

SIO253 Fall 2019 14:00 – 15:20 Tuesday, Thursday 229 Ritter Hall

Instructor: Peter Lonsdale
Office: 215 Ritter Hall
Phone: (858) 534-2855

Instructor: Paterno (Pat) Castillo
Office: 3131 Sverdrup Hall
Phone: (858) 534-0383

Interactions of Oceanic Plates and the Continental Margin of California

One goal of the class is to inform and interest students, especially those coming from out-of-state, in the dynamic geology and (mainly Cenozoic) geologic history of Alta California and Baja California and the adjacent offshore regions. A particular emphasis is how offshore geologic events have influenced onshore geology, and vice versa.

The general format of the class will be for one of us to lecture on Thursday, and then assign one or two short papers (related to the subject of the lecture) and questions about them that we will ask you to answer by email to us before 0900 Tuesday. We'll then discuss the questions and your answers at the beginning of Tuesday's class... When we're done with that, we'll lecture some more. The final exam will be a take-home with questions for students to answer during the assigned "Finals Week".

We'd like to schedule a 1-day (Saturday) class field trip into the Salton Trough desert at some mutually agreeable date, preferably after the Salton Trough lectures.

Topics to be covered in October to mid-November classes will include PowerPoint lectures by Peter: The assigned "first day of classes" is Thursday, Sept. 26. We want to use 14:00-15:00 that day to look through the syllabus with you, try to learn how much you already know about these subjects, and see if there are any scheduling conflicts you may have. If this goes quickly, I will then begin the "Oct. 1" lecture.

Lecture Dates:	Lectures:
Oct. 1, 3	1. Early (Precambrian and Paleozoic) tectonic history... origins of this continental margin and its deformation by collisions by offshore continental blocks and island arcs, and the beginnings of subduction.
Oct. 8, 10	2. Mesozoic crustal accretion and formation of the Peninsular Range and Sierra Nevada batholiths.
Oct. 15, 17	3. Active and inactive Californian subduction zones, and the geologic effects of their subducted slabs beneath a broad area of western North America (Basin-and-Range, Rocky Mountains, Sierra Madre).
Oct. 22, 24	4. Cenozoic formation of oceanic and continental microplates between the Pacific and North American plates, and the origin of the San Andreas Fault System.
Oct. 29, 31	5. Tectonic and volcanic activity on the Baja California microplate, and along its western margin.
Nov. 5, 7	6. Opening of Gulf of California, and its recent transition from rifting to seafloor spreading
Nov. 12, 14	7. Volcanic, tectonic, and hydrothermal activity in the Salton Trough, the subaerial part of the Gulf of California

Remaining scheduled classes before Thanksgiving (i.e. Nov. 19, 21, 26) will be led by Pat, lecturing on petrologic results of the tectonic history outlined by Peter, who will use the scheduled Dec. 3rd and 5th classes to lecture on the "Geology and Evolution of the California continental borderlands (submerged continental crust)".

There will be a take-home final exam assigned to the week of December 7th-14th, 2019. We will email exam questions on or before December 6th, 2019 and would like your exam answers emailed to both of us on or before December 13th, 2019.