

ADVANCED DIPLOMA IN GEOMATICS

AdvDip (Geomatics) - NQF Level 7 (120 credits)

Qualification code: **ADGM23**

SAQA ID: 118631, CHE NUMBER: H/H16/E214CAN

Campus where offered:

Pretoria Campus

REMARKS

a. Admission requirement(s):

A Diploma in Geomatics, **or** a National Diploma: Surveying, **or** any other NQF Level 6 qualification with 360 credits in a closely, related field. Preference will be given to an applicant with an average of 60%.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations.

b. Selection criteria:

Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

All applications received by the published due date will be evaluated and ranked by average subject mark scores from the previous qualification required for admission. After consideration of the Departmental Student Enrolment Plan (SEP), preference will be given to applicants with an average of 60% or more to fill the available places.

Candidates who do not meet the 60% requirement will be evaluated by a panel consisting of the Head of Geomatics Department and two other senior academic staff members in order to be considered for selection. The evaluation will consist of a portfolio of evidence of relevant work experience in engineering surveying (excluding work integrated learning) and an interview by the panel.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. Recognition of Prior Learning (RPL), equivalence and status:

See Chapter 30 of Students' Rules and Regulations.

d. Intake for the qualification:

January only.

e. Presentation:

Block-mode classes offered over a period of two years in pre-determined blocks as determined by the Department.

f. Minimum duration:

A minimum of one or two years (depending on the programme offering).

g. Exclusion and readmission:

See Chapter 2 of Students' Rules and Regulations.



CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
SSY107V	Satellite Surveying and Geodesy	(7)	(24)	

FIRST SEMESTER

GTH117V	Geomatics Technology	(7)	(12)	
RGM117V	Research Methodology	(7)	(12)	

SECOND SEMESTER

PSR117V	Project Management - Engineering Surveying	(7)	(12)	
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TOTAL CREDITS FOR THE FIRST YEAR: **60**

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
PCS107V	Precise Engineering Surveying	(7)	(24)	

FIRST SEMESTER

GDE117V	Geometric Design	(7)	(12)	
GIF117V	Geographic Information Sciences	(7)	(12)	

SECOND SEMESTER

GPM117V	Geomatics Practice Management and Ethics	(7)	(12)	
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TOTAL CREDITS FOR THE SECOND YEAR: **60**

TOTAL CREDITS FOR THE QUALIFICATION: **120**

MODULE INFORMATION (OVERVIEW OF SYLLABUS)

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GEOGRAPHIC INFORMATION SCIENCES (GIF117V) CONTINUOUS ASSESSMENT *(Module custodian: Department of Geomatics)*

The purpose of this module is to equip students with advanced GIS (Geographical Information Systems) cognitive, conceptual, and practical skills that is needed for Geomatics Technologists. This module will introduce students to GIS Programming, GIS Data Sharing and Web Mapping, which are crucial in geospatial data management and data visualization (geospatial data science and machine learning. (Total notional time: 120 hours)

GEOMATICS PRACTICE MANAGEMENT AND ETHICS (GPM117V) CONTINUOUS ASSESSMENT *(Module custodian: Department of Geomatics)*

The purpose of this module is to provide students with an understanding of practice management, professionalism, professional ethics, and related legislation. Professional practice and partnerships are reviewed. Management leadership is explored. Information and its dissemination are essential and therefore information economics is investigated. Geomatics Entrepreneurship and financial management are included in this module. (Total notional time: 120 hours)



GEOMATICS TECHNOLOGY (GTH117V)**CONTINUOUS ASSESSMENT*****(Module custodian: Department of Geomatics)***

Different geomatics related technologies are used in the acquisition, processing, and visualization of spatial data. The core of this module is in the 4th Industrial Revolution and the enabling technologies it provides to Geomaticians to execute different kinds of surveys and associated problem solving. The technologies explored include GNSS, Radar and Lidar amongst others. The module also looks at emerging trends such as the 5th industrial revolution and machine learning. Students are introduced to programming using high-level languages. (Total notional time: 120 hours)

GEOMETRIC DESIGN (GDE117V)**CONTINUOUS ASSESSMENT*****(Module custodian: Department of Geomatics)***

The purpose of this module is to provide students with the knowledge, cognitive and conceptual tools in Geometric Design (elements and principles of road design, road ecology, curve design, intersection and interchange design, earthworks, and drainage design). This course will give an overview of the theoretical concepts and practice in the fundamentals of geometric design by providing a link to its relevance and application in technology. (Total notional time: 120 hours)

P**PRECISE ENGINEERING SURVEYING (PCS107V)****CONTINUOUS ASSESSMENT*****(Module custodian: Department of Geomatics)***

The purpose of this module is to enable survey projects in support of engineering works, where the surveyor is required to produce results better than the precision expected in standard tasks such as topographical surveys and setting out. Units include Instrumentation for precise surveying, Precise engineering surveying methods, Deformation Surveying and Structural Monitoring, Setting out, GNSS for Precise Surveying, Inertial Navigation Systems, and 3D Laser Scanning. (Total notional time: 240 hours)

PROJECT MANAGEMENT - ENGINEERING SURVEYING (PSR117V)**CONTINUOUS ASSESSMENT*****(Module custodian: Department of Geomatics)***

The purpose of this module is to equip students with all aspects of managing a project. Issues of workplace ethics and professional conduct. Provide the student with the essential understanding of how projects are managed as qualified geomatics technologists. Sensitive issues of development of professional ethical standards, aspects of town planning, property law and land use management are incorporated into this module as it is pertinent to the project management environment by geomatics technologists. (Total notional time: 120 hours)

R**RESEARCH METHODOLOGY (RGM117V)****CONTINUOUS ASSESSMENT*****(Module custodian: Department of Geomatics)***

This module equips students with the ability to conduct scientific research. This is achieved through hands-on training of research concepts that lead to successful research execution and the design of academic or scientific documents and communicating the research findings. The major topics covered in this module include plagiarism, referencing, scientific writing, research processes and research design. On completion of this module, students should be able to design a clear and concise research proposal together with the literature survey in the geomatics fields. (Total notional time: 120 hours)

S**SATELLITE SURVEYING AND GEODESY (SSY107V)****CONTINUOUS ASSESSMENT*****(Module custodian: Department of Geomatics)***

The purpose of this module is to equip Geomatics Technologists with competence in applying the theoretical basis for calculations on ellipsoids and on different map projections they use in day-to-day practice. The technologists will acquire an understanding of the theoretical basis for calculations and reliability analysis of coordinates and heights. They will acquire an understanding of Spherical Astronomy, Geodesy and Map Projections, Coordinate Systems and 3D rotations, Terrestrial versus geodetic coordinate systems, Geodetic principles, Global Navigation Satellite Systems, Gravimetry and gravity field of the earth, High precision GNSS Geodesy, Satellite Coordinate Systems, Satellite orbits and parameters, Principles of position location using satellites, Numerical expression of the coordinates of the observer with reference to satellites, Least Squares and Point positioning using pseudo range. (Total notional time: 240 hours)

