GEOARCHAEOLOGY:
SEDIMENTS AND SITE FORMATION PROCESSES
ARCL2017
Term I, 2016/7,
Room B13 – 10-12 hrs
Year 2/3 Option, 0.5 unit
Turnitin Class ID: 3228713
Turnitin Password IoA1617
Deadlines for coursework for this course:

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ARCL 2017
Geoarchaeology: Sediments and Site Formation Processes

This course is an introduction to the study of the physical properties of landscapes as they pertain to archaeological evidence. Students will review key principles of physical geography, learn approaches to study site formation processes, examine different geoarchaeological case studies, and gain initial laboratory experience in the use of techniques to characterise sediments and soils in archaeological contexts.

Week I. 07 October 2016
Session 1. Introduction: Geoarchaeology’s history and goals
Session 2. Basic geoarchaeological concepts and methods

Week II. 14 October 2016
Session 3. The Toolkit of Geoarchaeology
Session 4. Soils and Post-Depositional Processes

Week III. 21 October 2016
Session 5. Slope processes
Session 6. Alluvial processes

Week IV. 28 October 2016
Session 7. Glaciation and the Loess record
Session 8. Coastal environments

Week V. 04 November 2016
Session 9. Arid and semi-arid environments
Session 10. The humid tropics

Reading Week: 7-11 Nov 2016

Week VI. 18 November 2016
Session 11. Occupations I: Caves and rock-shelters
Session 12. Occupations II: Open-air sites

Week VII. 25 November 2016
Session 13. Practical 1: Characterising sediments and soils
Session 14. Practical 1: (continued)

Week VIII. 02 December 2016
Session 15. Practical 2: ‘Remote-sensing’ sediments and soils
Session 16. Practical 2: (continued)

Week IX. 09 December 2016
Session 17. Occupations III: Human impact on the landscape
Session 18. Occupations IV: Landscape engineering and anthropogenic soils

Week X. 16 December 2016
Session 19. Practical 3: ‘Ground-truthing’ sediments and soils
Session 20. Practical 3: (continued)

ASSIGNMENT #1: ESSAY DUE ON 16 December 2016
ASSIGNMENT #2: LAB REPORT DUE on 13 January 2017
1. OVERVIEW

BASIC TEXTS: The field of geoarchaeology has a number of important texts, each emphasising different aspects of the subdiscipline.


METHODS OF ASSESSMENT: This course is assessed by means of one essay (3,800-4,200 words) that contributes 70% of the course grade, and one laboratory report (not exceeding 1,425-1,575 words) that contributes 30% of the course grade. The Essay assignment is to discuss the main research problems, challenges, and methods pertaining to a particular depositional archaeological environment (e.g. rockshelter, aeolian, alluvial, etc.) or type of site-formation (cave site, desert campsite, tell site, shell midden, etc.). The paper should consist of an overview of the characteristics of the sedimentary environment or site formation processes, and the critical appraisal of two or more geoarchaeological case studies. The Laboratory Report will consist of sediment descriptions, data from laboratory analyses, and a summary discussion of results. Other aspects of both assignments, as well as possible approaches to them, will be discussed in class in advance of the submission deadline. If students are unclear about the nature of either assignment, they should discuss this with the Course Coordinator in timely fashion. Also, the Course Coordinator is willing to discuss an outline of the student’s approach to their essay assignment, provided this is planned suitably in advance of the submission date. The deadline for the essay is 16 December 2016. The deadline for the laboratory report is 13 January 2017.

Penalties will only be imposed if you exceed the upper figure in the range. There is no penalty for using fewer words than the lower figure in the range: the lower figure is simply for your guidance to indicate the sort of length that is expected.

In the 2016-17 session penalties for overlength work will be as follows:

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1 Word counts exclude the title page, the table of contents, any lists of figures and tables, abstract, preface, acknowledgements, bibliography, lists of references, captions, contents of tables and figures, and appendices.
• For work that exceeds the specified maximum length by less than 10% the mark will be reduced by five percentage marks, but the penalised mark will not be reduced below the pass mark, assuming the work merited a Pass.

• For work that exceeds the specified maximum length by 10% or more the mark will be reduced by ten percentage marks, but the penalised mark will not be reduced below the pass mark, assuming the work merited a Pass.

Coursework submission procedures

• All coursework must normally be submitted both as hard copy and electronically. (The only exceptions are bulky portfolios and lab books which are normally submitted as hard copy only.)
• You should staple the appropriate colour-coded IoA coversheet (available in the IoA library and outside room 411a) to the front of each piece of work and submit it to the red box at the Reception Desk (or room 411a in the case of Year 1 undergraduate work)
• All coursework should be uploaded to Turnitin by midnight on the day of the deadline. This will date-stamp your work. It is essential to upload all parts of your work as this is sometimes the version that will be marked.
• Instructions are given below.

Note that Turnitin uses the term ‘class’ for what we normally call a ‘course’.
1. Ensure that your essay or other item of coursework has been saved as a Word doc., docx. or PDF document, and that you have the Class ID for the course (available from the course handbook) and enrolment password (this is IoA1617 for all courses this session - note that this is capital letter I, lower case letter o, upper case A, followed by the current academic year)
2. Click on http://www.turnitinuk.com/en_gb/login
3. Click on ‘Create account’
4. Select your category as ‘Student’
5. Create an account using your UCL email address. Note that you will be asked to specify a new password for your account - do not use your UCL password or the enrolment password, but invent one of your own (Turnitin will permanently associate this with your account, so you will not have to change it every 6 months, unlike your UCL password). In addition, you will be asked for a “Class ID” and a “Class enrolment password” (see point 1 above).
6. Once you have created an account you can just log in at http://www.turnitinuk.com/en_gb/login and enrol for your other classes without going through the new user process again. Simply click on ‘Enrol in a class’. Make sure you have all the relevant “class IDs” at hand.
7. Click on the course to which you wish to submit your work.
8. Click on the correct assignment (e.g. Essay 1).
9. Double-check that you are in the correct course and assignment and then click ‘Submit’
10. Attach document as a “Single file upload”
11. Enter your name (the examiner will not be able to see this)
12. Fill in the “Submission title” field with the right details: It is essential that the first word in the title is your examination candidate number followed by the essay question (e.g. YGBR8 rockshelters, lab report, etc.),
13. Click “Upload”. When the upload is finished, you will be able to see a text-only version of your submission.
14. Click on “Submit”

If you have problems, please email the IoA Turnitin Advisers on ioa-turnitin@ucl.ac.uk, explaining the nature of the problem and the exact course and assignment involved.
One of the Turnitin Advisers will normally respond within 24 hours, Monday-Friday during term. Please be sure to email the Turnitin Advisers if technical problems prevent you from uploading work in time to meet a submission deadline - even if you do not obtain an immediate response from one of the Advisers they will be able to notify the relevant Course Coordinator that you had attempted to submit the work before the deadline.

TEACHING METHODS: The course is taught through lectures and laboratory practicals. Before attending sessions, students should read the required readings for each session, especially relevant chapters in the Goldberg and Macphail textbook (see bibliography). The reading list is current but small modifications will most likely be introduced as the course proceeds. Laboratory sessions have been incorporated into the scheduled sessions for the course.

WORKLOAD: There will be 14 hours of lectures and 6 hours of laboratory sessions for this course. Students will be expected to undertake around 88 hours of reading for the course, plus 80 hours preparing for and producing the assessed work. This adds up to a total workload of 188 hours for the course.

PREREQUISITES: This course does not have a prerequisite. Due to its introductory nature, students are not required to have a prior background in earth sciences or previous laboratory experience.

3. AIMS, OBJECTIVES AND ASSESSMENT

AIMS: This course is an introduction to Geoarchaeology. The aim of the course is to provide a basic understanding of the role of earth sciences in answering archaeological questions.

OBJECTIVES AND LEARNING OUTCOMES: On successful completion of this course a student should understand how sediment studies contribute to archaeological problem-solving both on-site and in the reconstruction of past environments. This will include a basic knowledge of common techniques for sediment recording, grain size analyses, and sedimentological methods for determining past depositional environments associated with archaeological sites, and principles of site formation processes. The student will also be familiar with basic analyses of anthropogenic sediments and soils. A student is expected to be able to demonstrate improved skills of observation and critical reflection on academic topics.

a. SCHEDULE

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<th>Week I. 07 October 2016</th>
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<td><strong>Session 1.</strong> Introduction: Geoarchaeology’s history and goals</td>
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Some consider Geoarchaeology as one more archaeological specialism, others as a specific approach to the entire archaeological record. In order to familiarise students with these positions, the introductory lecture examines the historical relationship between the earth sciences and archaeology. This relation is the foundation upon which Geoarchaeology has developed and, in
some ways, it is the platform that enables contributions from different earth sciences (geology, geomorphology, physical geography, pedology, etc.) to make contributions to the field of archaeology.

**Required readings:**

**Suggested readings:**

**Additional reference works:**

**Session 2. Basic geoarchaeological concepts and methods**
In this session we will lay out the basic principles and key concepts upon which geoarchaeological practice is based. We will examine the contrast between soils and sediments, review the main types of sedimentary processes and soil forming dynamics, and outline how an understanding of them enable us to decode sequential records of landscape evolution (stratigraphy).

**Required readings:**

**Suggested readings:**
Week II.  
14 October 2016

Session 3.  **The Toolkit of Geoarchaeology**
What is the toolkit employed in geoarchaeological research? In this session we examine the most important techniques currently used by geoarchaeologists.

*Required readings:*

Session 4.  **Soils and Post-Depositional Processes**
In this session we examine in further detail the interface between environments and the landscape, i.e. soils. Soil are dynamic and in constant evolution. Many of the processes that shape soil mantles over time are of direct concern to archaeologists because they condition the burial environments of archaeological evidence and can modify the original integrity of archaeological remains.

*Required readings:*

*Additional reference works:*
The nature of the archaeological record is strongly determined by the characteristics and overall evolution of the physical setting where archaeological remains become buried. In the sessions before study week we will examine the main characteristics of different settings, highlighting their dominant geomorphological processes and discussing how these impact the preservation and integrity of archaeological remains.

Session 5  
**Slope processes**

The lecture will introduce the main features and dynamics associated with slopes. Most geoarchaeologists understand slope processes based on land surface unit models. A number of topics need to be introduced to make sense of these: the dissection of landforms by streams, surface flows, mass movement, colluviation, the soil catena. As will be seen, the dynamics described by these topics bear significantly on our understandings of erosion, sedimentation/deposition, and soil formation. Hence, they impact the preservation of archaeological remains and the formation of the archaeological record.

**Required readings:**

**Additional reference works:**

Session 6  
**Alluvial processes**

The lecture will introduce the main features of alluvial and lacustrian contexts and how they impact the preservation of archaeological evidence. Processes of erosion, sedimentation and deposition,
and soil formation associated with alluvial environments will be examined in further detail. Human settlements and site formation processes in alluvial environments will be discussed.

Required readings:

Case studies:

Additional reference works:

Week IV. 28 October 2016

Session 7.  *Glaciation and the Loess record*
Glaciers reset the landscape and many landforms in post-glacial landscapes originate in glacial dynamics. Glacial and periglacial activity, moreover, are at the source of one of the most highly active aeolian dynamics – the deposition of loess. In this lecture we will introduce the main features associated with glacial and periglacial environments and examine how they impact the preservation of archaeological evidence. Human settlements and site formation processes in glacial and periglacial environments will be discussed.

Required readings:


**Case Studies**


**Additional reference works:**


**Session 8. Coastal Environments**

The lecture will introduce the main features of coastal contexts and examine how they impact the preservation of archaeological evidence. Processes of sedimentation, erosion and deposition, with special emphasis on the effects of sea-level change, will be examined in further detail. Human settlements and site formation processes along shores of water bodies will be discussed.

**Required readings:**


**Suggested readings:**

**Week V. 04 November 2016**

**Session 9. Arid and semi-arid environments**

The lecture will introduce the main features associated with arid and semi-arid environments. Include here are erosion due to restricted vegetation cover, aeolian processes and deflation. We will examine how they impact the preservation of archaeological evidence.

**Required readings:**

**Case Studies:**

**Additional reference works:**

**Session 10. The humid tropics**

The lecture will introduce the main features associated with humid tropical environments. Included here are some specific geomorphological features common to the humid tropical belt, the nature of precipitation and weathering, and the characteristics of soil formation.

**Required readings:**


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**Reading Week: 7-11 Nov 2016**

**Week VI. 18 November 2016**

**Session 11. Occupations I: Caves and rock-shelters**

The lecture will introduce the main features associated with the study of archaeological cave and rock shelters. Processes of sedimentation, erosion and deposition, as well as chemical processes affecting cave site sediments, will be examined in further detail. Human settlements, site formation processes, and palaeoenvironmental implications of cave geoarchaeology will be discussed.

**Required readings:**


**Suggested readings:**


Session 12. Occupations II: Open-air sites
It is not just artefacts, structures and pits that make up the archaeology: the sediment matrix within which these have formed is worthy of attention. This lecture examines the growing importance of geoarchaeological research of occupation deposits

Required readings:

Week VII. 25 November 2016

Session 13. Practical 1: Characterising sediments and soils
In the first laboratory session we will review the basics of field and laboratory sediment characterisation. The sessions will take place in the geoarchaeology laboratory. Be ready to use what you have learned so far to interpret the depositional environments of samples.

Required readings:
NRCS Soil Survey Manual Ch 3:
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054253

Session 14. Practical 1: (continued)
Continuation of the laboratory session.

Week VIII. 02 December 2016

Session 15. Practical 2: ‘Remote-sensing’ sediments and soils
Geoarchaeological analyses used to study of soil and sediment samples will be taught in the geoarchaeology laboratory
Required readings:

Session 16. **Practical 2: (continued)**
Continuation of the laboratory session.

Week IX. 09 December 2016

Session 17. **Occupations III: Human impact on the landscape**
Causality in landscape change is often associated with either external or autogenic forcing. However, human societies have greatly impacted and transformed vast tracts of the earth’s landscape. This lecture will focus on the geoarchaeological study of human impact on the landscape.

Required readings:

Suggested readings:
Various Authors (2005) *Geoarchaeology Special Issue: Landscape and Land Use—Geoarchaeological Approaches to Human Impact, 20*(2)

Session 18. **Occupations IV: Landscape engineering and anthropogenic soils**
The surface of the planet has been vastly remodelled as a result of human inhabitation. In this session we examine geoarchaeological approaches to landscape engineering and the study of anthropogenic soils.

Required readings:


Week X. 16 December 2016

Session 19. Practical 3: ‘Ground-truthing’ sediments and soils
The basics of micromorphological analyses will be taught in the geoarchaeology laboratory

Required readings:

Session 20. Practical 3: (continued)
Continuation of the laboratory session.

5. ADDITIONAL INFORMATION

LIBRARIES AND OTHER RESOURCES:
Use UCL Explore to identify where readings are found. Most of them are located in either the Archaeology or Science libraries. Students are asked to organise themselves in order to share in the loan of books of which only few copies are available. Please contact the course coordinator if a specific item cannot be found in UCL.

INFORMATION FOR INTERCOLLEGIATE AND INTERDEPARTMENTAL STUDENTS: Students enrolled in Departments outside the Institute should obtain the Institute’s coursework guidelines from Tina Paphitis (email t.paphitis@ucl.ac.uk), which will also be available on the IoA website.

HEALTH AND SAFETY: The Institute has a Health and Safety policy and code of practice which provides guidance on laboratory work. This code of practice is revised annually and the new edition can be consulted online. All work undertaken in the Institute is governed by these guidelines and students have a duty to be aware of them and to adhere to them at all times. This is particularly important in the context of the laboratory undertaken as part of this course.

INSTITUTE OF ARCHAEOLOGY COURSEWORK PROCEDURES
General policies and procedures concerning courses and coursework, including submission procedures, assessment criteria, and general resources, are available on the IoA website. It is essential that you read and comply with these. Note that some of the policies and procedures will

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be different depending on your status (e.g. undergraduate, postgraduate taught, affiliate, graduate diploma, intercollegiate, interdepartmental). If in doubt, please consult your course coordinator.

GRANTING OF EXTENSIONS: Note that there are strict UCL-wide regulations with regard to the granting of extensions for coursework. Note that Course Coordinators are not permitted to grant extensions. All requests for extensions must be submitted on the appropriate UCL form, together with supporting documentation, via Judy Medrington’s office and will then be referred on for consideration. Please be aware that the grounds that are acceptable are limited. Those with long-term difficulties should contact UCL Student Disability Services to make special arrangements. Please see the IoA website for further information. Additional information is given here http://www.ucl.ac.uk/srs/academic-manual/c4/extenuating-circumstances/