



**University of Manitoba**  
**Clayton H. Riddell Faculty of Environment, Earth and**  
**Resources**  
**Department of Environment and Geography**

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## COURSE DETAILS

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<b>Course Title &amp; Number:</b>	GEOG 4300
<b>Number of Credit Hours:</b>	3.0
<b>Class Times &amp; Days of Week:</b>	Tuesdays and Thursdays 8:30 AM to 9:45 AM
<b>Location for classes/labs/tutorials:</b>	TBA
<b>Pre-Requisites:</b>	

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## Instructor Contact Information

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<b>Instructor(s) Name:</b>	Will Purcell
<b>Preferred Form of Address:</b>	Will / Mr. Purcell
<b>Office Location:</b>	n/a
<b>Office Hours or Availability:</b>	Available by e-mail. Available by appointment. Available after classes most days without appointment.
<b>Office Phone No.</b>	n/a Cell: 204-290-5389
<b>Email:</b>	<a href="mailto:William.Purcell@umanitoba.ca">William.Purcell@umanitoba.ca</a>  E-mails will normally be responded to quickly, and in nearly all instances, within 24 hours.
<b>Contact:</b>	I respond quickly to specific requests made by e-mail. If you have a pressing question, or merely seek additional information, just ask outside the classroom after class. In emergency situations, I may be available by text or phone, although it should be noted that I also have access to e-mail through that device.

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## Course Description

Applied aspects of meteorology are described in terms of weather analysis and forecasting techniques for synoptic-scales and mesoscales using various meteorological tools. An introduction to severe weather forecasting techniques will also be described.

## General Course Information

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The course will cover the science and applications of synoptic meteorology, including the techniques of coding, mapping, analysis and diagnosis of surface weather observations, the coding, mapping and display of upper air synoptic weather data, including plotting, analysis and diagnosis of tephigrams and hodographs. The course will also investigate the use, interpretation and diagnosis of satellite and radar imagery as aids to a complete synoptic weather and frontal analysis, and as a basis for short-term weather forecasting.

Applications to public and aviation weather will be emphasized, always with a view to the benefits of basing those applications on a proper scientific assessment. Hands-on analysis and diagnosis of several complex meteorological situations using a variety of methods will be demonstrated and investigated in detail, allowing the students to apply their growing knowledge to not only every-day weather situations, but also to extreme, once-in-a-lifetime events.

Students will be expected to participate in advanced analysis and diagnosis assessments as an extra component of the course.

## Course Goals & Intended Learning Outcomes

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Successful completion of this course will provide the students with a basic and intermediate understanding of the principles and techniques of synoptic analysis. It will also provide the student with a solid understanding of the meteorology of severe extratropical storms.

## Using Copyrighted Material

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Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed.

For more information, see the University's Copyright Office website at <http://umanitoba.ca/copyright/> or contact [um\\_copyright@umanitoba.ca](mailto:um_copyright@umanitoba.ca).

## Recording Class Lectures

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You are free to record all or portions of the class lectures. You may not post the audio, video or transcripts of any such recordings on any public forum, including social media or any other Internet sites.

Will Purcell and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course.

Similarly, course materials, both paper and digital, are for the participant's private study and research.

## Textbook, Readings, Materials

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The class has a required text: "***Midlatitude Synoptic Meteorology: Dynamics, Analysis and Forecasting***" by Gary Lackmann; published by American Meteorological Society, 2011. ISBN 978-1-878220-10-3

## Course Technology

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It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Disability Services.

Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline "gaming" during scheduled class time.

If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it. (©S Kondrashov. Used with permission)

## Class Communication

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The University requires all students to activate an official University email account. For full details of the Electronic Communication with Students please visit: [http://umanitoba.ca/admin/governance/media/Electronic Communication with Students Policy - 2014 06 05.pdf](http://umanitoba.ca/admin/governance/media/Electronic_Communication_with_Students_Policy_-_2014_06_05.pdf)

Please note that all communication between myself and you as a student must comply with the electronic communication with student policy ([http://umanitoba.ca/admin/governance/governing\\_documents/community/electronic\\_communic](http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communic)

[ation\\_with\\_students\\_policy.html](#)). You are required to obtain and use your U of M email account for all communication between yourself and the university.

## **Expectations: I Expect You To**

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I expect to be at (or near) class 10 minutes prior and up to 60 minutes after the formal lecture times.

I expect regular attendance, as the workload for this course is heavy, primarily with the required assignments. It will be very easy to fall behind and very difficult to catch up.

Class participation through active discussion is a course requirement and will be graded as part of the syllabus.

### **Academic Integrity:**

In addition to the general policies of the University of Manitoba regarding academic integrity, plagiarism, etc., the students should be aware of these specifics:

- All assignments must be completed by each student without reference to work by previous students, old course notes or other third party material. That is, each completed assignment must be the student's own work in its entirety.
- Group projects, if assigned, are subject to the rules of academic dishonesty and group members must ensure that a group project adheres to the principles of academic integrity.

Failure to adhere to these rules will result in an assignment grade of zero.

## **Students Accessibility Services**

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### **Student Accessibility Services**

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

*Student Accessibility Services* <http://umanitoba.ca/student/saa/accessibility/>

520 University Centre

204 474 7423

[Student\\_accessibility@umanitoba.ca](mailto:Student_accessibility@umanitoba.ca)

## Expectations: You Can Expect Me To

My lectures are based upon MS Powerpoint presentations I have prepared in advance. I will e-mail these to the students following the lectures.

I will be discussing each slide in varying degrees of detail, and as such, the raw presentation will be of limited use to those who do not attend the lectures.

I expect questions – no, I encourage questions – at any point in the lecture. In fact, during the reviews of assignments particularly, you will be assessed on your ability and willingness to ask and answer questions posed by other students and myself.

It should be emphasised that the ability to participate is key, more than the actual answers provided or the questions posed; the key to a successful meteorologist is having an open and critical mind.

## Class Schedule

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to Section 2.8 of the – [ROASS-Procedure](#)).

The schedule should include dates and times of classes, including missed classes due to holidays or other commitments of the teacher. It also includes dates of assignments/quizzes/exams and alternate forms of assessments, date for voluntary withdrawal, and dates when students can expect to receive their assignment or test grades.

Date	Class Content	Required Readings or any Pre-class Preparation	Evaluation
Jan. 8	Introductory Lecture		Assignment 1 rec'd
Jan. 10	Building an Extreme Storm		
Jan. 15	Severe Prairie Winds (Clippers)		Assignment 1 due
Jan. 17	Case Study #1 (Review Assign. 1)		
Jan. 22	Tephigrams & Hodographs	Chap. 1, 2, 3, 12	Assignment 2 rec'd
Jan. 24	QUIZ 1		
Jan. 29	QUIZ 2		Assign 2 due; 3 rec'd
Jan. 31	Review Quiz #2 & Case Study 2		
Feb. 5	Satellite Meteorology		
Feb. 7	Radar Meteorology		Assign 3 due; 4 rec'd
Feb. 12	Case Study #3 (Review Assign. 3)		
Feb. 19	MID-TERM BREAK		
Feb. 21	MID-TERM BREAK		

Feb. 26	QUIZ 3	Chap. 4, 5	Assign 4 due; 5 rec'd
Feb. 28	Review Quiz #3 & Case study 4		
Mar. 5	Frontal Analysis		
Mar. 7	QUIZ 4	Chap. 6, 7, 8	Assn. 5 due; 6 rec'd
Mar. 12	Modern Theories		
Mar. 14	Case Study #5 (Review Assign. 5)		Assign 6 due; 7 rec'd
Mar. 19	Case Study #6 (Review Assign. 6)		
Mar. 21	Forecasting		Assignment 7 due
Mar. 26	Case Study #7 (Review Assign. 7)		Assignment 8 rec'd
Mar. 28	Advanced Frontal Analysis		
Apr. 2	QUIZ 5	Chap. 9, 10, 11	
Apr. 4	Odds & Ends;		Assign 8 due & Defense – Assign 8
Apr. 9	Review Assignment 8; Final Mark		

### Laboratory Expectations

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No labs are scheduled.

### Lab Schedule

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No labs are scheduled.

### Course Evaluation Methods

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The students' performance will be assessed through a combination of take-home assignments, in-class quizzes and through class participation – asking questions and offering opinions and answers.

It is helpful to make a general statement about how the students learning will be assessed in the course. (i.e, a variety of methods to give all types of learners an opportunity to excel; essay format because part of the larger goal for the course is to develop writing skills, etc.)

Refer students to the Assignment Description on the following page of the syllabus for Details.

Due Date:	Assessment Tool	Value of Final Grade
Various	Assignments	70%
Various	In-class Quizzes	30%




## Grading

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Indicate your grading scale. A sample is given below that you can adjust to your course expectations.

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	90-100	4.25-4.5	4.5
A	80-89	3.75-4.24	4.0
B+	75-79	3.25-3.74	3.5
B	70-74	2.75-3.24	3.0
C+	65-69	2.25-2.74	2.5
C	60-64	2.0-2.24	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

## Referencing Style

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Not applicable, however should the need to provide a reference occur, assignments should use the APA reference style as outlined in the text:

American Psychological Association. (2009). Publication manual of the American Psychological Association (6th ed.). Washington, DC: Author.

## Assignment Descriptions

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There will be eight assignments in the course; you will be graded on the best seven of these, although the eighth and final assignment is mandatory.

Each assignment covers an extreme extratropical storm. You will be asked to analyze various charts and maps.

The entire evolution of the storms will be reviewed in a subsequent class.

**TITLE-** All assignments will be based on the analysis of an extreme extratropical storm.

**GOAL-** The goal is to develop and improve the students' analysis, diagnosis and prognosis skills under time constraints, while gaining a broader understanding of the dynamics of extreme storms.

**PROCEDURE-** Follow accepted standards for analyzing various charts.

**SUBMISSION GUIDELINES** – All assignments will be returned in class on the due dates.

**EVALUATION CRITERIA-** Assignments and quizzes are marked and returned promptly, as they will be reviewed in detail at a subsequent class, often within a week of the due date for the

assignment. Students will have a solid indication of their performance prior to the voluntary withdrawal date.

### **Assignment Extension and Late Submission Policy**

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To successfully complete this course, you must stay on schedule. The precise deadline for submitting assignments is the end of class on the day the assignment is due. Under some circumstances, I will accept late assignments prior to the commencement of the following class, when these assignments will be reviewed. (Therefore, no assignments will be accepted after this time.)

The penalty for turning in a late assignment is a 10-per-cent reduction in the grade for that assignment.

Note that the mark for assignments will be the average of completed assignments, after the lowest mark is dropped.