

GEOL 112 Dynamic Earth: A New Zealand Perspective

Timetable – Semester 2, 2017

WEEK	MONDAY Quad 4 10.00-10.50 am	TUESDAY Quad 4 10.00-10.50 am	W E D	THURSDAY Quad 4 10.00-10.50 am	FRIDAY Quad 4 10.00-10.50 am	LAB –Gn6 M/Tu/W/Th 2.00–5.00 pm	SAT/SUN FIELDTRIPS
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Module 1: Earth Structure and Geological Relationships

10 July-16 July	Introduction <i>EARTH</i> Prelude + Ch. 1	Earth structure <i>EARTH</i> Ch. 2		The active Earth: volcanoes <i>EARTH</i> Ch. 9	The active Earth: mountains <i>EARTH</i> Ch. 11 pp 400-415	Topographic & geological maps	
17 July- 23 July	Active tectonics of NZ 1 <i>CONT</i> Ch. 5 & Ch. 6	Active tectonics of NZ 2 <i>CONT</i> Ch. 5 & Ch. 6		Rock deformation <i>EARTH</i> Ch. 11 pp 379-387	Geological mapping <i>EARTH</i> Ch. 11 pp 388-389	Dipping beds	Sandymount Field Trip (5%) 22 nd or 23 rd July
24 July-31 July	Faults and folds <i>EARTH</i> Ch. 11 pp 387-399	Faults and earthquakes 1 <i>EARTH</i> Ch. 10		Faults and earthquakes 2 “Japan’s Killer Quake”	Review lecture and exam practice	Outcrop patterns	

Module 2: Mineral and Rock Types

31 July -7 Aug	Crystals and minerals <i>EARTH</i> Ch. 5	Silicate structural groups <i>EARTH</i> Ch. 5		Origin of magmas & classification of igneous rocks <i>EARTH</i> Ch. 5	Magmatic differentiation <i>EARTH</i> Ch. 6	Mineralogy I	
7 Aug- 13 Aug	Igneous intrusions <i>EARTH</i> Ch. 6	Otago volcanism <i>CONT</i> pp152–155		Volcanic processes (1) <i>EARTH</i> Ch. 9	Volcanic processes (2) <i>EARTH</i> Ch. 9	Lab Test 1 (5%) Mineralogy II	Dunedin Volcano (5%) 12 th or 13 th Aug
14 Aug-20 Aug	From Source to Sink: The sedimentary rock cycle <i>EARTH</i> Ch. 7 + pp183-201	Sedimentary classification and depositional characteristics <i>EARTH</i> Ch. 7 + pp183-201		Sediment transport <i>EARTH</i> Ch. 7 + pp183-201	Depositional environments and the stratigraphic record <i>EARTH</i> Ch. 7 + pp183-201	Mineral identification: The petrographic microscope	
		Class Reps 1.00 pm					
21 Aug-27 Aug	CLASS EXAM (8%)	Metamorphic textures & mineral reactions <i>EARTH</i> Ch. 8		Metamorphism of the continental lithosphere <i>EARTH</i> Ch. 8	Metamorphism of the oceanic lithosphere <i>EARTH</i> Ch. 8	Igneous Rocks	

MID-SEMESTER BREAK 28 August– 1 September

WEEK	MONDAY Quad 4 10.00-10.50 am	TUESDAY Quad 4 10.00-10.50 am	WED	THURSDAY Quad 4 10.00-10.50 am	FRIDAY Quad 4 10.00-10.50 am	LAB M/Tu/W/Th/Fr 2.00–4.50 pm	SAT/SUN FIELDTRIPS
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4 Sep - 11 Sep	Review lecture and exam practice CEM, MB, CMM, JDLW, JMP	Isotopic dating & age of the Earth JMP <i>EARTH</i> Ch. 12; CONT pp48-61		Isotopic dating & tracers JMP <i>EARTH</i> Ch. 12; CONT pp58-61, 78-83, 89	CAREER BITES What can you do with a Geoscience degree?	Sedimentary Rocks	
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Module 3: Earth History and Geology of New Zealand

11 Sep- 17 Sep	Earth History: DEL Precambrian <i>EARTH</i> pp468-481 CONT pp52-53	Earth History: DEL Paleozoic <i>EARTH</i> pp482-487		Earth History: Pangea, Gondwana, Tethys DEL <i>EARTH</i> pp487-495	Landslides lab intro: ARG Landslides and submarine slope failure. <i>EARTH</i> Ch. 16.	Lab Test 2 (5%) Metamorphic Rocks	Brighton/ Fairfield (5%) 16th or 17th Sept
18 Sep- 24 Sep	Geology of NZ: DEL Western Province <i>CONT</i> pp76–83	Geology of NZ: DEL Eastern Province (1) <i>CONT</i> pp84–90		Geology of NZ: DEL Eastern Province (2) <i>CONT</i> pp85 & 84-90	Geology of NZ: Break from Gondwana: REF <i>CONT</i> pp80–81 & 126-135	Landslides 1 (Field trip to SW Dunedin, 2 pm–4.50 pm, from lab)	
25 Sep- 1 Oct	Geology of NZ: REF Dunedin sequence – submerged then emergent <i>CONT</i> pp132–135,153-154	Geology of NZ: REF Canterbury Basin: <i>CONT</i> pp132-135, 250-253 Class Reps 1.00 pm		Geology of NZ: REF Taranaki & Wanganui Basin <i>CONT</i> pp23,299-230,330-333	Earth History: Global Cenozoic Events REF <i>CONT</i> pp 264-267, 278-281	Landslides 2	

Module 4: Earth Resources and Hazards

2 Oct- 8 Oct	Groundwater DC <i>EARTH</i> Ch. 19 CONT pp322-325	Mineral deposits (1) DC <i>EARTH</i> Ch. 14+15 CONT pp304-307 and pp 334-337		Mineral deposits (2) DC <i>EARTH</i> Ch. 14+15 CONT pp326-329	Mineral deposits (3) DC <i>EARTH</i> Ch. 14+15 CONT pp330-333	Paringa Composite Lab	
9 Oct- 13 th Oct	Volcanic, earthquake and other natural hazards ARG <i>EARTH</i> Ch. 9	Volcanic, earthquake and other natural hazards ARG <i>EARTH</i> Ch. 9		Synthesizing Geology: ARG Antarctica <i>CONT</i> pp92–93 & 268-275	Paper review and final exam preparation SS and others	Final Practical Exam (12%) 2–4.30pm on your lab day	

EXAMINATIONS Wednesday 18th October – Saturday 11th November

STAFF

DC	Professor Dave Craw
REF	Professor Ewan Fordyce
ARG	Associate Professor Andrew Gorman (undergrad course advisor) andrew.gorman@otago.ac.nz
DEL	Associate Professor Daphne Lee
CEM	Dr. Candace Martin
CMM	Dr. Chris Moy
JMP	Dr. Michael Palin
MB	Dr. Marco Brenna
SS	Dr. Steven Smith (Paper co-ordinator), steven.smith@otago.ac.nz
JDLW	Professor James White (Head of Department)
RM	Ray Marx (Teaching Fellow), ray.marx@otago.ac.nz

RECOMMENDED 1) *Earth, Portrait of a Planet, 5th Edition (International Student Edition)*, Stephen Marshak (Author), W.W. Norton & Company, 2012. (**EARTH**). *Note that the 4th Edition of this textbook is also acceptable as the content is nearly identical to the 5th Edition, but the page numbers referred to above may not be correct. If you want to buy earlier Editions (i.e. Editions 1-3) please consult first with Dr. Steven Smith.*

TEXTBOOKS: 2) *A Continent on the Move: New Zealand Geoscience Revealed*, Second Edition, Ian Graham (Chief Editor) 2015 (first edition published in 2008). Geological Society of New Zealand and GNS Science, Wellington. (**CONT**). *Note that the first edition of this book is also acceptable but the page numbers referred to in the above timetable may not be correct.*
(available on closed reserve in Science Library)

FIELD TRIPS: Field trips have associated questionnaires that are handed in and marked “Satisfactory” or “Unsatisfactory”. In addition, there will be questions in written examinations on material related to field trips. These are run on **either** Saturday **or** Sunday (refer to timetable). The Landslides 1 laboratory class will also be in the form of a short field trip run in lab time.

ASSESSMENT: The final grade for GEOL112 is made up of the following:

Lab tests (2 worth 5% each)	10%	Field Trips (3 worth 5% each)	15%
Final Practical Assessment	12%	Class Exam	8%
Final Theory Exam	55%	(+Bonus 2% for completing the online Library Quiz)	