

Text (required): Earth, Ninth Edition by Tarbuck and LutgensLab manual (required): **AIG Laboratory Manual in Physical Geology**, Eighth Edition, RM Busch, Ed.

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Office: SCN 216 Office hours: M,W 1:00-1:30 T, Th 11:30-12:00

Date	Lecture Topic	Lab Topic	TMYN module	Book chapter
Th Sept 22	Introduction, origin of the earth, Earth's spheres, history of geology, uniformitarianism			1
T Sept 27	Plate Tectonics- history of, evidence for; paleomagnetism; seafloor-spreading & magnetic reversals	Density of Earth Materials, Isostasy	Density	2 Lab 1
Th Sept 29	Plate Tectonics, boundary types, features at divergent, convergent, and transform boundaries, driving forces – mantle convection and mantle plumes	Identifying minerals	Unit Conversions	2 Lab 3A, 3B
T Oct 4	Minerals: chemistry review – bond types, atomic structure, crystal structures, classification of minerals based on mineral properties, major mineral classes			3
Th Oct 6	Igneous Petrology, magma, textures, composition, classification, Bowen's reaction series, intrusive bodies	Igneous rocks	Plotting points	4 Lab 5
T Oct 11	Volcanoes, eruption styles – magma viscosity, eruptive materials, volcanic landforms, humans and volcanoes			5
Th Oct 13	TEST ONE (Chapters 1-5)	Sedimentary rocks		Lab 6
T Oct 18	Sedimentary petrology, classification – grain size, sorting, detrital vs. chemical, common sedimentary rocks, sedimentary environments and facies			7
Th Oct 20	Weathering- types of	Metamorphic		6 Lab 7

	mechanical, types of chemical, weathering rates, formation of soil, soil erosion	rocks		
T Oct 25	Metamorphism – heat, stress, fluids; Metamorphic petrology – textures, foliation; metamorphic environments			8
Th Oct 27	Structural Geology, stress & strain, ductile deformation and folds, brittle deformation and faults, types of faults, strike and dip	3D structures; folds and faults, geologic maps	Slope and topographic maps	10 Lab 9D
T Nov 1	Geologic maps and cross sections			
Th Nov 3	Field Trip	FIELD TRIP One (Fish Ranch Rd., Sibley Volcanic Park)		
T Nov 8	Geologic Time, dating methods – absolute dating and radioactivity; relative dating – superposition and cross-cutting relationships, geologic time scale		Reading points from a curve	9 Lab 8 Exercise in class
Th Nov 10	Earthquakes- waves (seismology), magnitude, historical and recent earthquakes, destruction from seismic waves, Hayward fault and San Andreas system – seismic risk and earthquake prediction, tsunami	Locating earthquakes using seismic waves		11 Lab 16B, 16C
T Nov 15	TEST TWO (Chapters 6-10)			
Th Nov 17	Field Trip	FIELD TRIP Two (Hayward Fault)		
T Nov 22	Geophysics, Earth's interior, earth layers, heat flow, the origin of the magnetic field			12
Th Nov 24 NO CLASS				

T Nov 29	Groundwater, distribution of water on Earth, interaction between streams and groundwater, porosity and permeability, Darcy's Law, groundwater use and problems in California		Rates	17 Lab 12B, 12C in class
Th Dec 1	Energy and Mineral Resources, coal, oil and gas – formation and geologic occurrence, alternative energy sources, ore deposits – formation and occurrence, gold in California			23
T Dec 6	FINAL EXAM	12:00-1:50		CUMULATIVE

Dates and topics subject to change

Grading:

Tests: 50 points each

Final Exam: 100 points

6 Labs + 2 field trips: 20 points each, lowest grade will be dropped, labs and field trip reports are due one week after the exercise takes place

Participation during labs and attendance on field trips is very important; you will not receive a grade higher than C- if you miss more than two labs/field trips.

Total points: 340

TMYN assessments are worth 5 points each for a total of 30 extra credit points

No test or lab makeups, 10% deduction per day for late work