ARCLG118
Research Skills for Spatial Analysis
(15 credits)

2015–2016

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Room 115, Tel. 020 7679 1535 (Ext. 21535)
1 Overview

1.1 Short description

This core course for the MSc GIS and Spatial Analysis in Archaeology is designed to provide students with a wide range of technical, skills that are necessary to complete large-scale GIS projects in archaeology, particularly those that are multi-disciplinary and/or involve several different contributors. More specifically, we emphasise skills for clearly articulating appropriate research questions, data and methods in spatial analysis, for using quantitative data to support your arguments, for solving technical problems and carrying your GIS project through in a timely way, as well as for presenting your final results.

We make use of a wide range of software including both commercial GIS packages and Free and Open Source alternatives, allowing students to evaluate the advantages and disadvantages of each for different kinds of projects, specialist contributors and end-users. The course is taught using a combination of lectures, practical sessions and tutorials in the Institute’s AGIS laboratory. A key feature is that students develop a small-scale research project and are then assessed via a project portfolio and one essay.

1.2 Week-by-week summary

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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Subject</th>
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<tbody>
<tr>
<td>1</td>
<td>12 Jan</td>
<td>Introduction to facilities and case study</td>
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<td>2</td>
<td>19 Jan</td>
<td>Research questions and project planning</td>
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<td>3</td>
<td>26 Jan</td>
<td>Research methodology using Free and Open Source software</td>
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<td>4</td>
<td>2 Feb</td>
<td>Database design and data acquisition</td>
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<td>5</td>
<td>9 Feb</td>
<td>Data acquisition</td>
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<td>-</td>
<td>16 Feb</td>
<td>Reading week</td>
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<tr>
<td>6</td>
<td>23 Feb</td>
<td>Data refinement</td>
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<tr>
<td>7</td>
<td>1 Mar</td>
<td>Statistical inference and revision of research design</td>
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<td>8</td>
<td>8 Mar</td>
<td>Analysis</td>
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<tr>
<td>9</td>
<td>15 Mar</td>
<td>Analysis</td>
</tr>
<tr>
<td>10</td>
<td>22 Mar</td>
<td>Metadata and review</td>
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1.3 Basic texts

As this course is project-based there are no basic texts in the normal sense, however you should familiarise yourself with the content of:


The following is also very relevant:

1.4 Method of assessment
This course is assessed by means of a maximum of approximately 4000 words of coursework, divided into one 1425–1575 word essay (40%) and one 2375–2625 word report (60%) of laboratory work (which includes designing a poster).

1.5 Teaching methods
The course is almost entirely taught through a mixture of informal seminars, supervised practicals and a substantial amount of group work. Participation in practical exercises is limited by the availability of suitably equipped computers, and therefore priority is given to MSc GIS and Spatial Analysis in Archaeology students who take it as a core module. Some aspects of the group work will be managed using tools available on UCL’s virtual learning environment, Moodle (http://moodle.ucl.ac.uk/course/view.php?id=336).

1.6 Workload
There will be 30 hours of formal class-based work. You are also expected to undertake around 80 hours of preparatory computer work and reading, 20 hours preparing for and producing the essay, and an additional 20 hours of preparation for the project assessment. This adds up to a total workload of 150 hours for the course.

1.7 Prerequisites
This course is only available to students enrolled on the MSc GIS and Spatial Analysis in Archaeology.

2 Aims, objectives and assessment
2.1 Aims
The course aims to provide a context in which you will improve your ability to:
- Define research objectives;
- Learn how to use unfamiliar software;
- Manage data;
- Manage a collaborative research process;

2.2 Objectives
The course objectives are that you will be able to:
- Identify and clearly articulate a research question;
- Execute a relatively simple GIS-based analysis using open source GIS software;
- Use an Open Source client-server database management system to create a GIS-linked database;
- Construct metadata for a GIS-based project;
- Critically evaluate the management of a collaborative project.
2.3 Learning outcomes

In meeting these objectives you will also be able to demonstrate the following generic learning outcomes:

- The ability to use quantitative data to support an argument;
- The ability to formulate and carry through a research design;
- The application of acquired knowledge;
- The ability to solve technical problems;
- Understanding of client-server computer systems;
- Familiarity with the ‘culture’ of Free and Open Source software.

2.4 Coursework

2.4.1 Assessment tasks

This course is assessed entirely by coursework consisting of the two assignments described here:

**Standard essay (40%)** A short essay, of no more than 1425–1575 words in length, answering one of the following questions:

- Under what circumstances might GRASS GIS become the GIS software of choice for archaeologists working in the commercial and administrative sectors? Ensure that you pay attention to both the development of GRASS and wider issues of an economic, political, or other nature.

- Compare one well-known commercial GIS software package with one well-known FOSS GIS package. Evaluate their strengths and weakness, in terms of functionality, support, cost and any other criteria that you consider relevant.

- Describe how you could use FOSS software to implement a GIS in either a commercial archaeological unit or an administrative organisation. What functions would need to be provided? What software could fulfill these and how would the system fit together? What skills would be required to establish the system?

**Laboratory notebook (60%)** We will ask you to imagine that you have just completed a pilot project in advance of more extended research. This is a common scenario; indeed conducting a pilot study is fast becoming an essential part of the grant-getting process. Your tasks will be to: i) summarise the pilot project in a poster, and then ii) use it to motivate a simple grant application. Further details and assessment criteria will be posted on the course Moodle pages.

If you are unclear about the nature of an assignment then you should discuss it with the Course Co-ordinator.

Please ensure that any illustrations (maps, figures, graphs) are carefully presented. General guidance is available at: [https://wiki.ucl.ac.uk/display/archadmin/Illustrations](https://wiki.ucl.ac.uk/display/archadmin/Illustrations). All illustrations should have informative captions. Where appropriate, maps should include indicators of scale and orientation, as well as a legend (key) based on sensible ranges of data values. Graphs should include informative labels for the X- and Y-axes.
You are not permitted to re-write and re-submit coursework in order to try to improve your marks. However, the Course Co-ordinator is willing to discuss an outline of your approach to an assignment, provided this is planned suitably in advance of the submission date.

2.5 Word count and submission procedure

Please be sure to observe the following specifications:

<table>
<thead>
<tr>
<th>Word count</th>
<th>Submission deadline</th>
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<tbody>
<tr>
<td>Essay</td>
<td>950–1050</td>
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<tr>
<td>Lab. notebook</td>
<td>See separate spec.</td>
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<td></td>
<td>29 Apr. 2016</td>
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All work should be submitted to Turnitin (http://www.submit.ac.uk/en_gb/home). The relevant ‘class ID’ is 2969967 and the ‘enrolment password’ is IoA1516.

UCL has strict regulations with regard to word-length, late submission and plagiarism. You should note that these regulations could result in you failing a course and thus potentially failing the whole degree. Please see the MA/MSc Handbook for further information (https://wiki.ucl.ac.uk/download/attachments/43650495/ioa-mamsc%20general%20handbook.pdf?version=2&modificationDate=1442243967000&api=v2), or ask!

3 Schedule and syllabus

3.1 Teaching schedule

The course will be taught in Term 2. Classes will be held on Tuesdays, commencing at 14:30 and lasting until up to 17:30.

All teaching will take place in room 322C. Except in the case of illness, the 70% minimum attendance requirement applies to all classes.

3.2 Detailed week-by-week syllabus

The following is an outline for the course as a whole. Since the course is project-based, the exact schedule is subject to variation, so please treat the following as indicative of the likely activities each week rather than a definite specification. Detailed information about each week’s activities will be provided in the weekly handouts, which will be made available in advance on the course website (http://moodle.ucl.ac.uk/course/view.php?id=336).

Session 1: Introduction to facilities and case study

Introduction to the course. Introduction to the Institute of Archaeology AGIS laboratory and the UCL computing facilities. Introduction to the case study.

Session 2: Research questions and project planning

Discussion of what makes a good research project design and tools to support project management.

Practical work Formulation of a research proposal for the case study, including statement of research questions, basic scheduling and initial task allocation.
Session 3: Research methodology using Free and Open Source software

Introduction to the concept and pros and cons of Free and Open Source software (FOSS), including issues surrounding legal status, functionality and total-cost-of-ownership.

Practical work Introduction to GRASS GIS. Investigation of what tools it and other FOSS offers for implementation of the project research design in terms of detailed methodology.

Session 4: Database design and data acquisition

Introduction to data modelling, including the principles of the relational data model. Introduction to client-server relational database management systems (RDBMS).

Practical work Introduction to the PostgreSQL RDBMS. Begin the process of capturing or importing the data specified in the research design.

Session 5: Data acquisition

Practical work Complete the process of data acquisition.

Session 6: Data refinement

Practical work Ensure that the data is cleaned and transformed ready for use as required by the research design.

Session 7: Statistical inference and revision of research design

Discussion of statistical inference, possibly including Monte-Carlo simulation.

Practical work Revise and begin the GIS analysis specified in the research design.

Session 8: Analysis

Practical work Continuation of analysis.

Session 9: Analysis

Practical work Completion of analysis.

Session 10: Metadata and presentation

Introduction to the principles and methods for documenting GIS and other datasets. Discussion of what makes a good poster.

Practical work Review of project.

4 Online resources

The full UCL Institute of Archaeology coursework guidelines are given here: https://wiki.ucl.ac.uk/display/archadmin/Students.

The full text of this handbook is available at http://www.ucl.ac.uk/archaeology/studying/masters/courses/ARCLG118.

The Moodle pages for this course are available at https://moodle.ucl.ac.uk/course/view.php?id=336.
5 Additional information

5.1 Libraries and other resources

In addition to the Library of the Institute of Archaeology (5th floor), other libraries in UCL with holdings of particular relevance to this course are the Science Library (D.M.S. Watson building on the central UCL site) and the Environmental Studies Library in Wates House on Gordon Street. You may also wish to consult the list of electronic journals available through UCL (http://metalib-c.lib.ucl.ac.uk/). A full list of UCL libraries and their opening hours is provided at http://www.ucl.ac.uk/library/.

The University of London Senate House Library (http://www.ull.ac.uk/) also has holdings which may be relevant to this course.

5.2 Attendance

A register will be taken at each class. If you are unable to attend a class, please notify the lecturer by email. Departments are required to report each student’s attendance to UCL Registry at frequent intervals throughout each term. You are expected to attend at least 70% of classes.

5.3 Information for intercollegiate and interdepartmental students

Students enrolled in Departments outside the Institute of Archaeology should collect hard copy of the Institute’s coursework guidelines from the Academic Administrator’s office (Room 411A).

5.4 Dyslexia

If you have dyslexia or any other disability, please make your lecturers aware of this. Please discuss with your lecturers whether there is any way in which they can help you. Students with dyslexia are reminded to indicate this on each piece of coursework.

5.5 Feedback

In trying to make this course as effective as possible, we welcome feedback from students during the course of the year. All students are asked to give their views on the course in an anonymous questionnaire which will be circulated at one of the last sessions of the course. These questionnaires are taken seriously and help the Course Co-ordinator to develop the course. The summarised responses are considered by the Institute’s Staff-Student Consultative Committee, Teaching Committee, and by the Faculty Teaching Committee.

If you are concerned about any aspect of this course we hope you will feel able to talk to the course coordinator, but if you feel this is not appropriate, you should consult your degree coordinator/personal tutor, the Academic Administrator (Judy Medrington), or the Chair of Teaching Committee (Dr. Karen Wright).

5.6 Health and safety

Students enrolled on this course are particularly reminded of the measures that should be taken to reduce possible discomfort arising from the extended use of computer workstations. UCL’s occupational health centre provides some information at: http://www.ucl.ac.uk/hr/occ_health/health_advice/office_guide.php.
6  Tutors

The course tutors are:

**Dr Mark Lake** (ML), who is available for consultation in room 115 at the times posted on his door, or by appointment.
Tel: 020 7679 1535
Ext: 21535
Email: mark.lake@ucl.ac.uk

**Prof. Andy Bevan** (AB), who is available for consultation in room 108 at the times posted on his door, or by appointment.
Tel: 020 7679 1528
Ext: 21528
Email: a.bevan@ucl.ac.uk

7  Appendix A: Policies and Procedures 2015-16
(please read carefully)

This appendix provides a short précis of policies and procedures relating to courses. It is not a substitute for the full documentation, with which all students should become familiar. For full information on Institute policies and procedures, see the following website: [http://wiki.ucl.ac.uk/display/archadmin](http://wiki.ucl.ac.uk/display/archadmin). For UCL policies and procedures, see the Academic Regulations and the UCL Academic Manual: [http://www.ucl.ac.uk/srs/academic-regulations](http://www.ucl.ac.uk/srs/academic-regulations); [http://www.ucl.ac.uk/academic-manual/](http://www.ucl.ac.uk/academic-manual/).

7.1 General Matters

7.1.1 Attendance

A minimum attendance of 70% is required, except in case of illness or other adverse circumstances which are supported by medical certificates or other documentation. A register will be taken at each class. **If you are unable to attend a class, please notify the lecturer by email.**

7.1.2 Dyslexia

If you have dyslexia or any other disability, please discuss with your lecturers whether there is any way in which they can help you. Students with dyslexia should indicate it on each coursework cover sheet.

7.2 Coursework

7.2.1 Submission Procedures

You must submit a hardcopy of coursework to the Coordinator’s pigeon-hole via the Red Essay Box at Reception (or, in the case of first year undergraduate work, to room 411a) by stated deadlines. Coursework must be stapled to a completed coversheet (available from IoA website;
the rack outside Room 411A; or the Library). You should put your Candidate Number (a 5 digit alphanumeric code, found on Portico; please note that this number changes each year) and Course Code on all coursework. It is also essential that you put your Candidate Number at the start of the title line on Turnitin, followed by the short title of the coursework (example: “YBPR6 Funerary practices”).

7.2.2 Late Submission

Late submission is penalised in accordance with UCL regulations, unless prior permission for late submission has been granted and an Extension Request Form (ERF) completed. The penalties are as follows:

1. A penalty of 5 percentage marks will be applied to coursework submitted the calendar day after the deadline (calendar day 1).

2. A penalty of 15 percentage marks will be applied to coursework submitted on calendar day 2 after the deadline through to calendar day 7.

3. A mark of zero will be recorded for coursework submitted on calendar day 8 after the deadline through to the end of the second week of third term. Nevertheless, the assessment will be considered to be complete provided the coursework contains material than can be assessed.

4. Coursework submitted after the end of the second week of third term will not be marked and the assessment will be incomplete.

7.3 Granting of Extensions

New UCL-wide regulations with regard to the granting of extensions for coursework have been introduced with effect from the 2015–16 session. Full details will be circulated to all students and will be made available on the IoA intranet. Note that Course Co-ordinators are no longer permitted to grant extensions. All requests for extensions must be submitted on a new 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 now acceptable are limited. Those with long-term difficulties should contact UCL Student Disability Services to make special arrangements.

7.3.1 TURNITIN

Date-stamping is via Turnitin, so in addition to submitting hard copy, you must also submit your work to Turnitin by midnight on the deadline day. If you have questions or problems with Turnitin, contact mailto:ioa-turnitin@ucl.ac.uk.

7.3.2 Return of Coursework and Resubmission

You should receive your marked coursework within four calendar weeks of the submission deadline. If you do not receive your work within this period, or a written explanation, notify the Academic Administrator. When your marked essay is returned to you, return it to the Course Co-ordinator within two weeks. You must retain a copy of all coursework submitted.
7.3.3 Word Length

Essay word-lengths are normally expressed in terms of a recommended range. Not included in the word count are the bibliography, appendices, tables, graphs, captions to figures, tables, graphs. You must indicate word length (minus exclusions) on the cover sheet. Exceeding the maximum word-length expressed for the essay will be penalized in accordance with UCL penalties for over-length work.

7.3.4 Citing of Sources and Avoiding Plagiarism

Coursework must be expressed in your own words, citing the exact source (author, date and page number; website address if applicable) of any ideas, information, diagrams, etc., that are taken from the work of others. This applies to all media (books, articles, websites, images, figures, etc.). Any direct quotations from the work of others must be indicated as such by being placed between quotation marks. Plagiarism is a very serious irregularity, which can carry heavy penalties. It is your responsibility to abide by requirements for presentation, referencing and avoidance of plagiarism. Make sure you understand definitions of plagiarism and the procedures and penalties as detailed in UCL regulations: http://www.ucl.ac.uk/current-students/guidelines/plagiarism.

7.4 Resources

7.4.1 MOODLE

Please ensure you are signed up to the course on Moodle. For help with Moodle, please contact Nicola Cockerton, Room 411a (mailto:nicola.cockerton@ucl.ac.uk).