

EAS 212: The Oceans

Winter 2016 Section B1

Instructor: Dr. Juliana Marson **Office:** CCIS 3-274

Email: marson@ualberta.ca

Office Hours: MWF 1300-1350

Course Web Page access: EAS212 through eClass

Lecture Room & Time: CCIS L2-190, MWF 1200 1250

Objectives: 1) Introduction to the field of ocean sciences. 2) Description of the oceans (including water mass composition, evolution, circulation, the concepts of temperature, salinity, pressure, heat storage and sedimentation). 3) The role of the oceans in climate change. 4) Interactions between the oceans and the other elements of the climate system.

Prerequisite: Any 100 level Science course

Text Book: Alan P. Trujillo and Harold V. Thurman, *EAS212 - The Oceans, Custom Edition for University of Alberta*, 1st Edition, 2012, Prentice Hall

Other recommended books:

- Alan P. Trujillo and Harold V. Thurman, *Essentials of Oceanography*, 11th Edition, 2014, Pearson (You can access the Chapters of this book and other resources on the website <http://www.pearsonmylabandmastering.com/northamerica/masteringgeologyandoceanography/> using the Course ID: EAS212THEOCEANS)
- Douglas A. Segar, *Introduction to Ocean Sciences*, 3rd Edition (electronic edition), 2012 (You can access the Chapters of this book on the website <https://reefimages.com/oceans/oceans.html>)
- Paul R. Pinet, *Invitation to Oceanography*, Jones & Bartlett Learning
- Matthias Tomczak and J. Stuart Godfrey, *Regional Oceanography: An Introduction* (You can access the Chapters of this book on the website <http://www.es.flinders.edu.au/~mattom/regoc/pdfversion.html>)
- Lynne D. Talley, George L. Pickard, William J. Emery, and James H. Swift, *Descriptive Physical Oceanography – An Introduction*, 6th Edition, 2011, Elsevier

Evaluation:	Quizzes (2)	40%
	Final	60%

All assignments and examinations in this course will be given a numerical score. A cumulative course mark will be calculated from those scores, weighted as tabulated above. A final letter grade will be assigned based upon your cumulative mark and my analysis of the class's cumulative mark distribution. Where possible, natural breaks in the cumulative mark distribution will be used in assigning grades, but no pre-determined distribution of grades will be imposed on the class. Your grade will reflect a combination of your absolute achievement and relative standing in the class. In past years, the mean grade in this course has been around the B range.

>90%	A+
85-90%	A
80-85%	A-
75-80%	B+
70-75%	B
65-70%	B-
60-64%	C+
55-59%	C
50-55%	D
<50%	F

Exam Dates: Quizzes – January 29th and March 4th, in class

Final – Tentative Date and Time 1400-1600 Thursday April 14th

WARNING: Students must verify this date on BearTracks when the Final Exam Schedule is posted

Exams: Your student photo I.D. is required at quizzes/exams to verify your identity. Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes has elapsed. Electronic equipment other than basic (non-programmable) calculators cannot be brought into examination rooms

Missed Quizzes: A student who cannot write a quiz due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferral. Applications for deferral of a quiz can be made in writing to the professor (by hard copy AND email), with supporting documentation, within 48 h of the missed quiz. Deferral of quizzes is a privilege and not a right; there is no guarantee that a deferral will be granted. Misrepresentation of Facts to gain a deferral is a serious breach of the *Code of Student Behaviour*. Dates of deferred quizzes February 5th and March 11th, in the class time slot. For an excused absence where the cause is religious belief, a student must contact the instructor(s) within two weeks of the start of Fall or Winter classes to request accommodation for the term (including the final exam, where relevant). Instructors may request adequate documentation to substantiate the student request.

Deferred Final Examination: A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination. Such an application must be made to the student's Faculty office within 48 hours of the missed examination and must be supported by a completed University of Alberta Medical Statement Form or other appropriate documentation (Calendar section 23.5.6). Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Misrepresentation of Facts to gain a deferred examination is a serious breach of the *Code of Student Behaviour*.

Past Evaluative Material: A copy of a quiz from a previous year will be posted on the course eClass website at least one week prior to the first quiz.

Recording And/Or Distribution Of Course Materials: Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for

personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Students Eligible For Accessibility-Related Accommodations

(students registered with Specialized Support & Disability Services - SSDS): Eligible students have both rights and responsibilities with regard to accessibility-related accommodations. Consequently, scheduling exam accommodations in accordance with SSDS deadlines and procedures is essential. Please note adherence to procedures and deadlines is required for U of A to provide accommodations. Contact SSDS (www.ssd.s.ualberta.ca) for further information.

Student Success Centre: Students who require additional help in developing strategies for better time management, study skills or examination skills should contact the Student Success Centre (2-300 Students' Union Building).

Additional Required Statements:

- 1) Policy about course outlines can be found in Section 23.4(2) of the University Calendar.
- 2) The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.ualberta.ca/secretariat/appeals.htm) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.
- 3) All forms of dishonesty are unacceptable at the University. Any offense will be reported to the Senior Associate Dean of Science who will determine the disciplinary action to be taken. Cheating, plagiarism and misrepresentation of facts are serious offenses. Anyone who engages in these practices will receive at minimum a grade of zero for the exam or paper in question and no opportunity will be given to replace the grade or redistribute the weights. As well, in the Faculty of Science the sanction for **cheating** on any examination will include **a disciplinary failing grade** (no exceptions) and senior students should expect a period of suspension or expulsion from the University of Alberta

Disclaimer: Any typographical errors in this Course Outline are subject to change and will be announced in class. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus.

Tentative Course Schedule

Jan 4	Introduction
Jan 6	The Ocean Floor
Jan 8	Properties of Water
Jan 11	Temperature and Salinity
Jan 13	Density and Vertical Distribution of Properties
Jan 15	Water Masses
Jan 18	Forces: The Pressure Gradient Force and the Coriolis Effect
Jan 20	Large-Scale Atmospheric Circulation
Jan 22	Upwelling, Downwelling, and Ekman Motion
Jan 25	Geostrophic Currents and Gyres
Jan 27	Western Boundary Currents
Jan 29	QUIZ #1
Feb 1	Equatorial Circulation
Feb 3	Dynamic Topography
Feb 5	Hurricanes
Feb 8	Waves in the Open Ocean
Feb 10	Waves in Shallow Waters
Feb 12	Tsunamis
Feb 15	Holiday
Feb 17	Reading Week
Feb 19	Reading Week
Feb 22	Tides I
Feb 24	Tides II
Feb 26	The coast
Feb 29	Union Election Forum
Mar 2	Observing the Oceans
Mar 4	QUIZ #2
Mar 7	Introduction to Cryosphere and Sea Ice
Mar 9	Southern Ocean
Mar 11	Arctic Ocean
Mar 14	Global Thermohaline Circulation
Mar 16	Modelling the Oceans
Mar 18	Modes of Climate Variability
Mar 21	Sea Level
Mar 23	Paleoclimate
Mar 25	Holiday
Mar 28	Holiday
Mar 30	Introduction to Climate Change I
Apr 1	Introduction to Climate Change II
Apr 4	Dissolved Gases, CO ₂ Uptake and Ocean Acidification
Apr 6	Human Impacts on the Oceans
Apr 8	Review
Apr 14	Final exam