

International Student Exchange Program Courses in English Available for Exchange Student and Study Abroad
Faculty of Mathematics and Natural Sciences

No	Faculty	Department	Degree	Type of Program	Course Name	Course Code	Credit	Capacity	Course Description	Learning Outcomes	Course content	Recommended references
1	Mathematics and Natural Sciences	Geosciences	Undergraduate	Regular	Geostatistic	SCGL602121	2	5	The course explain the fundamental principles of geostatistical methods for processing geological data related to rock formation history, energy availability, natural hazards, and environmental studies. The lecture cover various geostatistical methods for natural resource exploration, geological hazard mitigation, and environmental problem identification.	Students will be able to calculate various types of geological data using fundamental statistical methods, presenting results as statistical distributions, variables, and variograms for applications in natural resource exploration, energy studies, geological hazard mitigation, and environmental problem identification.	1. Introduction & data presentation 2. Descriptive statistics & confidence limits Review 3. Normal distribution 4. Regression analysis 5. Bayesian statistics 6. Spatial data 7. Spatial interpolation 8. Semivariogram (1) 9. Ordinary kriging 10. Indicator kriging 11. Introduction of SGS & SIS	1. Statistics and Data Analysis in Geology By John C. Davis Wiley, 1973, 2002, 550 Pages 2. An Introduction to Applied Geostatistics By Edward H. Isaaks and R. Mohan Srivastava, Oxford University Press, New York, 1989, 561 pages 3. Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies Edited by Jeffrey M. Yarus and Richard L. Chambers Published by AAPG, 1994, 379 pages 4. Applied Geostatistics with SGeMS: A User's Guide (Stanford Geostatistical Modeling Software) By Nicolas Remy, Alexandre Boucher and Juanbing Wu,
2	Mathematics and Natural Sciences	Geosciences	Undergraduate	Regular	Applied Structural Geology	SCGL603253	2	5	This course aims to introduce types of geologic structures in extensional, compressional, and strike-slip settings, and to exercise structural interpretation on geological and geophysical datasets.	Students will understand different types of geologic structures and will be able to perform structural interpretation on different geological and geophysical datasets.	1. Introduction 2. Extensional tectonic setting 3. Compressional tectonic setting 4. Strike-slip tectonic setting 5. Basin inversion 6. Fault kinematic analysis 7. Tectonic Geomorphology 8. Seismic interpretation 9. Gravity interpretation 10. Interpretation on induced polarization (IP) data 11. Interpretation on magnetotelluric (MT) data	1. Frisch et al. (2011): Plate Tectonics and Continental Drift. Berlin, Germany: Springer-Verlag. 2. van der Pluijm and Marshak (2004): Earth Structure Second Edition. New York, United States of America: W. W. Norton & Company, Inc. 3. Bierman and Montgomery (2011): Key Concepts in Geomorphology. United States of America: W. H. Freeman and Company Publishers. 4. Delvaux and Sperner (2003): New aspects of tectonic stress inversion with reference to the TENSOR program. The Geological Society of London.

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3	Mathematics and Natural Sciences	Geosciences	Undergraduate	Regular	Volcanology	SCGL602112	2	5	This course will discuss how volcanoes work, starting from how magmatic activity forms to create volcanic systems, and how volcanoes impact the environment and humans. The lectures will cover how volcanoes form in various tectonic settings, the types of volcanoes and their products, different types of volcanic eruptions, characteristics of volcanic deposits, and the various impacts caused by volcanoes.	Students will be able to reconstruct volcanological phenomena from a geoscientific perspective using available data, integrating geological, geochemical, and geophysical evidence to analyze volcanic processes and their implications.	1. Volcanic Systems & Magmatic Processes – Origin and evolution of magma, volcanic plumbing systems. 2. Tectonic Controls on Volcanism – Subduction zones, rift systems, and hotspot volcanism. 3. Volcano Types & Eruptive Products – Shield vs. stratovolcanoes; lava flows, pyroclastics, and gases. 4. Eruption Dynamics – Effusive vs. explosive eruptions (Plinian, Strombolian, etc.). 5. Volcanic Deposits & Hazards – Tephra, lahars, pyroclastic flows; risk assessment and mitigation. 6. Environmental & Societal Impacts – Geothermal energy,	1. Schminke, H-U. (2004) Volcanism. Berlin, Germany: Springer-Verlag. 2. Sigurdsson, H. Encyclopedia of Volcanoes. San Diego, United States: Academic Press. 3. McPhie, J., Doyle, M. and Allen, R., 1993. Volcanic texture. Hobart: Centre for Ore Deposit and Exploration Studies, University of Tasmania. 4. Groppelli, G. and Viereck-Goette, L. eds., 2010. Stratigraphy and geology of volcanic areas (Vol. 464). Geological Society of America.