

CLIM 412/GEOL 412/CLIM 512/EVPP 505
PHYSICAL OCEANOGRAPHY
<http://mason.gmu.edu/~bklinger/clin412home.html>

-- SYLLABUS --

Instructor: Barry Klinger, bklinger@gmu.edu, 3-9227, Research Hall 116.

Fall 2016 Schedule: Wed 4:30-7:10 Thompson Hall L004.

Fall 2016 Office Hours: Wed 10:00-12:00 and by appointment (please email).

Course Description: Course describes the global patterns of temperature, salinity, currents and waves in the world's oceans, and how these patterns influence marine biota, climate, and human activity. Course introduces key concepts which explain physical features of the ocean ranging from microscopic turbulence to global circulation. **Credits:** 3.

Prerequisites: MATH 113 or MATH 115, and PHYS 160 or PHYS 243, or permission of instructor.

Homework: 8-12 problem sets.

Project: Term paper on physical oceanography subject.

Exams: Midterm and final exam with mixture of mathematical problems and short essay questions.

Grades: Final Exam 30%, Midterm 20%, Homework 25%, Term Paper 20%, Effort & Participation 5%

Difference in Assignments and Grading for CLIM 412 and EVPP 505:

Students enrolled in EVPP 505 will have additional problems on problem sets and in exams than students in CLIM 412. Term paper will be 5-10 single-spaced pages for CLIM 412 and 7-12 for EVPP 505 and will be judged to a higher standard for EVPP 505.

Required Texts: Course notes, available in Blackboard

Suggested Texts

Open University Course Team, 2001, *Ocean Circulation*, Butterworth-Heinemann

Open University Course Team, 1999, *Waves, Tides, and Shallow-Water Processes*, Butterworth-Heinemann,

Knauss, J. A., 1997: *Introduction to Physical Oceanography* (2nd edition), Prentice Hall

Additional Reading:

Marshall, J., and R. A. Plumb, 2007: *Atmosphere, Ocean and Climate Dynamics: An Introductory Text*, 344 pp., Academic Press. [Conceptual and mathematical basis of geophysical fluid dynamics for air and sea.]

Pond, S., and G. L. Pickard, 1983: *Introductory Dynamical Oceanography*, 2nd Ed., Pergamon Press. [Describes ocean fluid mechanics used into course, but at more mathematical level.]

Talley, L. D., G. L. Pickard, W. J. Emery, and J. H. Swift, 2011: *Descriptive Physical Oceanography, An Introduction* (6th Edition), 555 pp, Elsevier. [Comprehensive observational textbook.]

Stewart, R., 2008: *Introduction to Physical Oceanography*, available online at <https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=20>

Some Important Mason Policies

Updated Spring 2016

Electronic Communications

Students must use their MasonLive email account to receive important University information, including communications related to this class.

Disability Accommodations

If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with **Office of Disability Services** to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Office of Disability Services: <http://ods.gmu.edu>

Academic Integrity

The integrity of the University community is affected by the individual choices made by each of us. Mason has an Honor Code with clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Paraphrased material must also be cited, using MLA or APA format. A simple listing of books or articles is not sufficient. Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting. If you have any doubts about what constitutes plagiarism, please see me.

Office of Academic Integrity: <http://oai.gmu.edu/>
Honor Code: <http://oai.gmu.edu/the-mason-honor-code-2/>

Mason Diversity Statement

George Mason University promotes a living and learning environment for outstanding growth and productivity

among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth.

An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.

The reflection of Mason's commitment to diversity and inclusion goes beyond policies and procedures to focus on behavior at the individual, group and organizational level. The implementation of this commitment to diversity and inclusion is found in all settings, including individual work units and groups, student organizations and groups, and classroom settings; it is also found with the delivery of services and activities, including, but not limited to, curriculum, teaching, events, advising, research, service, and community outreach.

Acknowledging that the attainment of diversity and inclusion are dynamic and continuous processes, and that the larger societal setting has an evolving socio-cultural understanding of diversity and inclusion, Mason seeks to continuously improve its environment. To this end, the University promotes continuous monitoring and self-assessment regarding diversity. The aim is to incorporate diversity and inclusion within the philosophies and actions of the individual, group and organization, and to make improvements as needed.