

Version 2: Course *without* diamond exploration project

Geologic Topics Covered	Connections Drawn to Non-Geologic Topics	Linkages to Public Policy
<p>Nile River Section</p> <p>fluvial features (deltas, floodplains, levees, etc.)</p> <p>topographic maps, aerial photos</p> <p>behavior of rivers and deltas (erosion, deposition, migration, aggradation, downcutting)</p> <p>geologic maps</p> <p>influence of bedrock on river geometry</p> <p>flooding</p> <p>depositional environments in fluvial and deltaic settings</p> <p>reconstructing river evolution from fluvial and deltaic deposits</p> <p>dams and influence on fluvial and deltaic systems</p> <p>intraplate seismicity and induced seismicity</p> <p>dam failure and effects of catastrophic flooding (both natural and artificial)</p>	<p>Nile River Section</p> <p>influence of bedrock geology on settlement patterns along Nile, unification of Egypt</p> <p>annual Nile floods and development of civilizations along the Nile</p> <p>fluctuations in climate and Nile behavior as influences on historical events in Nile Valley (settlement in the Nile Valley, development of agriculture, settlement patterns, rise and fall of dynasties)</p> <p>benefits and consequences for Egypt of damming the Nile at Aswan</p> <p>hydropolitics in North Africa</p> <p>vulnerability of the Aswan High Dam and the parameters of the disaster that would result from catastrophic failure of the Dam</p>	<p>Nile River Section</p> <p>water needs in North Africa, population growth, riparian rights, international hydropolitics and negotiations for water allocations from the Nile</p> <p>complexity of policy decisions related to need for water and consequent control of the Nile, only parts of which are governed by geologic/environmental considerations</p> <p>emergency plan for Egypt in event of failure of Aswan High Dam</p> <p>“public policy” in Ancient Egypt as a result of fluctuations in Nile flood levels</p>
<p>Sahara/Sahel Section</p> <p>groundwater systems (migration, artesian systems and oases, age of groundwater, depletion and pollution)</p> <p>¹⁴C dating</p> <p>stratigraphic columns</p> <p>reconstructing paleoclimate from sediment sequences, fossils, pollen, and landforms</p> <p>Holocene and Pleistocene climate evolution in North Africa</p> <p>management of surface and subsurface water resources</p> <p>greenhouse warming</p>	<p>Sahara/Sahel Section</p> <p>influence of rainfall fluctuations on rise and fall of Saharan/Sahelian habitation and empires</p> <p>modern hydrogeology in the Sahara and Sahel and the future of economic growth in North Africa</p> <p>humans and the environment; debate over causes of desertification</p> <p>future in the Sahara and Sahel – how geologic evidence helps us determine what greenhouse warming might do</p>	<p>Sahara/Sahel Section</p> <p>exploitation of Saharan ground water reserves in Libya and the Western Desert of Egypt</p> <p>amelioration of desertification and the roles of governments, grass roots groups, and international agencies in dealing with desertification</p> <p>using geologic information to plan for a future in the Sahel when worldwide average temperatures may be higher</p>

<p>East African Rift Zone Section</p> <p>plate tectonics continental rifting Miocene and Pliocene plate tectonic evolution of Africa and surrounding plates evolution of structures, topography, and sediment sequences in the EAR rift zone volcanism & origin of magmas use of sediment sequences to reconstruct paleoenvironments at hominid sites radiometric dating of ash layers use of ash layers and vertebrate fossils to correlate sediment sequences use of sediment sequences, palynology, and paleontology to reconstruct paleoclimates hominid evolution</p>	<p>East African Rift Zone Section</p> <p>rift zone evolution and the preservation and exposure of hominid remains development of the EAR as a possible environmental influence in hominid evolution</p>	<p>East African Rift Zone Section</p> <p>none</p>
<p>Mineral Resources Section</p> <p>tectonic evolution of Africa since Archean hydrothermal fluids origin of selected types of mineral deposits in Africa (paleoplacer gold, vein gold, diamonds, bauxite, copper) smelting of metallic ores petroleum</p>	<p>Mineral Resources Section</p> <p>resources, prehistoric cultures, and ancient empires in Africa metallurgical origins of smelting rituals influence of mineral resources on exploitation of continent influence of mineral resources on international relations and economic status of countries origin of black oppression in South Africa</p>	<p>Mineral Resources Section</p> <p>influence of the South African mining industry in the late 19th century and early 20th century on taxation, pass, and homeland laws and the development of apartheid diamonds and the dilemma of Botswana's relations with South Africa in the 1980's governmental and infrastructure barriers in Africa to using mineral resources to improve the overall well-being of the population</p>