

Course Outline for: GEOG 1172 Introductory Meteorology**A. Course Description**

1. Number of credits: 4
2. Lecture hours per week: 3
Lab hours per week: 2
3. Prerequisites: None
4. Corequisites: None
5. MnTC Goals: Goal #3 - Natural Science
 Goal #10 – People and the Environment

An examination of atmospheric structure and processes, including temperature patterns, heating and cooling of the earth, moisture and humidity, winds, weather map interpretation, and the role of humans in atmospheric modification. Laboratory assignments provide applications of these concepts.

B. Date last revised: April 2023**C. Outline of Major Content Areas**

1. Energy and the basic structure and composition of the atmosphere
2. Theoretical investigations of atmospheric processes
3. Observed precipitation processes
4. Variable saturation vapor pressures
5. Predictions/Forecasting
6. Statistical classification of weather-related data
7. Understanding geographical patterns
8. Influence of human activity on atmospheric structure and processes
9. Interaction of atmospheric and socio-economic systems
10. Air pollution
11. Global warming
12. Weather modification
13. Political initiatives

D. Course Learning Outcomes

Upon successful completion of the course, the student will be able to:

1. Explain the relationships among meteorologic processes and variables (i.e. heat energy, humidity, and barometric pressure) as they apply to the atmosphere and formation of weather. (Goal 3a, 3b, 3c, 3d, 10a)
2. Relate past and present changes in the composition and structure of the atmosphere to contemporary discussions of public policy. (Goal 2b, 2c, 2d, 3b, 3d, 10a, 10c)
3. Apply direct scientific measurement and analysis to the interpretation of air masses and fronts. (Goal 2a, 2b, 2c, 3a, 3b, 3c)

4. Understand the role of weather maps for use in weather forecasting. (Goal 3c, 10b)
5. Test rudimentary weather forecasts made using weather maps, against actual atmospheric conditions. (Goal 2a, 3b, 3c, 10a, 10b)
6. Explain the causes and effects of hazardous weather, and what precautions can be taken to minimize the costs associated with those hazards. (Goal 3a, 3b, 3d, 10a, 10e, 10f)
7. Explain using scientific data the causes and possible solutions to a variety of air pollution problems including human induced atmospheric modification. (Goal 2a, 3c, 3d, 10d, 10e, 10f)
8. Understand the statistical and ecological bases behind various climate typologies. (Goal 2a, 3a, 3b, 10a, 10b)

E. Methods for Assessing Student Learning

Methods for assessment may include, but are not limited to, the following:

1. exams
2. lab exercises
3. quizzes
4. assignments

F. Special Information

None