

MAST-467/667 Introduction to Arctic Oceanography (Fall 2014)

Instructor: Andreas Münchow (muenchow@udel.edu)

Web-Site: <http://muenchow.cms.udel.edu/classes/Arctic>

Time and Location: Tuesday and Thursday 17:00-18:15 in 203 Robinson Hall

Goal: Provide each student with a set of basic knowledge and quantitative tools to confidently argue polar issues that relate to ongoing public climate change debates.

Synopsis: The class enhances and transcends introductory oceanography classes with a regional and observational emphasis on the Arctic Ocean. It relates oceanography to statistics, physics, meteorology, glaciology, geology, climatology, and biology within a Climate Change context. Lectures and workshops relate knowledge to skill-based extraction of quantitative information from online data, respectively. Topics include

- (1) Arctic Oceanography (3 weeks)
- (2) Arctic Sea Ice (2 weeks)
- (3) Greenland's Glaciers (2 weeks)
- (4) Arctic Climate Syntheses (2 weeks)

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- (5) Computer Literacy (3 weeks)
 - (6) Statistics (2 weeks)
 - (7) Communication (2 weeks)

Pre-requisites: Science background such as an introductory class in physical, chemical, geological, or biological oceanography.

Grades: 45% analysis projects, 25% homework problems, 20% Final project/Exam, 10% in-class participation --- Expectations and assignments will vary between graduate (MAST-667) and undergraduate (MAST-467) sections of this class.

Text: This is an experimental class without a definite textbook; materials will be drawn from the peer-reviewed primary and secondary literature that will be made available as .pdf files on the class web-site. Some useful textbook references are

1. Knauss, J.A., 1997: Introduction to Physical Oceanography, 2nd ed., Prentice Hall, Upper Saddle River, NJ, 309 pp.
2. Marshall, S.J., 2012: The Cryosphere, Princeton University Press, Princeton, NJ, 288 pp.
3. National Research Council, 2002: Abrupt Climate Change, Inevitable surprises. National Academies Press, Washington, DC, 230 pp.
4. Raymond, E.S., 2004: The Art of UNIX Programming, Addison-Wesley, Boston, MA, 525 pp.

