Surveying and Mapping Sciences

Final award
BSc (Hons)

Intermediate awards available
BSc, Cert HE, Dip HE

UCAS code
H206

Details of professional body accreditation
Chartered Institution of Civil Engineering Surveyors
Construction, Property and Surveying

Relevant QAA Benchmark statements
Engineering
Geography

Date specification last up-dated
October 2015

Alternative location for studying this program

<table>
<thead>
<tr>
<th>Location</th>
<th>Which elements?</th>
<th>Taught by UEL staff</th>
<th>Taught by local staff</th>
<th>Method of Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
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</tr>
</tbody>
</table>

The summary - UCAS programme profile

BANNER BOX:

There is significant demand from industry for graduates from this programme

ENTRY REQUIREMENTS

280 UCAS Tariff Points or Equivalent

GCSE Mathematics and English Grade C or above

Students may be admitted through Accreditation of Experiential Learning (AEL) or Accreditation of Certificated Learning (ACL) processes.

In the case of applicants whose first language is not English, then IELTS 5.5 (or equivalent) is required. The University’s English Language requirements as detailed on the website at time of application must be met – see http://www.uel.ac.uk/international/application/english-language-requirements/
At UEL we are committed to working together to build a learning community founded on equality of opportunity – a learning community which celebrates the rich diversity of our student and staff populations. Discriminatory behaviour has no place in our community and will not be tolerated. Within a spirit of respecting difference, our equality and diversity policies promise fair treatment and equality of opportunity for all. In pursuing this aim, we want people applying for a place at UEL to feel valued and know that the process and experience will be transparent and fair and no one will be refused access on the grounds of any protected characteristic stated in the Equality Act 2010.

ABOUT THE PROGRAMME

What is Surveying and Mapping Sciences?

This programme encompasses a diversity of disciplines characterised around the major theme of spatial data measurement. The science of Surveying, also known as Land Surveying or Geomatics, is a specialisation that brings together the collection, processing, analysis, presentation and management of spatial information. This includes the subjects of land surveying, geodesy, photogrammetry, laser scanning, remote sensing, hydrographic surveying, mapping and cadastral surveying alongside the use of geographic information systems (GIS) and software.

Surveying and Mapping Sciences at UEL

- At UEL we have over 60 year’s experience in offering surveying programmes of study.
- Our programmes are highly regarded by industry and our students usually readily find employment within the surveying or civil engineering sectors.
- Students have access to a full range of professional surveying equipment and software and use this throughout their studies.
- At UEL surveying programmes score very highly in the National Student Survey (NSS) and in internal satisfaction surveys.

Programme structure

3 year fulltime, 4 year sandwich or 6 year day-release part-time (up-to 60 credits per academic year).

Learning environment

The programme benefits from access to a full range of modern surveying equipment and software and designated laboratory space. Teaching is delivered through formal lectures, tutorials, workshops, problem based learning and laboratory sessions. In more than half of the modules studied at least 50% of the study time is completed in field practical or laboratory classes. Group work is also encouraged in many modules. There is a field scheme in the first year. Site visits to current construction and surveying projects are regularly available throughout the academic year and are often used in the teaching programme.

Assessment
Assessment varies from module to module but will include examinations, coursework, project work, laboratory reports, presentations, and tests of competence in practical sessions.

Students with disabilities and/or particular learning needs should discuss assessments with the Programme Leader to ensure they are able to fully engage with all assessment within the programme.

**Work experience/placement opportunities**

The School has strong links with industry and employers often approach us when looking for placement / internship students. We encourage students to consider seeking industrial experience during their academic programme, either through work experience during the summer vacations or through the optional sandwich placement between level 5 and level 6. Those students who opt for a year out placement will be enrolled on a 120 credit Industrial Sandwich Placement module EG5100 which will appear in the final transcript as evidence of the ‘sandwich’ placement year. An employment liaison officer oversees the administration of the year out placements and assists in helping students secure a placement. We are fortunate in the support of our Industrial Advisory Board (IAB) partners in enabling this important optional element to happen, although this is a competitive process and a placement cannot be guaranteed.

**Project work**

Throughout your studies you will undertake a number of small projects, usually based on practical work, as part of the module assessment. During level 6 of the programme you will be required to complete a final project in the form of independent research and study of a technical subject. This project will be supervised by a member of staff with an interest in the field and will normally include some laboratory work or the analysis of a specific survey problem.

**Added value**

All of the modules of study have been designed to match the Chartered Institution of Civil Engineering Surveyors (ICES) membership competencies.

**IS THIS THE PROGRAMME FOR ME?**

**If you are interested in...**

- Maps
- Geography
- Mathematics
- Computing
- Working outside

**If you enjoy...**

- The challenges of practical work
- Working in groups
- Field work
• Using computers
• Applying mathematics
• Solving Problems
• Construction

If you want...

Variety, working both indoors and outdoors, applying science and technology and a degree with a real practical emphasis geared to meet the needs of employers.

Your future career

Might be in Land or Sea Surveying, Civil Engineering, Construction, Cadastral Surveying, Environmental Assessment, Archaeology or Forensic site investigation. You might work on large or small-scale projects, in project management or in land development activities. Some graduates have moved to careers in business, management and finance.

Students regularly continue their studies on post-graduate programmes at UEL and at other institutions in subjects such as Environmental Management, Geographic Information Science and specialised areas of surveying.

Long-term career potential is good and surveying continues to be a professional skill in demand.

How we support you

Each student is assigned a personal tutor and we meet with you to discuss any issues you may have at regular intervals. We operate a policy where students are encouraged to consult with their Module Leaders and Personal Tutors, Year Tutors and Programme Leader whenever required.

The School facilities include dedicated laboratories and equipment which you are free to use, as long as they are not required for a class. Technical support is readily available.

Employer links are maintained through our Industrial Advisory Board and employers are invited to attend the University to talk to students about careers in Surveying. The professional bodies also visit the University regularly and provide details on their qualification process and the advantages available to members.

Bonus factors

Student Membership of Chartered Institution of Civil Engineering Surveyors.

A unique programme in the UK based at a London University.

Programme aims and learning outcomes

What is this programme designed to achieve?
This programme is designed to give you the opportunity to:

- Develop subject knowledge and understanding, subject specific skills and cognitive skills within the spectrum of geomatics. That is in terms of spatial measurement, spatial data - their collection, management and application - particularly with regard to issues of data quality - in a range of disciplines.
- Appreciate the scientific principles underlying the discipline and an ability to assess the significance of developments in both theory and practice;
- Develop an appreciation and practical working knowledge of an appropriate range of technologies for the effective, viable and innovative solution of a wide range of spatial problems;
- Practise the analytical, managerial and professional skills required for entry into professional careers.

What will you learn?

Knowledge

- Demonstrate a clear appreciation of the application and limitations of survey and mapping techniques and new developments in surveying practice for large scale surveys, topographic surveys, engineering surveys, hydrographic surveys, Cadastral Surveys and in specialised areas.
- Discuss and understand the legislative frameworks of safety, health and the environment along with contract and planning, land ownership, land registration and planning issues;
- Explain and illustrate the role requirements and responsibilities of the professional surveyor in terms of data collection, analysis and presentation.

Thinking skills

- Demonstrate ability in mathematical, graphical and computer based processing, analysis and presentation of spatial data.
- Recommend appropriate survey and mapping techniques and procedures to be applied in different applications;
- Research problems and critically reflect on data produced based on the application of current knowledge and innovative solutions.

Subject-Based Practical skills

- Demonstrate practical competency in the execution, planning and completion of field survey tasks and in the use of field survey equipment, total stations, levels and GNSS.
- Demonstrate practical competency in the use of other data collection and processing techniques, including laser scanning, photogrammetric and remote sensing sources and their use in two and three dimensional data collection
- Solve problems and demonstrate and apply understanding of the limitations of data collection, processing, analysis and presentation techniques.
- Recommend appropriate surveying techniques, error checking and control procedures which can be used in surveying projects;

Skills for life and work (general skills)
- Demonstrate a scientific approach to research problems and design procedures for the collection and analysis of data;
- Apply transferable skills and show an appreciation of lifelong learning and continuing professional development
- Have the ability to communicate effectively and work within project teams.

The programme structure

Introduction

All programmes are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do including attending lecture, seminar and undertaking private study).

Credits are assigned to one of 5 levels:

Level 3 equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree programme

Level 4 equivalent in standard to the first year of a full-time undergraduate degree programme

Level 5 equivalent in standard to the second year of a full-time undergraduate degree programme

Level 6 equivalent in standard to the third year of a full-time undergraduate degree programme

Level 7 equivalent in standard to a Masters degree

Credit rating

The overall credit-rating of this programme is 360 credits.

Typical duration

The expected duration of this programme is 3 years full-time or 6 years part-time.

It is possible to move from full-time to part-time study and vice-versa to accommodate any external factors such as financial constraints or domestic commitments. Many of our students make use of this flexibility and this may impact on the overall duration of their study period. A student cannot normally continue study on a programme after 4 years of study in full time mode unless exceptional circumstances apply and extenuation has been granted. The limit for completion of a programme in part time mode is 8 years from first enrolment.
How the teaching year is divided

The teaching year begins in September and ends in June.

A typical student, in full-time attendance mode of study, will register for 120 credits in an academic year. A student in a part-time mode of study may register for up to 90 credits in any academic year.

What you will study when

A student registered in a full-time attendance mode will take 120 credits per year. Typically this will be comprised of four 30 credit modules. The exact number may differ if the programme is comprised of 15, 45 or 60 credits modules. An honours degree student will complete modules totalling 120 credits at level four, modules totalling 120 credits at level five and modules totalling 120 credits at level six.

Programme Structure Bsc (Hons) Surveying and Mapping Sciences

a) 3 Year Full-time Programme

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Distance learning</th>
<th>Credits</th>
<th>Status*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>EG4110</td>
<td>Land and Construction Surveying</td>
<td>N</td>
<td>30</td>
<td>Core</td>
</tr>
<tr>
<td>4</td>
<td>EG4111</td>
<td>Maths and IT in the Built Environment</td>
<td>N</td>
<td>30</td>
<td>Core</td>
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<tr>
<td>4</td>
<td>EG4112</td>
<td>Introduction to the Built Environment</td>
<td>N</td>
<td>30</td>
<td>Core</td>
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<tr>
<td>4</td>
<td>EG4115</td>
<td>GIS &amp; Mapping</td>
<td>N</td>
<td>30</td>
<td>Core</td>
</tr>
<tr>
<td>5</td>
<td>EG5112</td>
<td>Legal &amp; Regulatory Framework</td>
<td>N</td>
<td>15</td>
<td>Core</td>
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<tr>
<td>5</td>
<td>EG5120</td>
<td>Computer Programming</td>
<td>N</td>
<td>15</td>
<td>Core</td>
</tr>
<tr>
<td>5</td>
<td>EG5121</td>
<td>GNSS &amp; Coordinate Reference Systems</td>
<td>N</td>
<td>30</td>
<td>Core</td>
</tr>
<tr>
<td>5</td>
<td>EG5122</td>
<td>Data Acquisition &amp; 3D Modelling</td>
<td>N</td>
<td>30</td>
<td>Core</td>
</tr>
<tr>
<td>5</td>
<td>EG5123</td>
<td>Engineering Surveying</td>
<td>N</td>
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<tr>
<td>P</td>
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<td>Dissertation</td>
<td>N</td>
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<tr>
<td>6</td>
<td>EG6122</td>
<td>Surveying Project Design &amp; Implementation</td>
<td>N</td>
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<td>Core</td>
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<tr>
<td>6</td>
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<td>Management &amp; Professional Studies in Geomatics</td>
<td>N</td>
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<td>Core</td>
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<tr>
<td>6</td>
<td>EG6124</td>
<td>Sea Surveying</td>
<td>N</td>
<td>15</td>
<td>Core</td>
</tr>
<tr>
<td>6</td>
<td>EG6123</td>
<td>Cadastre &amp; Land Management</td>
<td>N</td>
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</table>

b) 6 Year Part-time Programme

Year 1

<table>
<thead>
<tr>
<th>Level</th>
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<tr>
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Year 2

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<td>4</td>
<td>EG4112</td>
<td>Introduction to the Built Environment</td>
<td>N</td>
<td>30</td>
<td>Core</td>
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<tr>
<td>4</td>
<td>EG4115</td>
<td>GIS &amp; Mapping</td>
<td>N</td>
<td>30</td>
<td>Core</td>
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Year 3

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<tr>
<td>5</td>
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<td>Legal &amp; Regulatory Framework</td>
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Year 4

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Year 5

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<td>EG6124</td>
<td>Sea Surveying</td>
<td>N</td>
<td>15</td>
<td>Core</td>
</tr>
</tbody>
</table>
Please Note – A core module for a programme is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An optional module for a programme is a module selected from a range of modules available on the programme.

The optional level P placement module (EG5100) is required to obtain a sandwich degree in addition to the other requirements, but does not count towards the degree classification.

Please Note – All modules greater than 20 credits are non-compensatable

Requirements for gaining an award

In order to gain an Honours degree you will need to obtain 360 credits including:

- A minimum of 120 credits at level four or higher
- A minimum of 120 credits at level five or higher
- A minimum of 120 credits at level six or higher

In order to gain an Ordinary degree you will need to obtain a minimum of 300 credits including:

- A minimum of 120 credits at level four or higher
- A minimum of 120 credits at level five or higher
- A minimum of 60 credits at level six or higher

In order to gain a Diploma of Higher Education you will need to obtain at least 240 credits including a minimum of 120 credits at level four or higher and 120 credits at level five or higher

In order to gain a Certificate of Higher Education you will need to obtain 120 credits at level four or higher

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<td>N</td>
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</table>
Degree Classification

Where a student is eligible for an Honours degree by passing a valid combination of module to comprise an award and has gained the minimum of 240 UEL credits at level 5 or level 6 on the current enrolment for the programme, including a minimum of 120 UEL credits at level 6, the award classification is determined by calculating;

\[
\text{The arithmetic mean of the best 90 credits at level 6} \times 0.8 + \text{The arithmetic mean of the next best 90 credits at levels 5 and/or 6} \times 0.2
\]

and applying the mark obtained as a percentage, with all decimals points rounded up to the nearest whole number, to the following classification

- 70% - 100% First Class Honours
- 60% - 69% Second Class Honours, First Division
- 50% - 59% Second Class Honours, Second Division
- 40% - 49% Third Class Honours
- 0% - 39% Not passed

Teaching, learning and assessment

Teaching and learning

Knowledge is developed through

- Lectures where the main subjects are introduced.
- Directed practical laboratory/field sessions where students are guided in how to use the technology
- Seminars, where discussions are used to further the ideas introduced in the main lectures
- Problem Based Learning

Thinking skills are developed through

- Tutorials, where students are guided by self-directed study to allow for the further discussion of the ideas introduced in the main lectures
- Practical laboratory and field work where students apply their knowledge learnt by completing practical tasks
- Dissertation in the final year, where students take a chosen topic which has a scientific/practical base allowing the students to conceptualise their own ideas.
- Problem Based Learning – especially in EG6122

Practical skills are developed through
 Practical laboratory work, both self-directed and lecturer-directed.
 Field work, both self-directed and lecturer-directed.
 Problem Based Learning – especially in EG6122
 The first year field scheme, where student work in groups to solve real world problems

**Skills for life and work (general skills) are developed through**

* The inclusion of professional ethics and studies in both the second and final year.
* The use of technology, and the changes in technology introduced in the majority of modules
* Presentation skills.

**Assessment**

**Knowledge is assessed by**

* Examinations
* Practical work
* Experiments

'Thinking' skills are assessed by

* Essays
* Reports
* Presentations

**Practical skills are assessed by**

* Laboratory work
* Field work
* Laboratory reports

**Skills for life and work (general skills) are assessed by**

* Presentations
* Within all the coursework
* The practical work both in the laboratories and field work, that are based on real world problems

**How we assure the quality of this programme**
Before this programme started

Before this programme started, the following was checked:

- there would be enough qualified staff to teach the programme;
- adequate resources would be in place;
- the overall aims and objectives were appropriate;
- the content of the programme met national benchmark requirements;
- the programme met any professional/statutory body requirements;
- the proposal met other internal quality criteria covering a range of issues such as admissions policy, teaching, learning and assessment strategy and student support mechanisms.

This is done through a process of programme approval which involves consulting academic experts including some subject specialists from other institutions.

How we monitor the quality of this programme

The quality of this programme is monitored each year through evaluating:

- external examiner reports (considering quality and standards);
- statistical information (considering issues such as the pass rate);
- student feedback.

Drawing on this and other information, programme teams undertake the annual Review and Enhancement Process which is co-ordinated at School level and includes student participation. The process is monitored by the Quality and Standards Committee.

Once every six years an in-depth review of the whole field is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to current and former students and speaks to staff before drawing its conclusions. The result is a report highlighting good practice and identifying areas where action is needed.

The role of the programme committee

This programme has a programme committee comprising all relevant teaching staff, student representatives and others who make a contribution towards the effective operation of the programme (e.g. library/technician staff). The committee has responsibilities for the quality of the programme. It provides input into the operation of the Review and Enhancement Process and proposes changes to improve quality. The programme committee plays a critical role in the quality assurance procedures.

The role of external examiners
The standard of this programme is monitored by at least one external examiner. External examiners have two primary responsibilities:

- To ensure the standard of the programme;
- To ensure that justice is done to individual students.

External examiners fulfil these responsibilities in a variety of ways including:

- Approving exam papers/assignments;
- Attending assessment boards;
- Reviewing samples of student work and moderating marks;
- Ensuring that regulations are followed;
- Providing feedback through an annual report that enables us to make improvements for the future.

The external examiner reports for this programme are located on the UEL virtual learning environment (Moodle) on the school notice board under the section entitled ‘External Examiner Reports & Responses’. You can also view a list of the external examiners for the UEL School by clicking on the link below.

http://www.uel.ac.uk/qa/externalexaminersystem/currentexaminers/

**Listening to the views of students**

The following methods for gaining student feedback are used on this programme:

- Module evaluations
- Student representation on programme committees (meeting 2 times year)
- Student/Staff consultative committee (meeting 3 times a year)

Students are notified of the action taken through:

- Circulating the minutes of the programme committee via Programme Virtual Learning Environment.
- Direct Feedback to students in classes
- Providing details on the programme Virtual Learning Environment.

**Listening to the views of others**

The following methods are used for gaining the views of other interested parties:

The following methods are used for gaining the views of other interested parties:

- Annual Internal Student Satisfaction Questionnaire
- Analysis of National Student Survey Results
- Professional Body Meetings
- Contacts with former students
- Industrial Advisory Board
Further Information

Include here any specific information relevant to your programme/school.

Where you can find further information

Further information about this programme is available from:

The UEL web site (http://www.uel.ac.uk)

- The programme handbook (give web-site where available)
- Module study guides (give web-site where available)
- UEL Quality Manual (http://www.uel.ac.uk/qa/policies/qualitymanual/)
- School web pages http://www.uel.ac.uk/ACE
- Chartered Institution of Civil Engineering Surveyors http://www.cices.org