HAVE YOU EVER WONDERED?

How Sat-Nav systems work?

geekanoids.co.uk

Imagery by baboom.ie
HAVE YOU EVER WONDERED?

How the routes of underground tunnels can be controlled?

Dublin Port Tunnel
HAVE YOU EVER WONDERED?

How 3D fly-throughs of new building developments or infrastructure are created?
HAVE YOU EVER WONDERED?

How the stages in ‘World Rally Championship’ or the courses in ‘Tiger Woods PGA Tour’ are designed to be just like the real thing?
HAVE YOU EVER WONDERED?

How early flood warning and other disaster management systems work?
HAVE YOU EVER WONDERED?

How boundaries of land are fixed & managed, even in the middle of nowhere?
GEOMATICS

will give you the answers

and much more!
WHAT IS GEOMATICS?

“the measurement, analysis and management of data relating to the earth and the built environment”

• It includes the professional activities of:
  – Land & Hydrographic Surveying
  – Engineering & Mine Surveying
  – Remote Sensing
  – Geographic Information Systems (GIS)
  – Land Management
LAND SURVEYING

Data Collection
- GPS
- Total Stations

Navigation Systems
- 2D Computer Aided Drawings
- 3D Models
LAND SURVEYING

• Measurement of features on the earth’s surface to produce 3D spatial information in the form of maps or models

• Data from survey instrumentation is computer-processed and delivered to the client as a digital product

• Such data can be used on its own or together with GNSS (GPS) satellite positioning or GIS for many applications including:
  – In-car navigation systems
  – Location-based services on mobile devices
  – National mapping
ENGINEERING & MINE SURVEYING

All construction work must be carefully surveyed & checked:

- Factory Buildings
- Motorways
- Housing Estates
- Drainage Schemes
- Transport
- Tunnels

Measurement of mineral deposits & mines

- Tunnelling
- Mining
- Bridge Monitoring
- Road Setting-Out
STUDENT VISIT TO TARA MINES
REMOTE SENSING

- Measurement without physical contact using imagery, radars or lasers
- Spaceborne, airborne or ground-based
- Used to produce maps or 3D models
GEOMATICS

Bachelor of Science (Geomatics): Honours Degree – Level 8

DT112
Four Years

SATELLITE REMOTE SENSING

Fly Throughs

Ireland, Dec 22, 2010
UAVs
Unmanned Airborne Vehicles

e.g. http://www.youtube.com/watch?v=B-xVy2E1sT4
Traffic Accident Reconstruction

3D Motion Capture

Andy Serkis working on King Kong

Note the movement detecting suits and the cameras all around the room
LASER SCANNING

Traffic Accident Investigation

Archaeological Interpretation

Cultural Heritage Documentation
REMOTE SENSING & CAD

From raw points

To finished models
STUDENT WORK

CAD

http://www.youtube.com/watch?v=TCQPIIBEcWo
GEOGRAPHIC INFORMATION SYSTEMS

A method to *integrate*, *manipulate*, *analyse* & *visualise* spatial data
Disaster Prediction & Monitoring

Forest Fire, California

Hurricane, New Orleans
GEOMATICS

DT112
Four Years

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Location Based Services & Augmented Reality

http://gigaom2.files.wordpress.com/2011/06/wherephone-scene.png

http://www.enterpriseirregulars.com
Site Suitability Mapping

Visibility Analysis

http://bloge.p-gis.com/

http://www.esri.com
LAND MANAGEMENT

Integrated policies to manage land for sustainable development

- Sustainable Development
  - Economic, Social & Environmental

- Effective Land Market
- Effective Land Use Management

- Land Tenure
  - Titles, Mortgages & Easements
  - Secure legal rights

- Land Value
  - Assessment of land value
  - Collect Property Tax

- Land Use
  - Policies and Spatial Planning
  - Control of Land Use

- Land Development
  - Construction Planning and Permits
  - Regulation & control

- Land Information
  - Cadastral and Topographic Data
  - Geospatial Data Infrastructures

Enemark, 2004
ENVIRONMENTAL MANAGEMENT

• Understanding the impact of human activity on the environment
• Creating environmental models to predict impacts
ENVIRONMENTAL IMPACT ANALYSIS

Source: Digitech 3D
National Mapping
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COURSE STRUCTURE

Semester 1 – Overview & Fundamental Surveying Techniques

Semester 2 – Analogue & Digital Surveying Methods

Semester 3 – Spatial Data Acquisition & Processing

Semester 4 – Spatial Data Processing & Management

Semester 5 – Applications of Spatial Information

Semester 6 – Work Placement or ERASMUS exchange

Semester 7 – Business Cases

Semester 8 – Dissertation

Work Placement options include 12 weeks in professional practice or undertaking studies at a European University via the ERASMUS scheme.
European Links

- Denmark: Aalborg
- France: Le Mans
- Germany: Hamburg & Stuttgart
- Norway: Bergen
- Spain: Valencia
SO WHERE DO GEOMATICS GRADUATES FIND WORK?

With:

- Local Authorities
- Government Departments
- Statutory Bodies
- Semi-State Agencies
- National Mapping Agencies
- Private Geomatics and Surveying Companies
- Remote Sensing & Photogrammetric data producers
SO WHERE DO GEOMATICS GRADUATES FIND WORK?

With:

• Engineering & Construction Companies
• Utilities Companies:
  – Electricity, Gas, TV, Broadband
• Survey Equipment Manufacturers & Sales Agencies
• Companies working in archaeology, medicine, forestry, geology, or geography
A Selection of Employers & Work Placement Providers
Selection of employers & work placement providers with Irish & International operations
POSSIBLE JOB TITLES

- Surveyor
- Survey Manager
- Survey Engineer
- Senior Surveyor
- Surveying and Mapping Manager
- Mining & Exploration Surveyor
- Hydrographic Surveyor
- Civil Engineering Surveyor
- GIS Manager
- GIS Coordinator
- GIS Database Administrator
- Map Designer
POSSIBLE JOB TITLES

- Photogrammetrist
- Remote Sensing Scientist
- Image Analyst
- Land Development Consultant
- Planning Consultant
- Consultant in Land Management & Land Policy
- Survey Sales Manager
- Project Manager
- Software/Application Developer
GRADUATE SALARIES

Typical graduate (starting) salaries vary between:

• €28,000 and €40,000 with good progression

Increases for:

• Driving license
• Summer/Part-time experience

Typically 95% of graduates obtain full-time work before finishing the program or within 6 months

• The other 5% usually go travelling where they are also often involved in survey work!
ACADEMIC OPPORTUNITIES BEYOND BSc. DEGREE

• A First or 2.1 (Merit) award in the BSc. degree ensures direct entry to most Master of Science degrees

• The School of Spatial Planning at DIT provides taught MScs in related areas

• Masters degrees (M.Phil) or Doctoral degrees (Ph.D) by research can be undertaken at DIT or other locations
APPLICANT SUITABILITY

Aptitude for:

• Science & technology including IT
• Spatial thinking
• Mathematics

Enjoy a career that offers:

• A varied working environment
• Outdoor &/or indoor work
• Work opportunities both nationally and internationally
GRADUATION
The DIT Degree in Geomatics is the *only* such programme in Ireland

Accredited by and enabling membership of:

The Irish Institution of Surveyors
www.irish-surveyors.ie

Accredited by and providing the opportunity to become a Chartered member of:

The Society of Chartered Surveyors Ireland
http://www.scsi.ie/

The Royal Institution of Chartered Surveyors
http://www.rics.org/

Chartered Institution of Civil Engineering Surveyors
http://www.cices.org/
Why choose Geomatics at DIT?

- Varied career options with good progression
- Employment/Travel opportunities in Ireland and Internationally (full employment globally)
- 95% employment within 6 months of graduation
- Option of gaining Chartered status & other professional recognition
- Work with cutting-edge technologies
- 12-week work placement
- Practically-focused course including assessment
FOR MORE INFORMATION CONTACT

FRANK PRENDERGAST

Email: frank.prendergast@dit.ie

School Office

Email: spatial.planning@dit.ie

OR VISIT OUR WEBSITE

www.dit.ie/geomatics
We invite students and careers guidance teachers to visit

the **School of Spatial Planning**

during the academic year

for a fuller explanation of the programmes

and to

to see students at work