

SYLLABUS AND COURSE SCHEDULE  
 GEOL-G 349/549 SUMMER FIELD GEOLOGY AND PALEOANTHROPOLOGY AT OLDUVAI GORGE

MAY 16-JUNE 22, 2018  
 SCHEDULE OF TOPICS

Topic	Activity	Days	Location
<b>A. Travel logistics</b>	<ul style="list-style-type: none"> <li>Arrival Kilimanjaro International</li> <li>Transfers to hotel in Arusha</li> <li>Travel, safety, health &amp; living in Tanzania sessions</li> <li>Introduction to course activities, methods of instruction, field sites, student responsibilities.</li> </ul>	1	Impala Hotel, Arusha
<b>B. Academic program</b>			
<b>On site orientation course</b> <ul style="list-style-type: none"> <li>Introduction to Swahili</li> <li>Geographic overview of Tanzanian</li> </ul>	<ul style="list-style-type: none"> <li>Learn basic Swahili class</li> <li>The history of Tanzania &amp; culture</li> <li>Visit local village &amp; market</li> </ul>	1	Impala Hotel, Arusha
<ul style="list-style-type: none"> <li>Overview of human evolution in Africa</li> <li>The role of African Museums &amp; conservation of cultural resources</li> </ul>	<ul style="list-style-type: none"> <li>Geologic history of continental rifting</li> <li>Fossil evidence from the East African Rift System</li> <li>History of early human discoveries at Olduvai Gorge</li> <li>Guided tour to the Human Evolution &amp; Olduvai exhibitions.</li> </ul>	1	Impala Hotel, Arusha
<b>Geology</b>			
<ul style="list-style-type: none"> <li>Development of the East African Rift System</li> <li>Impact of rifting on the environments &amp; human evolution</li> <li>Formation of archaeological sites</li> </ul>	Arusha-Olduvai road trip with stops on the way. Field observations of features associated with rifting i.e., volcanism, faults, lake basins, archaeological deposits, and evolution of the wildlife ecosystems & cultural landscapes. <ul style="list-style-type: none"> <li>Introduce the concept of <i>graben</i> &amp; <i>half-graben</i> in rift formation.</li> <li>How Lake Manyara environments are used as modern analogue for hominid adaptation at prehistoric Olduvai lake basin</li> </ul>	1	Manyara scarp  Overnight at Mto wa Mbu, Manyara/Karatu
<ul style="list-style-type: none"> <li>Geographic overview of Ngorongoro volcanic highlands</li> <li>Evolution of Olduvai paleolandscapes &amp; environments</li> </ul>	From Lake Manyara to Ngorongoro volcanic highlands: <ul style="list-style-type: none"> <li>Brief recap of volcanism, formation of collapse caldera &amp; evolution of Olduvai system.</li> <li>How Ngorongoro Crater environments are used as modern analogue for Olduvai hominid environments</li> </ul>	2	Ngorongoro Crater
<ul style="list-style-type: none"> <li>Stratigraphy of Olduvai</li> <li>Rock Identification (Igneous/ Sedimentary/ Metamorphic)</li> <li>Principles of sedimentary facies &amp; facies correlation</li> </ul>	<ul style="list-style-type: none"> <li>Formations in sedimentary rocks</li> <li>How sedimentary Beds/rock packages reflect depositional environments</li> <li>Age of nearby volcanoes and Precambrian rocks</li> <li>Olduvai depositional environments</li> <li>Sedimentary facies</li> </ul>	4	Olduvai  Olduvai
<ul style="list-style-type: none"> <li>Contemporaneous faulting and sedimentation</li> <li>Precambrian crystalline geology</li> <li>Tertiary volcanism</li> </ul>	<ul style="list-style-type: none"> <li>Rock deformation associated with extensional tectonics</li> <li>Tanzania craton &amp; unconformity between Precambrian &amp; Quaternary sedimentary rocks.</li> <li>Sand dunes, fluvial deposits, re-worked airfall tuffs.</li> </ul>	4	Olduvai, Serengeti, Serena Lodge
<ul style="list-style-type: none"> <li>Sources of raw material for stone tool making.</li> </ul>	<ul style="list-style-type: none"> <li>Difference between volcanic vs. meta-sedimentary outcrops.</li> </ul>	1	Olduvai
<b>Paleoanthropology</b>			

<ul style="list-style-type: none"> <li>Hominid evolution &amp; emergence of prehistoric people in Africa.</li> <li>Origins &amp; evolution of stone age technology</li> <li>Evolution of vertebrate fauna and early human behavior in geological context.</li> <li>Fossil &amp; faunal analysis</li> </ul>	<ul style="list-style-type: none"> <li>Human origins: Development, distribution &amp; evidence of Australopithecines, <i>Paranthropus (Zinjanthropus)</i>, <i>Homo habilis</i>, <i>Homo erectus</i>, Archaic <i>H. sapiens</i>, prehistoric hunter-gatherers, modern pastoral communities.</li> <li>Biological &amp; cultural evolution from Bed I to Beds II, III &amp; IV times.</li> <li>Faunal turnover during basal Bed II.</li> <li>Environmental contexts of Beds I-IV</li> <li>Evolution of vertebrate fauna in Serengeti ecosystem</li> <li>Origin of meat-eating behavior by human ancestors and archaeological evidence.</li> <li>Osteology &amp; fossil identification</li> <li>Classification of skeletal &amp; animal groups</li> <li>Bite marks and bone damage by carnivore gnawing</li> </ul>	5 1	Olduvai Laetoli
<b>Taphonomy</b> <ul style="list-style-type: none"> <li>Hunting &amp; scavenging behaviors of carnivores &amp; crocodiles</li> </ul>		2	Lakes Masek & Ndutu, Serengeti, Serena Lodge
<ul style="list-style-type: none"> <li>Techniques in lithic analysis</li> <li>Cultural chronology of Olduvai</li> <li>Stone knapping experiments</li> <li>Simulation of archaeological sites</li> </ul>	<ul style="list-style-type: none"> <li>Types of stone artifacts</li> <li>Classification of tool industries.</li> <li>How artifact tied to sedimentary Beds</li> <li>Tool making and raw material choice</li> <li>Butchery experiments using experimentally made stone tools</li> <li>Actualistic observation of large carcass consumption by carnivores &amp; crocodiles</li> </ul>	3	Olduvai
Paleoenvironmental reconstruction	<ul style="list-style-type: none"> <li>Volcanism</li> <li>Faults</li> <li>Earthquake hazards</li> <li>Geological structures</li> <li>Fluvial processes</li> </ul>	3	Oi Doinyo Lengai, Lake Natron
<ul style="list-style-type: none"> <li>The role of African Museums in science &amp; education</li> <li>Human-environment interaction.</li> </ul>	<ul style="list-style-type: none"> <li>Exhibition: Human evolution in context.</li> <li>The role of Maasai community in conservation of natural and cultural resources.</li> </ul>	1 1	Olduvai museum Maasai village Olbalbal
<b>Field techniques &amp; exercises</b>			
<ul style="list-style-type: none"> <li>Scientific tools and techniques in field geology &amp; paleoanthropology</li> <li>Methods: Data recovery, documentation and curation of scientific specimen, and publication of scientific reports</li> </ul>	<ul style="list-style-type: none"> <li>Measuring a detailed section</li> <li>Geophysical surveys</li> <li>Archaeological &amp; paleontological field surveys &amp; techniques</li> <li>Archaeological excavations</li> <li>Develop independent: data collection, analysis specimens, curatorial management &amp; presentation.</li> </ul>	4	Olduvai
Revision sessions	<ul style="list-style-type: none"> <li>Recap what was learned in the course</li> <li>Students finish projects &amp; organize field journals</li> <li>Students- 1 day off (optional visit to Nasera archaeological rock shelter).</li> </ul>	2	Olduvai
Breaking camp	Return to Arusha via Ngorongoro	1	Overnight at Impala Hotel, Arusha