

## **Geos 643: Sandstone Depositional Environments**

An advanced course treating the hydrodynamics, sediment dispersal patterns, and preservation potential of modern clastic depositional environments, and criteria for recognizing their ancient counterparts in the geologic record.

**Instructor:** Paul McCarthy, 336 NSB (474-6894; [mccarthy@gi.alaska.edu](mailto:mccarthy@gi.alaska.edu))

**Office hours:** Mondays and Fridays 9:00 - 10:30 a.m. (or by appointment)

**Text:** Reading, H.G. Sedimentary Environments: Processes, facies and stratigraphy (3<sup>rd</sup> edition), Blackwell Science Publ., Oxford, U.K. 706 p.

### **Other References:**

Galloway, W.E. and Hobday, D.K. Terrigenous Clastic Depositional Systems. Springer-Verlag, Berlin. 489 p.

Scholle, P.A. and Spearing, D. Sandstone Depositional Environments. AAPG Memoir, 31, Tulsa, OK. 410 p.

Reineck, H.E. and Singh, I.B. Depositional Sedimentary Environments (2<sup>nd</sup> edition), Springer-Verlag, Berlin, 551 p.

This is a graduate level course in clastic depositional environments. The aims of this course are to provide you with technical training and theoretical background in clastic depositional environments beyond that which you may have obtained at the undergraduate level. From a practical point of view, the course will involve completion of a field-based research project, presentation of seminars and participation in discussions. We will be reading and discussing both text-book style material and research papers from the primary literature. I will present some of this material in traditional lecture style, however, students will also be expected to present much of the basic material in seminar format to their peers. Weekly discussion of pertinent research papers is important and, therefore, students are required to come to class prepared to discuss assigned papers.

**Evaluation:** Grades for the course will be based on a 10 -15 p. (excluding figures and tables) field-based research paper (40% first version; 20% second version), a constructive peer review of another student=s research paper (10%), a seminar presentation on one (or more) of the listed topics (20%), and participation in weekly discussions (10%). I will provide further information on what is required for the research paper, peer review, and seminars in the next week.

**Deadlines:**

November 18 - First version of research paper due.

November 21 - Constructive peer review of papers due.

November 25 - First versions returned.

December 14 - Final version of research paper due.

**Tentative Lecture/Seminar schedule:**

**Week of:**

**September 12/05: Alluvial fan deposits**

- Reading: p. 37-42; 57-61
- Scholle/Spearing: p. 49-86
- Reineck/Singh: p. 299-305.
- Galloway/Hobday: p. 29-59

**September 19/05: Fluvial deposits**

- Reading: p. 37-54; 61-82
- Scholle/Spearing: p. 115-138
- Reineck/Singh: p. 257-298; 305-314.
- Galloway/Hobday: p. 60-90

**September 26/05: Paleosols**

- Reading: p. 55-56
- Reineck/Singh: p. 298.

**October 3/05: Eolian deposits**

- Reading: p. 125-153
- Scholle/Spearing: p. 11-48
- Reineck/Singh: p. 209-240
- Galloway/Hobday: p. 250-269

**October 10/05: Lacustrine deposits**

- Reading: p. 83-124
- Scholle/Spearing: p. 87-114
- Reineck/Singh: p. 241-256
- Galloway/Hobday: p. 231-249

**October 17/05: no classes**

**October 24/05: Estuarine environments**

- Reading: p. 216-218
- Scholle/Spearing: p. 179-190
- Reineck/Singh: p. 315-320.
- Galloway/Hobday: p. 145-149

**October 31/05: Deltaic environments**

- Reading: p. 156-160; 181-209
- Scholle/Spearing: p. 139-178
- Reineck/Singh: p. 321-338.
- Galloway/Hobday: p. 91-125

**November 7/05: Tidal depositional systems**

- Reading: p. 154-166
- Scholle/Spearing: p. 191-246
- Reineck/Singh: p. 424-456.
- Galloway/Hobday: p. 126-158

**November 14/05: Shoreline and barrier island systems**

- Reading: p. 154-231
- Scholle/Spearing: p. 247-280
- Reineck/Singh: p. 339-370.
- Galloway/Hobday: p. 126-158

**November 21/05: Shallow marine deposits**

- Reading: p. 232-280
- Scholle/Spearing: p. 281-328
- Reineck/Singh: p. 371-381.

- Galloway/Hobday: p. 159-185

**November 28/05: Continental slopes**

- Scholle/Spearing: p. 329-364
- Galloway/Hobday: p. 186-228

**December 5/05: Turbidites and submarine fans**

- Reading: p. 395-453
- Scholle/Spearing: p. 365-404
- Reineck/Singh: p. 457-501.
- Galloway/Hobday: p. 186-228.

**December 12/05: Special topics**