimum grade of C or MATH 1131 with a minimum grade of C)

**ATSC 5555G Selected Topics in Atmospheric Science ((0-6)-(0-12)-(1-6))**

Course will encourage students to pursue specific topics in atmospheric science to greater depth. These topics might include field trips and/or library study. Course may be taken multiple times for credit if topics are different.

**Prerequisite(s):** ATSC 1112 and ATSC 1112L

**Restriction(s):**

Enrollment is limited to Graduate Level level students.

**ATSC 5555U Selected Topics in Atmospheric Science ((0-6)-(0-12)-(1-6))**

Course will encourage students to pursue specific topics in atmospheric science to greater depth. These topics might include field trips and/or library study. Course may be taken multiple times for credit if topics are different.

**Prerequisite(s):** ATSC 1112 and ATSC 1112L