

# SIO224 Internal Constitution of the Earth 2019

Lecture	Topic
1, 2 Apr	Formation of the Earth and Moon, Bulk composition
2, 4 Apr	1D Earth structure and resolution
3, 9 Apr	Thermodynamics review
4, 11 Apr	P and T in deep Earth, materials at high T
5, 16 Apr	Equations of state – Mie Gruneisen theory
6, 18 Apr	Fitting the lower mantle (spin transition)
7, 23 Apr	Phase transformations, phase diagrams, mantle discontinuities
8, 25 Apr	Melting, phase diagram of iron, T profiles
9, 30 Apr	3d Earth structure, thermal + compositional
10, 2 May	Tomography, resolution and errors
11, 7 May	Isotopic constraints on mantle convection
12, 9 May	Defomation mechanisms of mantle minerals
13, 14 May	Fluid dynamics, dynamic similarity, Stokes flow
14, 16 May	Radial viscosity structure of the earth – PGR, geoid and slab models
15, 21 May	Mantle convection, Boussinesq approx, stability
16, 23 May	Mantle convection, effect of heating, geometry, viscosity
17, 28 May	Compressible mantle convection, energetics
18, 30 May	Thermochemical convection, mantle plumes
19, 4 June	Core energetics, thermal history of Earth
20, 6 June	Review