

COASTAL GEOLOGY
Winter 2020: Mon/Wed/Fri: 9:20 -10:25 – E&MS B-210

Gary Griggs (griggs@ucsc.edu) E&MS A-361
Office hours: Mon/Wed: 10:30 -12:00 or by appointment

Texts: *Introduction to California's Beaches and Coast (CBC)*; *Living with the Changing California Coast (LWCCC)*; *Littoral Cells, Sand Budgets, and Beaches: Understanding California's Shoreline (LC)*

DATE	TOPIC	READING
Jan 6	Introduction: coastal landforms & processes	CBC Intro. 1
Jan 8	Coastal classification and evolution; tectonics and coasts	CBC 1; LWCCC 2
Jan 10	Global Coastal Geomorphology	
Jan 13	Tectonic geomorphology-marine terraces	CBC 2
Jan 15	Climate change and sea level fluctuations	CBC 3
Jan 17	Temporal and spatial differences in sea level	CBC 3
Jan 20	HOLIDAY – Martin Luther King Jr. Day- No Class	
Jan 22	Pacific Decadal Oscillations/El Niño Southern Oscillations	LWCCC3
Jan 24	Impacts of future sea-level rise	CBC 3
Jan 27	Marginal marine environments; estuaries, lagoons, wetlands, and environmental issues	
Jan 29	Coastal dunes; human impacts on dunes	CBC 5
Jan 31	Waves: properties, formation, propagation	CBC 4
Feb 3	Tsunamis	
Feb 5	MIDTERM	

Feb 7	Waves at the shoreline: refraction, reflection, diffraction; interference	CBC 4
Feb 10	Beaches: materials and morphology; Movement of sand on beaches	CBC 5; LC
Feb 12	Beach compartments/littoral cells; sand budgets;	CBC 5; LC; LWCCC4
Feb 14	Sand sources, littoral drift, sand sinks	
Feb 17	Human impacts on littoral cells; dams and armor	CBC 5/LC
Feb 19	<i>President's Day – HOLIDAY – No Class</i>	
Feb 21	Beach nourishment: retention and losses	LC
Feb 24	Coastal Engineering: breakwaters, jetties, groins	LWCCC4
Feb 26	Coastal Erosion: types, processes and rates	CBC 7; LWCCC5
Feb 28	Responses to coastal erosion: armoring	CBC 7; LWCCC7
Mar 2	Coastal armoring: effectiveness & impacts	CBC 7/; LWCCC7
Mar 4	Sea-level rise: Shoreline flooding and inundation	
Mar 6	Options for Adapting to future sea-level rise; Resilience and Managed Retreat	LWCCC 6
Mar 9	The California Coastal Commission - Coastal planning, Governance and policies	LWCCC 8
Mar 11	Coastal Consulting – Case Studies 1	
Mar 13	Coastal Consulting: Case Studies 2	
Mar 18	Wednesday 4:00-7:00 pm FINAL EXAMINATION	

COASTAL GEOLOGY LABORATORY

Teaching Assistant: Lida Davar

Lab Sections: Monday 5:30-8:30 (D-250); Thursday 5:15-8:15 (D-250)

Week 1: Jan 13/16	Introduction to aerial photo interpretation
Week 2: Jan 20/23	Mapping marine terraces on topographic maps from aerial photographs
Week 3: Jan 27/30	Global sea Level & tide gauges
Week 4: Feb 3/6	Sand Dunes on the Central Coast
Week 5: Feb 10/13	Coastal protection and engineering
Week 6: Feb 17/20	Sea cliff erosion rates
Week 8: Feb 24/27	West Cliff Drive Field Lab: Erosion & Protection
Week 9: Mar 2/5	Future Sea-Level Rise and Shoreline Inundation