**EARTH’S DYNAMIC WEATHER**

**GEO 211, Summer 2004**

June 07 – June 25

**Catalog Course Description**

Dynamic aspects of weather and climate from global to local scales with emphasis on how we gather, analyze and understand weather information.

**Prerequisites**

Inner core requirement. MC-QR category requirement. Formerly GEO 110.

Instructor: Dagmar Budikova e-mail: [dbudiko@ilstu.edu](mailto:dbudiko@ilstu.edu)

Class Time: MTWRF 8:55 -11:45 am Office Hours: MTWRF 12:00 – 12:50 pm

Office: 206 Felmley Hall Phone: TBA

This course will introduce students in the social sciences to the science of meteorology, climatology and related environmental issues. Attention will be given to phenomena at all scales from micro to global systems, and from those that are short-lived to others that typically last several months or years.

**Required textbook and workbook**

Ahrens, C. D. 2003. Meteorology Today: An Introduction to Weather, Climate, and the Environment. Seventh Edition. Brooks/Cole & Thompson Learning. 544 pp.

Carbone, G. 2004. Exercises for Weather and Climate. Fifth Edition. Prentice Hall. 200 pp.

Grading scale for course and exams: ≥ 90% A; ≥ 80% B; ≥70% C; ≥ 60% D; <60% F

**Assignments and Evaluation**

The total grade of 100% will be portioned in the following manner:

**Five (5) Tests 40% (@8% each)**

**Laboratory exam**  **30%**

**Quizzes and participation 30%**

**Tests**

There will be **5 (five)** tests given throughout the three-week period, on every **Monday and Thursday** **at beginning of class.** The tests will be completed within a 50-minute period and will consist of true/false and multiple-choice questions.

**Laboratory assignments and exam**

Throughout the course, you will be asked to work on exercises in the laboratory manual you purchased. Notice, however, that I will not be collecting any of them for grading. However, part of the class time will be devoted to discussing these exercises. See the schedule below for specific due dates for each exercise. The evaluation with respect to this material will come in form of a comprehensive laboratory exam, which will weigh heavily towards your final grade. The final laboratory exam is scheduled for **June 25, 2004 at 9:00 am**.

**Attendance and in-class participation**

The material presented in this course is ‘cumulative’. For this reason, it is important that you attend classes at all times. I will keep a record of attendance every day. Notice, this record will make up part of your final grade. I strongly encourage in-class discussion. This may include asking and/or answering questions, participating in taking up assigned homework and laboratory exercises.

**Quizzes**

Each **Tuesday, Wednesday and Friday**, we will begin with a closed-book quiz, which will take no more than 10 minutes to complete. There will be 8 quizzes in total, worth 30% of your final grade. The material will be generally based on concepts presented during the previous day and related readings that I will assign each day. Performance on quizzes contributes to your general participation grade.

**Tentative Class Structure and Content**

The class will meet five times per week for three 50-minute sessions, between June 7 and June 25, 2004. Two of the first three hours will be devoted to lecturing and testing. The last hour will be used for working through practical exercises as presented in the laboratory manual. Key concepts and topics that will be addressed include the following:

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| --- | --- | --- | --- | --- |
| **Date** | **Topic** | **Lab**  **Exercise** | **Test/Quiz/**  **Exam** | **Read\*** |
| June 7 | Why study weather and climate; Earth’s atmosphere | **1** Q: all |  | Ch. 1 |
| June 8 | Energy, temperature and heat; radiation laws; greenhouse effect; energy balance; water phase changes | **4** Q: 1-4  **6** Q: 10-13 | Quiz 1 | Ch. 2 |
| June 9 | Earth-sun relations; Diurnal temperature variation; Temperature controls | **2** Q: 1-6; 14-17  **4** Q: 5-13 | Quiz 2 | Ch. 3 |
| June 10 | Atmospheric moisture: measures of humidity, mixing ratio, vapor pressure, dew point | **6** Q: 14- 19;  22-23 | **Test 1** | Ch. 5 |
| June 11 | Atmospheric moisture continued; clouds | **7** Q: 1-9 | Quiz 3 | Ch. 5,6 |
| June 14 | Atmospheric stability; cloud development | **7** Q: 10-16 | **Test 2**  Ch: 5,6 | Ch. 7 |
| June 15 | Atmospheric stability continued; Precipitation formation | 7 Q: 18-25 | Quiz 4 | Ch. 7, 8 |
| June 16 | Air pressure; pressure gradient force; rotational forces | **9** Q: 1, 3-11 | Quiz 5 | Ch. 9 |
| June 17 | Global winds- general circulation of the atmosphere; jet streams; El Niño | **9** Q: 12-20;  25-29 | **Test 3** | Ch. 11 |
| June 18 | Air masses and fronts | **10** Q: 1-6 | Quiz 6 | Ch. 12 |
| June 21 | Middle-latitude cyclones; climate controls | **10** Q: 7-11 | **Test 4** | Ch. 13, 18 |
| June 22 | Climate classification | **14** Q: 1-23 | Quiz 7 | Ch. 18 |
| June 23 | Climate change | **15** Q: all | Quiz 8 | Ch. 19 |
| June 24 | *Review for Lab exam* |  | **Test 5** | Review |
| June 25 | *Lab exam* |  | **Lab Exam** | Review |

**\* Readings reflect chapters in your textbook**

**Any item on this outline may be subject to change.**