

# Structure and Composition of the Earth's Interior (GEO4-1401)

Tentamen - Wednesday 5 November 2014  
09:00 - 11.30

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The numbers in () indicate the percentage for evaluation. No documents are allowed during the examination. Please write clearly and don't forget to indicate your name.

1. What is meant by an equation of state and what is their geophysical significance? Describe some equations of state which are used in Earth Sciences. (20 marks)
2. Why is it difficult to constrain the density structure of the Earth's interior? Why is it important to know the density distribution inside the Earth, and what methods have been used to map the Earth's density structure? (20 marks)
3. In a paper from 2012, Schuberth *et al.* argue that, in the lower mantle, “long period P and S wave travel-time variations can be explained by temperature alone”. Do you agree with this statement? Give reasons for your answer. (20 marks)
4. To what extent are surface volcanism and subduction linked to the lower mantle? You can support your answer with reference to studies in seismology, geodynamics and geochemistry, including their limitations. (40 marks)

Good luck