GEOS 601 Polar Regions of the Earth: Science, Society, and Discovery  
Credits 3. 3 Lecture Hours.  
Disciplines and topics that define modern polar science in the north and south; includes history of the Polar Regions, polar geosciences, major polar scientific projects, and special topics; participate as individuals and teams in education, outreach and science projects.  
Prerequisite: Graduate classification.

GEOS 611 Data Management for the Geosciences  
Credits 3. 3 Lecture Hours.  
Study of data creation and data project execution plans in geosciences; interactive data workflow-based infrastructures; maintaining data identity and quality during data transformation processes; fundamental geosciences data management planning; data collection by environmental sensors.  
Prerequisite: Graduate classification.

GEOS 612 Data Quality for the Geosciences  
Credits 3. 3 Lecture Hours.  
Study of quality procedures and concerns for analysis-ready data for geosciences applications; fundamental functions to evaluate and produce high-quality geosciences data; data quality status and reliability; identification and extraction of mandatory elements of geoscience data.  
Prerequisite: Graduate classification.

GEOS 613 Data Governance in the Geosciences  
Credits 3. 3 Lecture Hours.  
Study of geosciences data governance activities and communications; operational, technological, digital and intellectual geosciences data resources; creation of accurate and reliable geosciences data; preparation of high-quality geosciences data for governance purposes; organizational data rules and standards for the geosciences.  
Prerequisite: Graduate classification.

GEOS 642/GEOG 642 Past Climates  
Credits 3. 3 Lecture Hours.  
Terrestrial and marine proxy records of past climate variability, including tree rings, coral, and sediments; past climate change events such as the Little Ice Age and Medieval Warm Period; greenhouse gases and global temperature; insight into the nature of climate change and challenges humankind faces in the next few centuries.  
Prerequisite: Graduate Classification.  
Cross Listing: GEOG 642/GEOS 642.

GEOS 669 Introduction to Processing Geoscience Data with R  
Credits 3. 3 Lecture Hours.  
Scientific programming; handling of data in the earth sciences; differences among spatial and temporal datasets; use of short programming scripts in the open-source language R, clean data sets, application of simple data visualizations.  
Prerequisite: Graduate classification.

GEOS 676 Capstone Experience  
Credits 3 to 6. 3 to 6 Lecture Hours.  
Integration of knowledge and skills gained through other courses and experiences in the Master of Geoscience program, application of conceptual geoscience knowledge to solve applied problems in the discipline; development of teamwork, communication and professional skills through interactions with industry professionals.  
Prerequisites: Enrollment in Master of Geoscience.

GEOS 677 Science, Technology, Engineering and Mathematics (STEM) Teaching Professional Development  
Credit 1. 1 Lecture Hour.  
Center for Teaching Excellence (CTE) consultation and faculty mentoring in STEM teaching; course topic and syllabus design; learning outcomes and assessment; teaching methodology; reflection on teaching philosophy; reflection on teaching as research. Must be taken on satisfactory/unsatisfactory basis.  
Prerequisites: Graduate classification and approval of instructor.  
Cross Listing: ENGR 677 and SCEN 677.

GEOS 689 Special Topics in...  
Credits 1 to 4. 1 to 4 Lecture Hours.  
Selected topics in an identified area of geosciences. May be repeated for credit.  
Prerequisites: Graduate classification and approval of instructor.