GEOSPATIAL EDUCATION
TO
EMPOWER BUSINESS QUALITY

Dr. Frank Young

Head, Surveying and Land Information
Faculty of Engineering and Surveying
University of Southern Queensland
TOOWOOMBA. QLD. 4350
We hear ........

“The next few years will encompass the significant impact of broadband, wireless, smart cars, smart fridges, streaming media, voice recognition and the inevitable growth of new Internet applications. In the present context, change is the only constant!”

... we are part of this change and ...

Suitable graduates are needed to capitalise on these changes.
The University of Southern Queensland is not a traditional university!

• Choose on-campus, off-campus, on-line web study ... or any combination

• Choose the study program level – choose to change to higher or lower levels
Background

1967 - USQ established.


1999 - Best dual-mode university in the world - International Council for Open and Distance Learning (ICDE)

2000 - joint winner Australian University of the Year 2000-2001
EDUCATION to EMPOWER BUSINESS QUALITY from

• User-defined technical, professional and CPD education opportunities

• Flexible delivery and multiple options.
PROFESSIONAL EDUCATION AND CPD OPPORTUNITIES

• Doctor of Philosophy
• Master of Geomatics
• Graduate Diploma in Geomatic Studies (Surveying or GIS)
• Graduate Certificate in Geomatic Studies (Surveying or GIS)
• Bachelor of Surveying (and GIS 2005?)
• Bachelor of Technology (Surveying)
• Bachelor of Technology (GIS)
• Associate Degree (Surveying)
• Associate Degree (GIS)

… plus single courses, workshops, short courses, etc.
7

2005? Program interrelationships

Credit transfers – studies from other institutions.
Bachelor of Spatial Science (2005?)

**LEGEND**

- **COMMON COURSES - ASSOCIATE DEGREE**
- **COMMON COURSES – BACHELOR OF TECHNOLOGY**
- **COMMON COURSES - BACHELOR DEGREE**
- **BACHELOR DEGREE COURSES**
- **ELECTIVES**

**CORE**
- MAT1100 Foundation Mathematicss
- SVY1102 Surveying A
- GIS1401 Geographic Data Presentation
- ENG1101 Engineering Problem Solving 1
- ENG2102 Engineering Problem Solving 2
- ENG1001 Princ. of Prof Eng and Surveying
- GIS1402 Introduction to GIS
- ENV2201 Land Studies
- **NEW** Introduction to GPS
- ENG2002 Technology and Society
- SVY3202 Photo and Remote Sensing
- CIS1001 Intro to Business Programming
- MAT1102 Algebra and Calculus 1
- ENG411 Research Project Part 1
- ENG4112 Research Project Part 2
- ACC1101 Accounting for Decision Making
- SVY4308 Prof Ops and Proj Mgt
- SVY4306 Land Law & Valuation

**Surveying Major**
- SVY1104 Survey Comps A
- SVY2301 Automated Surveying Systems
- SVY2106 Geodetic Surveying A
- SVY2303 Construction Surveying
- CIV2701 Road Design and Location
- SVY3304 Cadastral Surveying
- SVY2106 Geodetic Surveying B
- SVY2105 Survey Comps B
- SVY42302 Mine Surveying
- SVY3201 Urban Design & Development
- **ELECTIVE**
- **ELECTIVE**
- **ELECTIVE**
- **ELECTIVE**

**GIS Major**
- **NEW** Remote Sensing & Image Processing
- GIS3003 Land Management Systems
- GIS3405 Spatial Analysis and Modeling
- GIS3404 Geographic Data Visualisation
- CSC1401 Foundation Programming with C
- CSC3400 Database Systems
- **NEW** – Web based GIS
- CSC2402 Object Orientated Program. in c++
- CSC3402 Graphical User Interface Program.
- SVY4203 Urban and Regional Planning
- **ELECTIVE**
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What do professionals need ..... or need to develop in ?

• Communication skills;
• Conceptual, innovative and lateral thinking;
• Judgement, analysis, critical evaluation and spatial connectivity ability.
• An ability to adopt and adapt – be proactive;
• Technology knowledge;
• Contextual understanding of their work environments;
• Relate to society and government thinking;
• Administrative, management and human relations abilities;
• Synthesis knowledge for solving problems;
• A professional attitude; and
• A lifetime learning ability.
Study approaches (for supporting business flexibility) include:

- Free movement between the surveying and GIS programs.
- Choose degree level - move up or down.
- Cross institutional choice (limited) of courses.
- Complete single courses for credit.
- Short courses and workshops available on an on-demand basis.
- Special arrangements - developed for individual situations, eg.
  - A five-day on-campus technical training period.
  - A five-month technical/theoretical/projects program.
  - Off-campus short courses.
Basic program structure concepts:

First-year courses –

• Assimilate students into the profession and its role.
• Basic technical competence and knowledge.

Second-year courses

• Higher technical competence and applications knowledge.
• Ability to lead a small field party.

Third-year courses

• Higher technical competence and understanding
• Higher ‘academic’ application knowledge and management elements.

Fourth-year courses –

• Professional management, professionalism, project research and reporting ability and higher ‘academic’ preparation.
Resulting graduate attributes....

Personal

• function effectively as an individual and in multi-disciplinary team as a leader or manager;

• manage under time and resource constraints;

• adapt to changes and to master new techniques technology;

• independently undertake lifelong learning
Academic

• Apply scientific, computing and maths techniques;
• Gather, discriminate & use information sources;
• communicate effectively;
• apply problem solving techniques - identification, analysis, evaluation and synthesis; decision making; and initiative, innovation and creativity;
• systems approach to design and operational performance;
• need for sustainable design and development;
Professional

• understand social, cultural, economic, and environmental responsibilities;

• understanding professional, legal and ethical responsibilities professional.
For real life experience, basic knowledge is learnt/experienced in context (in a team environment):

- **Planning, organising, managing** (group and personal).
- Written, verbal and visual **communication**.
- **Mathematics** and **physics** contextual application.
- **Teamwork** and individual contribution.
- **Study** and **research techniques**.
- **Role** within own profession, other professions and society.

…. we then build on these abilities.
• Development of a selected number of on-line courses;
• Development of Computer Assisted Learning (CAL);
• Use more application software (GIS, GPS, 3D modelling, etc);
• Improve communication and web access;
• Improve flexible and generic materials - XML technology;
• PDF file use with fully functioning Internet links;
• Improve web interface to provide greater flexibility; and
• Twinning arrangements with other institutions.

Linking with Business & professional organisations.
User defined paraprofessional and professional geospatial education is highly desirable and is available.

Anywhere - Anytime – Anyway - Any Level
USQ’s flexible and contemporary geospatial education curricula addresses those technical, professional, research and innovative learning experience needed to empower the spatial sciences industry’s future.

Questions!!