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# **GEOG/ENST 2331 Climatology**

# **Winter 2023 January 9 - April 11**

**Instructor:** TBD

**Email:** TBA

**Class Hours:** Tuesday and Thursday: 7:30 – 8:30 pm (Zoom)

**Office Hours:** TBA

**Lab Instructor:** TBD

**Email:** TBA

**Lab Class Hours:** Monday: 10:30am - 12:30pm (WD2 Section) (Zoom)

**Office Hours:** TBA

**Course Objectives:**

This course gives a general introduction to meteorology and climatology. Meteorology topics include energy balance, moisture and cloud development in the atmosphere, atmospheric dynamics, small- and large-scale circulations, storms and cyclones, and weather forecasting. Climatology topics include the interaction between the atmosphere and oceans over long time periods, climate classification, and the potential for climatic change.

Students are expected review assigned reading, slides and labs before attending on dates listed below.

**Required Textbook:**

Ahrens, Jackson and Jackson, 2016. *Meteorology Today 2nd Canadian Edition* (Nelson Education).

**Manual:**

With our virtual offering in W2023, there is no formal course manual. Lab content, necessary data or links, exercise instructions and lab deliverables will be posted to the course D2L under weekly content.

# Evaluation Scheme and Schedule:

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| --- | --- | --- | --- | --- |
| **Session** | | Date | Mark Allocation | |
| **Lab Introduction and Setup** | | Week 2 | 2 | |
| **Lab 1 – Global Energy Budget** | | Week 3 | 5 | |
| **Lab 2 – Isotherms, Isobars, and Wx Analysis (D, J)** | | Week 4 | 8 | |
| **Lab 3 – Atmospheric Mechanics** | | Week 5 | 5 | |
| **Lab 4 – Adiabatic Lapse Rates and Atmospheric Stability** | | Week 6 | 5 | |
| **Midterm** | | Week 8 | 25 | |
| **Lab 5 – Weather Observation Period Project and Wx Analysis (F)** | | Week 8-9 | 15 | |
| **Lab 6 – Climate Classification** | Week 12 | 4 |
| **Lab Quiz** | Week 13 | 6 |
| **Final Examination** Details to be announced |  | 30 |

**Lecture Schedule (*subject to revisions)*:**

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| --- | --- | --- |
| **Dates** | **Tuesday** | **Thursday** |
| **Week 1** | Introduction | Introduction Chapters 0 & 1 |
| **Week 2** | Radiation and Energy Chapter 2 | Global Energy Balance Chapter 2 |
| **Week 3** | Temperature Chapters 2 & 3 | Pressure Gradients Chapter 8 and Lab 2 |
| **Week 4** | Forces and Winds Chapter 8 | Moisture in the Atmosphere Chapter 4 & 5 |
| **Week 5** | Atmospheric Stability Chapter 6 | Cloud Formation Chapters 5 & 6 |
| **Week 6** | Precipitation Chapter 7 | Atmospheric Circulation Chapter 8 |
| **Week 7** | STUDY WEEK |  |
| **Week 8** | Review for midterm | Midterm |
| **Week 9** | Global Circulations Chapter 10 | Air Masses and Fronts Chapter 11 |
| **Week 10** | Midlatitude Cyclones Chapter 12 | Thunderstorms and Tornadoes Chapter 13 |
| |  | | --- | | **Week 11** | | Hurricanes Chapter 14 | Hurricane Forecasts and Polar Lows  Chapters 15 & 12 |
| **Week 12** | Climate Classification Chapter 16 | Global Climatic Change Chapter 17 |
| **Week 13** | Characteristics of Global Warming Chapter 17 | |