

**Syllabus: G528, Analysis of Sedimentary Basins  
Spring, 2011**

Professor Marc Hendrix, CHCB359  
Office Phone: 243-5278  
email = [marc.hendrix@mso.umt.edu](mailto:marc.hendrix@mso.umt.edu)  
Office phone: 243-5278

<b>DATE</b>	<b>LECTURE TOPIC</b>	<b>READING</b>
1/24	Intro - What is a sedimentary basin?	Miall, Ch. 1
1/26	Crustal properties, tectonic settings	Ingersoll, 1988
1/31	Tectonic settings, cont.	Busby and Ingersoll Ch. 1
2/2	Review of sedimentary structures	
2/7	Sedimentary structures, cont.	Miall, Ch. 2, 4.5.1-4.5.6
2/9	Paleocurrent Analysis <i>Sed structures and paleocurrent analysis lab assigned</i>	Miall, Ch. 5.9
2/14	Intro to provenance analysis	Miall, Ch. 5.5. 9.4
2/16	Provenance Analysis cont. <i>Provenance analysis lab assigned</i>	
<b>2/21</b>	<b>NO CLASS – President’s Day holiday.</b>	
<b>2/23</b>	<b><i>Sed structure and paleocurrent analysis lab due at beginning of class</i></b> Work on provenance analysis lab during class time	
2/28	Review sed structure and paleocurrents lab Continue work on provenance lab during class time	Miall, Ch. 2.4.5, 5.4.2
3/2	Introduction to subsidence analysis	Miall, Ch. 7
<b>3/7</b>	Geophysical applications to basin analysis – Bob Lankston <b><i>Provenance lab due at beginning of class</i></b>	
<b>3/9</b>	Geophysical applications to basin analysis – Bob Lankston <b><i>Due date to discuss final paper topic with Hendrix</i></b>	Miall, Ch. 5.4.1, Ch. 8
3/14	Geophysical applications to basin analysis – Bob Lankston (cont.) Sequence strat/SL change cont.	
3/16	Subsidence analysis, cont.	
<b>3/21</b>	Continental to marginal marine deposystems <b><i>Subsidence Analysis part 1 assigned</i></b>	Miall, Ch. 6

3/23	Shelf and deep marine deposystems <i>Subsidence Analysis part 2 assigned</i> <i>Final paper topic and 250 word abstract due</i>	
3/28	Shelf and deep marine deposystems	
3/30	Deep marine systems <i>Subsidence Analysis parts 1 and 2 due at beginning of class time</i>	
4/4	<b>NO CLASS – SPRING BREAK</b>	
4/6	<b>NO CLASS – SPRING BREAK</b>	
4/11	Extensional basins	Miall, Ch. 9.3.1
4/13	Extensional basins, cont.	
<b>4/16 (Saturday) – Mandatory final project field trip – synthetic basin analysis</b>		
4/18	Extensional basins, cont.	
4/20	Compressional basins	Miall, Ch. 9.3.2
4/25	Compressional basins, cont.	
4/27	Compressional basins, cont.	
5/2	Strike-slip and hybrid basins	Miall, Ch. 9.3.3
5/4	Strike-slip and hybrid basins, cont. Catch up and wrap up	
<b>5/9</b>	<b>Student presentations of final paper topic – group 1</b>	
<b>5/11</b>	<b>Student presentations of final paper topic – group 2</b> <b>Final papers due class time</b> <b>Synthetic basin analysis project exercise due class time (Late projects not accepted)</b>	

This class will synthesize much of what you have learned about in other classes (sed/strat, geophysics, tectonics) and introduce you to a variety of new topics, all in the context of the interpretation of sedimentary basins, their history of fill, and their record of greater tectonic processes. You will be asked to do a significant amount of reading for this class. Most of the reading is in Miall's book (Principles of Sedimentary Basin Analysis, 3<sup>rd</sup> ed.; Springer-Verlag), but I will also assign various papers pertinent to individual topics. Please do your best to keep up with the reading.

Grades will be based on three laboratory exercises (10-15% each, depending on the lab), one take-home exam involving analysis of a synthetic basin in late April (30%), and one final presentation/paper (25%; 5% for abstract; 10% for presentation; 10% for final paper).

The final take-home exam will require you to synthesize a wide variety of data, some of which you will gather in the field on a one-day field outing around western Montana, April 16. Participation in the field trip is required for all students in the class.

The final project will consist of a ten page (maximum) paper on the evolution of a sedimentary basin of your choice, as well as a 30 minute (maximum) powerpoint presentation on your findings. You are responsible for choosing the sedimentary basin you work on, but it must not be located on the North American continent. The paper must contain the results of a geohistory analysis from at least one stratigraphic section you have derived from the literature and should focus on integrating the different sorts of data you can find in the literature (stratigraphic, provenance, paleocurrent data, etc.) that pertain to your basin. Because you may need to use the interlibrary loan system for obtaining some of your reference materials, it's important that you decide on your basin and begin to research it as soon as possible. To that end, you are responsible for discussing your plans for the final paper with Hendrix no later than Wednesday, March 9 and you must submit a 250 word (max) abstract on your final paper preliminary findings on Wednesday, March 23. The final papers themselves will be due on **Wednesday, May 11 at class time and will not be accepted after that date.**

There will be no final exam for this class, but the results of the final synthetic basin project are due at the beginning of class, **Wednesday, May 11.** Late projects will not be accepted and will be automatically receive a score of zero.