Course Description and Syllabus
GEOL 6/73067 Carbonate Rocks
Kent State University Department of Geology
Spring 2010
(http://www.personal.kent.edu/~jortiz/carbonates/)

Instructor: Dr. Joseph D. Ortiz
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Class Meeting: TR, 9:15-10:30 pm, Room 339 McGilvrey Hall
Office Hours: T: 10:30-11:30 am, W: 12:50-3:30 pm; or by appointment.

Course Catalog Number: 63067, Masters level; 73067, Doctoral level
Registrar's Call Number: 11000 Masters level; 11457 Doctoral level

Course Rationale and Objectives: Carbonates represent one of the most important classes of sedimentary rocks. They are important as records of biogenic evolution, particularly in marine settings; serve as reservoirs for oil, gas, and water, and are critical in the biogeochemical cycling of the Earth system. We will explore carbonates on the micro-, meso-, and megascopic scales to evaluate their role in the sedimentary record through time. Students will learn how to identify carbonate rocks and their constituent components, characteristics of ancient and modern carbonate depositional environments, and how to evaluate carbonate deposits in the context of a sequence stratigraphic framework placing emphasis on forcing and response.

Text and other reading material

Reading will be assigned from the following sources in addition to the open literature and handouts:

Tucker, M.E., Wright, V.P., Carbonate Sedimentology, Blackwell Science, 482 p. 1990, ISBN 0-632-01472-5.
Schlager, W., Carbonate Sedimentology and Sequence Stratigraphy, SEPM Concepts in Sedimentology and Paleontology, #8, 200 p. 2005, ISBN 1-56576-115-2.

Online Information: The class website is: http://www.personal.kent.edu/~jortiz/carbonates/
To check your grades using your university email login name and password, login to flashline (http://flashline.kent.edu) and go to “My Courses”, and select the link for Blackboard Vista.

Office Hours and Consultation with the Instructor: I want you to do well in this course! I welcome questions from all students either in person, by email, or by phone. Whether you are doing well in the course, find it challenging, or are on academic probation, attending office hours can help make the course a more enriching experience. To ensure your own privacy when sending electronic messages, please use your university email account. Include your first and last

name on any electronic correspondence along with your banner id. Please do not use your social security number on any correspondence. Please cc a copy of any important messages that you send to the instructor back to yourself so that you have a record.

University Policies: The following University policies apply to anyone enrolled in this course:

1. University Calendar: The official university calendar, which provides information on deadlines for university-related transactions can be found at: http://www.registrars.kent.edu/home/SPRING/calendar.htm
2. Enrollment Status: The official registration deadline for this course is **January 15, 2010**. (see the university calendar for late registration deadlines, etc.) University policy requires all students to be officially registered in each class they are attending. Students who are not officially registered for a course by published deadlines should not be attending classes and will not receive credit or a grade for the course. Each student must confirm enrollment by checking his/her class schedule (using Student Tools in FlashFast) prior to the deadline indicated. Registration errors must be corrected prior to the deadline.
3. Academic Honor Code: In accordance with University Policy 3342-3-01.8, all students are expected to abide by the academic honor code, as specified in the University's "Digest of Rules and Regulations". The use of other's intellectual property without giving them appropriate credit is a serious academic offense. This includes misrepresenting the source, nature or other conditions of your academic work to get undeserved credit. It is the University's policy that cheating or plagiarism can result in receiving a failing grade for the work or course or other more serious disciplinary action. Repeat offenses can result in dismissal from the University. If you have any questions, please read the full policy at http://www.kent.edu/policyreg/chap3/3-01-8.cfm.
4. Drop and Withdrawal: Withdrawal from any or all courses is permitted through the 10th week of the semester (or the prorated deadline for flexibly scheduled sections). For Spring 2010 the deadline is **April 4, 2010**. After that time, students are considered to be committed to all remaining courses and must complete them. If students are unable to complete the semester because of extreme circumstances that first occur after the deadline, students should consult their college or campus dean's office. Any course withdrawal(s) processed after the second week of the semester will appear on the students' academic record with a grade of "W". No approval is required to withdraw from a course during the withdrawal period. For more information see: http://www.registrars.kent.edu/home/SPRING/withdrawal.htm.
5. Students with Documented Accommodation needs: Students who require health-related accommodations must verify their eligibility through the Office of Student Accessibility Services (SAS) on the Ground Floor of the DeWeese Center (330-672-3391 or http://www.kent.edu/sas). In accordance with University policy, if you have a documented need for a health-related accommodation to obtain equal access to this course, please contact the instructor at the beginning of the semester or when given an assignment for which an accommodation is required. If you have any questions regarding a potential accommodation need, please contact the instructor and SAS as soon as possible.
6. Final Exam Dates: Please check the final exam schedule for the classes in which you are enrolled. This can be found on the web at: http://www.registrars.kent.edu/home/SPRING/exams.htm In the event that you have two exams scheduled at the same time, the instructor will make suitable arrangements. Students who have conflicts or **more than three examinations on the same day** should consult with the Dean of his or her college at the earliest possible time for assistance in

making alternative arrangements.

Grading Policy: Students are expected to attend all class sessions, do the reading, participate in class discussions and consult the web site throughout the term. These steps will help you to learn the material covered on the exams. Grades will be based on the assigned work as follows:

Midterm exams	(Two exams worth 15% each)	30%
Cumulative Final Exam		30%
Projects/Class Participation		15%
Term Paper		25%
Total		100%

Projects: Homework for the class will consist of readings and occasional data analysis projects. Students are expected to seek out additional material to help place the readings in context or to serve as points of discussion in class. Students are encouraged to discuss the readings with others students in the class outside of the class meetings prior to the class session during which we will discuss the assigned reading. Problem sets should be completed independently unless otherwise instructed.

Term Papers: This course will require significant amounts of independent scholarship. Student will be expected to research a particular topic of interest on the syllabus, generate a bibliography of publications from the literature and complete a term paper on the subject. Students will be guided through this process during the term as they complete various stages of the project: (1) Bibliography of sources, (2) description of research question, (3) outline, (4) initial draft, (5) Final draft.

Exams: Each exam will consist of short answer and essay questions. Exams for graduate students will be longer than those for undergraduate. The questions may involve the interpretation of maps, diagrams, and graphs. The midterm exams will give students an opportunity to demonstrate their knowledge of the material presented. While the mid-term exams will be non-cumulative, the final exam will be cumulative. Exam scores may be curved at the discretion of the instructor, but each student has the potential to succeed in this course. Students are expected to pick up their graded exam papers in class when they are returned, or to make arrangements to do so at office hours.

Make-up Exams: Students who miss an exam must provide a written excuse in order to receive a make up assignment. Legitimate excuses include written documentation of the following: your own illness, a death in the family, military or official university athletic commitments. If you are involved in military or official university athletic activities, review the exam schedule at the beginning of the term and consult with the instructor prior to the exam if you have a conflict. If an illness, personal crisis, or family tragedy causes you to miss an exam, you must contact the instructor by phone or email no later than 48 hours after the scheduled start time of the exam. It is very important that you provide your full name, email address, and a telephone number where you can be reached in your phone or email message.

Text books on Carbonate Sedimentology and Stratigrapy that you may find helpful

You may find the following resources useful while take this class:

Ahr, W.M., Geology of Carbonate Reservoirs, Wiley, 278,p, 2008, ISBN: 978-0-470-16491-4.
Eberli, G., Masalerro, J.L., and Sarg, J.E., (eds.) Seismic Imaging of Carbonate Reservoirs and Systems, AAPG Memoir 81, 376p., ISBN: 978-0-89181-362-4.
Flügel, E., Microfacies of Carbonate Rocks, Analysis, Interpretation, and Application, Springer, 2nd ed., 2010, 984 p., ISBN: 978-3-642-03795-5.
Loucks, R.G, and Sarg, J.F., (eds.), 2004, Carbonate Sequence Stratigraphy, Recent developments and applications, AAPG Memoir 57, 545p., ISBN: 0891813365.
Lucia, F.J., Carbonate Reservoir Characterization, An Integrated Approach, Springer, 2nd ed., 2007, 336 p., ISBN: 978-3-540-72740-8.
Moore, C.H., Carbonate Reservoirs: Porosity Evolution and diagenesis in a sequence stratigraphic framework, Developments in Sedimentology 55, Elsevier, 460 p., 2001, ISBN: 978-0-444-50850-8.
Scholle, P. A. and Ulmer-Scholle, D. S, 2003, A Color Guide to the Petrography of Carbonate Rocks: AAPG Memoir 77, 474 p, ISBN: 0891813586.
Scholle, P.A., D.G. Bebout, and C.H. Moore (eds.), 1983, Carbonate Depositional Environments: AAPG Memoir 33, 708 p., ISBN: 0891813101.

Carbonate Rocks, Spring 2010

Week	Date (TR)	Topic	SPEM Readings*	Tucker Readings*	Assignment (due Thursdays)
1	Jan 19, 21	Basics of Oceanography	**1**		
2	Jan 26, 28	Controls on Carbonate Production	**2**	**2**	
3	Feb 2, 4	Carbonate composition and classification		**1**	**Select Term project**
4	Feb, 9, 11	Carbonate mineralogy and chemistry		**6**	
5	Feb 16, 18	Diagenesis		**7**	**Exam 1:**
6	Feb 23, 25	Dolomitization		**8**	**Term Project bibliography**
7	March 2, 3	Modern Environments and depositional geometry	**3**	**3**	
8	March 9, 11	Shallow water facies	**4**	**4**	
9	March 16, 18	Deep water facies		**5**	**Term Project Outline**
10	March 23, 25	The Geologic record of Carbonate Rocks		**9**	**Exam 2:**
	March 29, April 4	***Spring Break***			
11	April, 6, 8	Rhythmic Sedimentation	**5**		
12	April, 13, 15	Intro to Sequence Stratigraphy	**6**		**Term Project First Draft**
13	April 20, 22	T factory Sequence Stratigraphy	**7**		
14	April 27, 29	C and M factory Sequence Stratigraphy	**8**		
15	May 4, 6 (class before noon on 5/4)	Implications	**9**		**Term Project Final Version**
16	Tues, May 11 7:45 a.m. – 10:00 a.m.	**Cumulative Final Exam**	**McGilvrey Hall Room 339**		**Finals Week**

* Additional readings from class handouts will also be required