From Geomatics to Geospatial Science and Surveying: Undergraduate Curriculum Review at the University of Cape Town

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SUMMARY

The current BSc Geomatics curriculum at the University of Cape Town has been in place for two decades. Despite numerous minor reviews to keep the curriculum uptodate, a holistic and comprehensive curriculum review was needed. The triggers for this review include:

1. Shifting the focus from predominately spatial data measurement to include modelling, monitoring, mapping, management and analysis to prepare graduates for a dynamic profession.

2. Curriculum creep.

3. Lack of differentiation between streams.

4. Low student enrolment.

5. Low progression rate and overly prescriptive pre- and co-requisites.

6. Heavy workload for students and staff.

The objective for the review is to design a curriculum that addresses new and emerging knowledge areas, is attractive to new students, improves throughput and reduces the credit load.

We adopted Tyler’s Model of curriculum development and began by imagining our ideal graduate through an identity statement and defining six graduate attributes, with several associated learning outcomes and knowledge areas. To give expression to these changes, we decided to rebrand the Division and the degree from Geomatics to Geospatial Science and Surveying. The bachelor's will

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be offered in two streams: Geospatial Surveying (to be accredited for land surveying) and Geospatial Data Science (to be accredited for geographic information science). These streams have a common first and second year, focussing on Mathematics, Physics, Computer Science, and foundations in surveying and GIS.

The process of curriculum review was made difficult by the constraints of the COVID years, absence of key staff while on sabbatical, credit limits and accreditation frameworks. But the benefits outweigh these challenges. Through collaboration on this project over several years, the staff has grown in strength and cohesion. We have reimagined our identity and defined suitable graduate attributes and learning outcomes for the modern geospatial specialist. Every knowledge area and credit has been discussed and agreed upon. There is better alignment of knowledge areas between courses and through years of study. We are a leading university in Africa; the new curriculum gives expression to this in the geospatial sector. The process and outcomes described in this paper should be useful to other programmes embarking on similar projects.