

Faculty	Natural Sciences
Home Department	Earth Sciences (Applied Geology)
Module Topic	GIS and Geological data modelling
Generic Module Name	APG311
Alpha-numeric Code	APG311
NQF Level	7
NQF Credit Value	30
Duration	Semester
Proposed semester to be offered	First Semester
Programmes in which the module will be offered	BSc (Applied Geology) (3214,3011)
Year level	3
Main Outcomes	<p>On completion of this module students should be able to:</p> <ul style="list-style-type: none"> • Know the principles and applications of spatial and related techniques in geology. • Develop skills for the construction of GIS raster and vector maps using geological data. • Able to carry out data query and spatial data analysis. • Have a conceptual understanding of data management, data querying and spatial analysis. • Understand basic geological data analysis and interpretation. • Develop knowledge on how to create geochemical element association and their application in rock identification, mineral exploration and environmental management. • Understand principles of modelling geological processes and geological setting. • Develop skills to integrate geological data into computer-based models; process and analyze and evaluate resulting images. • Have a conceptual understanding of the application of geological models in the search for various Earth resources.
Main Content	<ul style="list-style-type: none"> • Database management, vector maps and raster maps • Data query and Spatial data analysis • Geological data and GIS • Application of GIS to geological industry. • Basic statistical data analysis, including mean, standard deviation, variance and their application in exploration • Correlation and regression analysis • Element association and their use in rock/environmental relation • Basic elements in 2D and 3D geological models in geology. • Introduction to computer modelling packages in applied geological industry. • Construction of geological/geochemical/ maps and sections. • Integration of geological maps and sections into 2D and 3D models related to element migration and hydrocarbon occurrence and flow dynamics

Pre-requisite modules	None			
Co-requisite modules	None			
Prohibited module Combination	None			
Breakdown of Learning Time	Hours	Timetable Requirement per week		Other teaching modes that does not require time-table
<i>Contact with lecture / tutor:</i>	42	<i>Lectures p.w.</i>	3	
<i>Assignments & tasks:</i>	60	<i>Practicals p.w.</i>	2	
<i>Practicals:</i>	30	<i>Tutorials p.w.</i>	0	
<i>Tutorials:</i>	0			
<i>Tests & Examinations:</i>	84			
<i>Selfstudy:</i>	84			
<i>Other:</i>	0			
Total Learning Time	300			
Methods of Student Assessment	Continuous Assessment (CA): 50%			
	Final Assessment (FA): 50%			
Assessment Module type	Continuous and Final Assessment (CFA)			