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## General Physics for Earth Sciences, an undergraduate introductory physics course for first-year students majoring in the earth sciences at the University of Johannesburg

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Curriculum development for higher education science degrees becomes particularly important with regards to service courses, i.e. those courses designed to cater for students majoring in scientific disciplines different from that of the service course. Not only do service courses provide general scientific literacy to future scientists, but (if properly designed) they also address preconceptions around the relevance of a particular science discipline within the broader scientific context. Physics service courses are not exempted from the above considerations.

A first-year physics course for Earth Sciences majors recently developed at the University of Johannesburg is described. The need for such a course to be developed came from the necessity to address 1) the poor performance of the students in the old “content-neutral” general physics service course, and 2) the lack of engagement of these students with the content.

The design of this fourteen-week course spans from vector algebra and two-dimensional mechanics to properties of solids and fluids. Particular care has been put into enriching each section with relevant examples within the geosciences context, and making linkages between physics principles and laws to more advanced geoscience subjects. Examples of these are: mass wasting as an application of the inclined plane problem; relevance of vector addition for the triple junction stability in plate tectonics; Archimedes’ principle and buoyancy at subduction zones; the importance of friction in rock deformation, and many others. The pedagogical approaches adopted in the teaching of the course are described, bringing evidence that these, together with the relevance of the course content to students, have contributed to tremendously increasing the student performance and holistic experience of the course.

Finally, arguments are proposed to support the claim that the emphasis on relevance of the content is the appropriate answer to address the issues around decolonization of the curriculum within the (South African) higher education landscape.

**Apply to be considered for a student award (Yes / No)?**

N/A

**Level for award (Hons, MSc, PhD, N/A)?**

N/A

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