

Geographical Information Technology (GIT) courses @ Stellenbosch University

Prof Adriaan van Niekerk

Outline

- Overview of GIT training @ SU
- Programmes
- Short courses
- Land cover?

Stellenbosch



Stellenbosch University



Overview of GIT training

- GIT training is only offered at Department of Geography & Environmental Studies (DGES)
 - Some other departments have applied (post-graduate) courses in which GIS is used
- GIT training is offered in two formats:
 - As part of degree programmes
 - As part of short courses

Formal GIT training

- GIT training is only offered at Department of Geography & Environmental Studies (DGES)
 - Some other departments have applied (post-graduate) courses in which GIS is used
- Formats of formal training
 - Programmes
 - BSc Geoinformatics (3 years)
 - BSc Hons Geoinformatics (1 year)
 - MSc Geoinformatics (2 years)
 - BA Informatics (Geoinformatics) 3 years
 - BA Hons GIS (1 year)
 - MA GIS (2 years)
 - Short courses



PLATO Accredited

BSc GeoInformatics

- 1st year
 - Geo-Environmental Science (2)
 - Physics (2)
 - Maths (2)
 - Computer Science (2)
- 2nd year
 - GIS (1), Spatial Data Management (1)
 - Earth Observation (1), Photogrammetry (1)
 - Computer Science (2) or Informatics (2)
 - Statistical methods (1), Business Ethics (1)

Number of modules shown in (parenthesis). Each module consist of about 90 contact hours (14 weeks)
Modules with Geospatial content shown in red

BSc GeoInformatics

- 3rd year
 - Data Input (1), Spatial Analysis (1)
 - Spatial Modelling (1), GEOBIA (1)
 - Computer Science (4) or Informatics (4)
- 4th year (Hons)
 - Advanced Remote Sensing (RADAR/Hyperspectral) (1)
 - GIS Management & Professional Practice (1)
 - Spatial Modelling & Visualisation (1)
 - Research Application (1)

BA degree programmes*

- BA Socio-Informatics (GeoInformatics)
 - YR1: **Geo-Environmental Science (25%)**, Maths, Stats, Informatics, Economics, Sociology
 - YR2: **GIT (50%)**, Informatics, Economics/Sociology, Ethics
 - YR3: **GIT (50%)**, Informatics
 - BA Hons GIS
 - **GIS (incl. Management, Professionalization)**
 - **Spatial Modelling (incl. Web-GIS, Models)**
 - **Remote Sensing (Radar, Hyperspectral RS)**
 - **GIT in social science research project (25%)**
- 30 credits each
(4 x 8 credits)

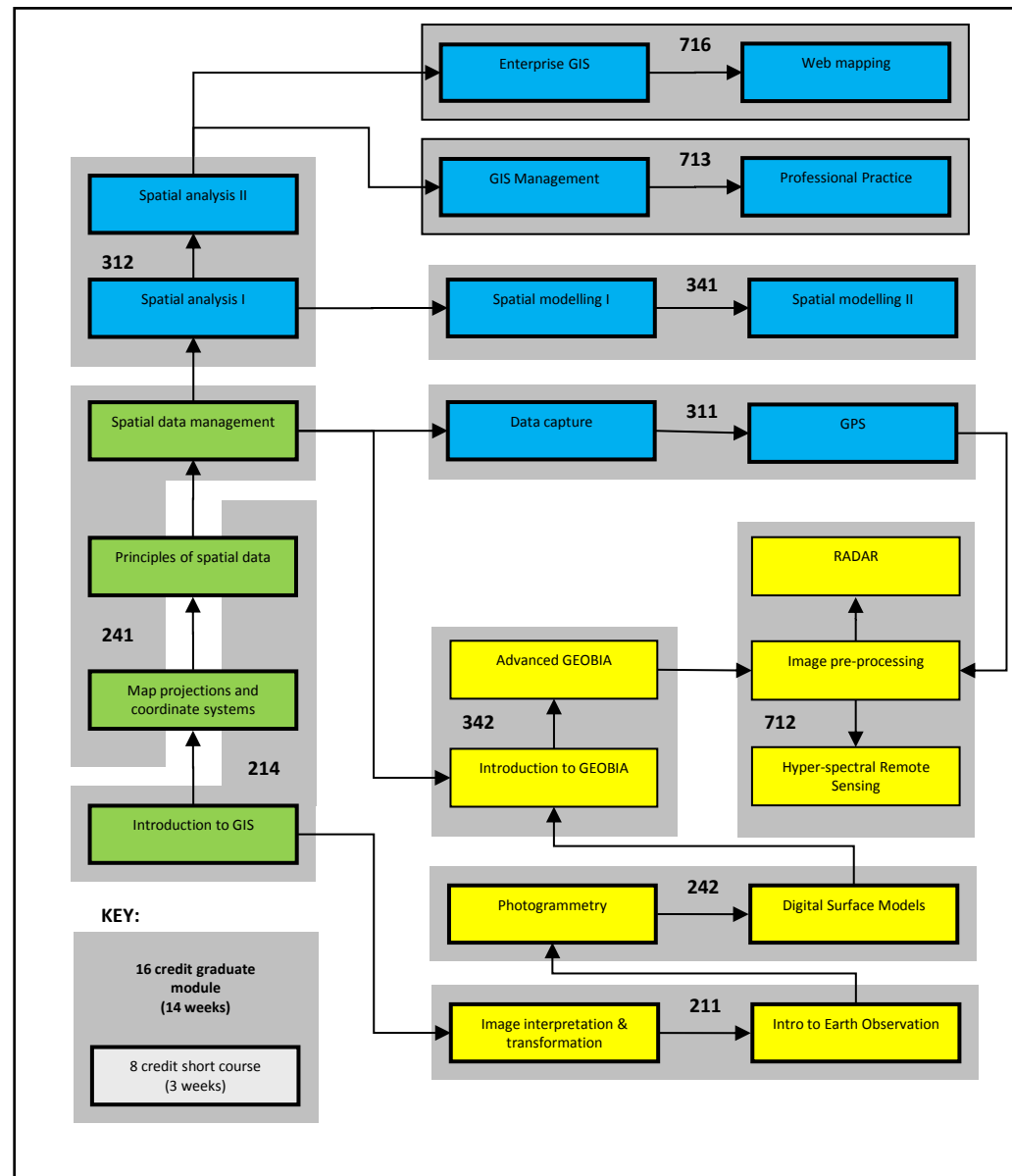
* Not yet accredited by PLATO

Short courses

- Duration (5 weeks)
 - 2 weeks theoretical preparation (reading) off-campus
 - 1 week (5 days) on campus (lectures, demonstrations, hands-on tutorials, theory exam)
 - 2 weeks assignments on/off-campus
- Accredited by SU (SAQA)
- 8 credits each
- Cost: R8000 (negotiable for large groups)
- How many courses?
 - Intention was to offer all GIT modules as short courses
 - Package as a post graduate diploma so that someone with a non-GIT degree can qualify and register with PLATO

Short course outline

- 4 core (common) courses
- 10 GIS courses
- 9 EO courses



Dilemma

- More than 32 x 8 credit short courses will be needed for PLATO accreditation!
- 1 week x 32 = At least 1 year full time study
- Cost! (no state subsidy for short courses)
- Feasible? Not sure, need to understand demand better.

Current short courses

- Only three courses offered in 2014
 - Introduction to GIS (Mar/Aug/Oct)
 - For beginners and managers
 - Introduction to Earth Observation (May/Sep)
 - For GIS practitioners
 - GEOBIA (Earth Observation) (Nov)
 - For Remote Sensing practitioners (or those who have completed Intro to EO)
- Check <http://academic.sun.ac.za/cga/courses/> for schedule
- Can offer courses on demand depending on group size
 - Spatial Analysis; Data Manipulation; Photogrammetry; Spatial Data Acquisition; Spatial Data Management

Intro to GIS course structure

- Day 1
 - Maps & Cartography
 - GI Science
 - GIS Software [Intro to ArcGIS]
- Day 2
 - Nature of Geographical Information [Data models]
 - Map projections and coordinate systems [Map projections and coordinate systems]
- Day 3
 - Data input [Digitizing] [GPS] [Data editing]
- Day 4
 - Spatial and hybrid queries [Spatial queries]
 - Data manipulation and spatial analysis [Spatial analysis]
- Day 5
 - Assignment briefing
 - Theoretical exam
- Check <http://academic.sun.ac.za/cga/courses/> for structures of courses

Stellenbosch University Campus



Questions & Suggestions?

Contact details:

Adriaan van Niekerk

avn@sun.ac.za

Land cover

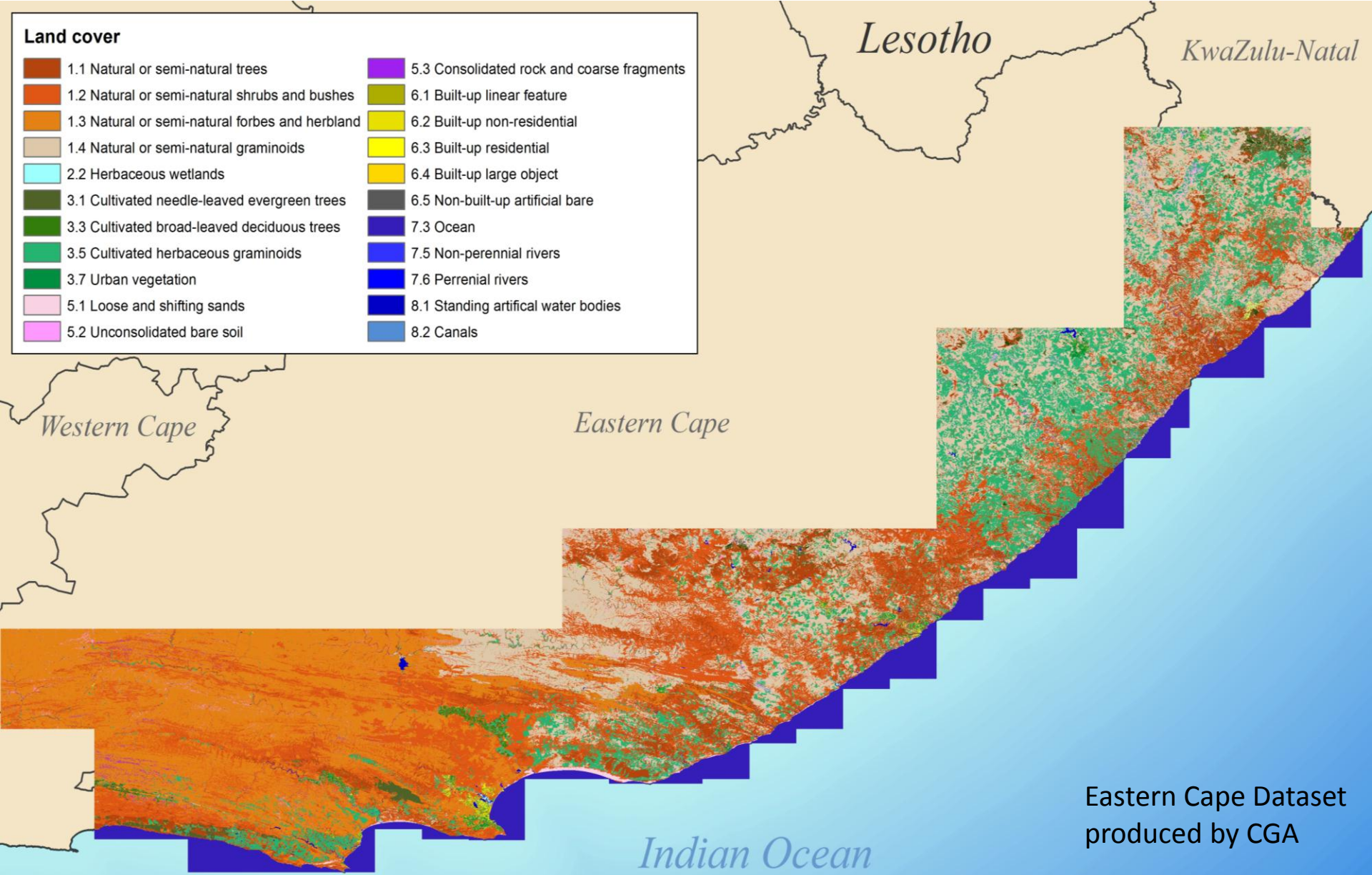
- Critical for decision relating to urban and regional planning, agriculture, environmental management, water use and availability estimation, disaster mitigation
- Last proper land cover map produced for Western Cape was in 2000
 - Landsat-7, 2ha MMU, 45 classes
 - Consortium of partners: Big variance in accuracy (average 66% accuracy, 0.57 Kappa); many inconsistencies
- Agriculture for Western Cape updated in 2013 (<10% of area)
 - Great, but we urgently need a full update of all land covers in the Western Cape

Land cover map produced by CGA for NGI

- 2.5m (10m) resolution (43 SPOT5 images, 16 LANDSAT)
- Completed within 4 months (Dec-Mar 2014)
- Overall accuracy 93% (0.9 Kappa) [9358 field samples]

Will cost less than R4million to do Western Cape
 With agricultural data we can produce a fantastic product

Land cover	
1.1 Natural or semi-natural trees	5.3 Consolidated rock and coarse fragments
1.2 Natural or semi-natural shrubs and bushes	6.1 Built-up linear feature
1.3 Natural or semi-natural forbes and herbland	6.2 Built-up non-residential
1.4 Natural or semi-natural graminoids	6.3 Built-up residential
2.2 Herbaceous wetlands	6.4 Built-up large object
3.1 Cultivated needle-leaved evergreen trees	6.5 Non-built-up artificial bare
3.3 Cultivated broad-leaved deciduous trees	7.3 Ocean
3.5 Cultivated herbaceous graminoids	7.5 Non-perennial rivers
3.7 Urban vegetation	7.6 Perennial rivers
5.1 Loose and shifting sands	8.1 Standing artifical water bodies
5.2 Unconsolidated bare soil	8.2 Canals



Eastern Cape Dataset produced by CGA