Disclaimer: Not a final version. Content subject to change.

DEPARTMENT OF
# GEOGRAPHY AND PLANNING

## GPHY 209 – Weather and Climate

| | | |
|---|---|---|
| **Course Instructor** | **Dr. Scott Lamoureux** | **Email**: scott.lamoureux@queensu.ca |
| **Office** | D126 Macintosh-Corry Hall | |
| **Contact Time** | Two 1-hour lectures equivalent per week: includes weather real-time, Q+A, key concepts interactive time<br>~Bi-weekly data laboratory | **Phone**: 613-533-6033 (unlikely to be serviceable during term: email and online access best) |
| **Format** | Lectures and data assignments | |
| **Class Assessment** | Data assignments<br>Quizzes<br>Final exam | 4 X 10% each<br>Best 4 of 5 X 5% each<br>40% |

**COURSE OVERVIEW**

The objective of GPHY 209 is to provide a fundamental understanding, from a scientific basis, of our weather and climate especially focused on how processes in the atmosphere and hydrosphere operate, interact, and influence these essential but often-overlooked aspects of our lives. Topics will include, but are not limited to, the physical properties of the atmosphere, radiation and energy balances, global circulation, atmospheric moisture and precipitation, weather systems, weather forecasting, the world's climates and the mechanisms of climate change on various scales.

The course is taught with a largely qualitative treatment of the subjects and laboratory assignments introduce quantitative analysis of key concepts, interpretation and analysis. I will spend online sessions re-capping weather of the day as it relates to course content, question and answer sessions, and "whiteboard" key concept sessions. We will look at weather from a global perspective, and can expect tropical weather and on-going temperate systems to be our focus.

**LEARNING OUTCOMES**

- Consider and examine the physical laws that underlie the atmospheric processes that we experience each day;
- Identify and recognize how large-scale aspects of our atmosphere are formed, how they evolve and move, and what impact they have on our global, regional and local weather systems;
- Explore and explain the distinction between weather and climate, the connection between them, observed changes and their possible impacts;
- Work with weather and climate data to build interpretive skill and process knowledge;
- Develop an appreciation for the connection between weather-related topics, how they are forecast and their impact on our societies and cultures.

**COURSE TOPICS**

1. Atmosphere structure and properties
2. Energy sources and budget
3. Temperature
4. Atmospheric Pressure and winds
5. Moisture and Precipitation
6. Weather Forecasting
7. Circulation Patterns
8. Fronts
9. Mid-latitude Cyclones
10. Tornadoes & Hurricanes
11. Earth's Climates

**COURSE READINGS**

Optional: Ross (2017) Weather and Climate. Oxford University Press, second edition. I recommend this as a valuable reference.