



The South African Council for Professional and Technical Surveyors

Die Suid-Afrikaanse Raad vir Professionele en Tegniese Opmeters

**NOTES FOR GUIDANCE FOR REGISTRATION
AS A PROFESSIONAL GEOGRAPHICAL
INFORMATION SCIENCE (GISc) PRACTITIONER**

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1 INTRODUCTION

These notes, which have been approved by South African Council for Professional and Technical Surveyors (PLATO), have been compiled with a view to assist students at South African higher education institutions and others who intend qualifying for registration as Professional GISc Practitioner in terms of Section 7(4)(b) or (c) of the Professional and Technical Surveyors' Act, 1984 as amended. Applicants must note that the said Act and the Rules framed there under make provision for the registration in different categories and branches of the register according to their qualifications and training. Adherence to the requirements as set out below, will assist materially in avoiding unnecessary delays.

1.1 Definitions

The "Council" means the South African Council of Professional and Technical Surveyors established in terms of Act 40 of 1984, or such agent acting on its behalf.

"GISc" Geographical Information Science refers to the science and technology of collection, measuring, processing, analysing, displaying interpreting, disseminating, utilising, evaluating and managing geographically related and spatially referenced information

"Mentor" refers to a practising, registered Professional GISc Practitioner or Technologist GISc Practitioner who act as guide and advisor to young entrants to the profession

"PLATO" means the South African Council of Professional and Technical Surveyors established in terms of Act 40 of 1984, or such agent acting on its behalf.

2 STATUTORY REQUIREMENTS

In the first instance an applicant who wishes to register as a Professional GISc Practitioner, in the register provided for in Section 7(4)(b) of the Act, must first register in terms of Section 21(1) as a Candidate GISc Practitioner after obtaining an appropriate accredited GISc qualification or equivalent qualification approved by the South African Council for Professional and Technical Surveyors. (Normally a 4 year Bachelors degree or an approved GISc NQF qualification)

A candidate who wishes to qualify for registration as a Professional GISc Practitioner and who will be entitled to undertake GISc related work shall undergo post-qualification work integrated

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learning (WIL) as set out in paragraph 6 and pass a law examination and practical test set by the Council within such period as it may determine.

Section 20(1) of the Professional and Technical Surveyor's Act, 1984 sets out the requirements for registration as a Professional GISc Practitioner. Consequently an applicant must submit certified copies of his/her birth and degree certificates included with the application to the Council. "Certified" means certified to be a true copy by a Commissioner of Oaths or a Justice of the Peace.

3 WORK INTEGRATED LEARNING

3.1 Period of learning

The period of WIL is a minimum of 220 working days and the nature of such learning shall be approved and controlled by the Council. All experience must be obtained after the date of completion of the requirements for the qualification, provided that the candidate applies for registration as a Candidate GISc Practitioner within two months of such date. Provided further that if the candidate was registered with the Council as a GISc technician or technologist prior to obtaining the academic qualifications necessary for the Professional category and can produce a diary and employers' certificates to substantiate this claim, exemption for all or part of the practical training may be granted.

Training must be continuous and only in exceptional cases will a break in training be condoned. The normal acceptable minimum period of training with a single practitioner or firm of practitioners is 45 working days (i.e. two months), although lesser periods may be accepted in the case of categories of work given under paragraph 6.2.

A break in training will not be condoned unless a candidate makes timely application for such a break.

A candidate already in possession of an accredited or equivalent qualification who wishes to qualify for registration as a Professional GISc Practitioner and who has gained a variety of prior work experience as contemplated in Paragraphs 3 must submit an application to the Council in terms of Paragraph 5. The provisions of Paragraph 3 shall be used to assess the GISc work including variety of work performed in terms of Section 22[1][a][ii] of the Act. by a candidate who has gained more than 2 years practical experience. Where it is not possible to obtain certificates of employment or submit exact schedules of training and experience an affidavit detailing all such training and experience, may be acceptable.

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The requirements laid down for WIL in this memorandum must be strictly adhered to and the required learning must be obtained working under the personal supervision of a registered, practising Professional GISc Practitioner or other suitably qualified person approved by the Council.

The candidate is required to notify the Council as soon as possible after registering as a Candidate GISc Practitioner and starting his/her practical training, of the name of the Professional GISc Practitioner, firm or organisation with whom he/she is working. Any change in address or a change to another Professional GISc Practitioner, firm or organisation must be reported to the Registrar.

3.2 Nature of Learning

Learning in all categories of work must be varied and must be undertaken under the personal supervision of a registered, practising Professional GISc Practitioner, registered GISc Technologist or other professional person suitably qualified who has been practising as such for at least five years after registration.

It is permissible to learn under a Professional GISc Practitioner in salaried employment, but taking into consideration the requirements specified in paragraph 6, it is sometimes difficult to obtain the full range of WIL in such circumstances. In case of doubt the candidate should refer the matter to the Council.

It is important that the mentor should be a person who can instruct and provide the required experience. The mentor must also be capable of providing guidance in professionalism, professional ethics and professional practice. The candidate must select a mentor who can provide the correct quality of WIL. In case of doubt the candidate should refer the matter to the Council. In such a case the name, qualifications and experience of the potential mentor, other than a registered Professional GISc Practitioner, must be supplied to the Council so that it can assess the suitability of such a person.

Compulsory Training

120 Working days in cartography/geo-spatial information management which comprises:

	TYPE OF WORK	WORKING DAYS
i	<p>DATA COLLECTION AND CAPTURE:</p> <p>This includes digitising from map compilation or ortho-images; data capture from co-ordinates or general plans; metadata capture and maintenance; map projections and re-projections. It also includes the design of data capturing processes, including the capture of metadata. This may also include position fixing using surveying techniques [GPS etc]. field recording of data by direct observation and by annotation of aerial photography and satellite imagery.</p>	20
ii	<p>DATA MANIPULATION:</p> <p>This may include data processing; transformations; spatial data cleaning; data editing; attribute data cleaning; basic data classification; capture and metadata maintenance and principles of taxonomy; working with database files; performing queries; data integration merging, splitting and aggregations.</p>	15
iii	<p>REPRODUCTION PROCEDURES:</p> <p>This includes the reproduction of prints by multi-colour printing on different output devices and other methods of output.</p>	5
iv	<p>DATABASE AND SPATIAL MODELLING:</p> <p>This includes working with different data models; designing feature classifications and definitions, design of symbology types, styles and colour. It also includes system design; data integrity analysis and maintenance; and data backup and recovery procedures.</p>	15
v	<p>MAP PRODUCTION:</p> <p>This includes map publication principles and design; and report writing. Both line [vector] and images [raster] work to be included. Of this work at least 10 days must be spent using WEB techniques/procedures.</p>	20
vi	<p>SPATIAL STATISTICS AND INTERPOLATION:</p> <p>This includes working with centre of gravity, distance calculations and interpolations; spatial auto correlation; trends and forecasts.</p>	5
vii	<p>SPATIAL ANALYSIS:</p> <p>This includes cartographic modelling, topological, buffer and Boolean type analysis for vector and raster data; network analysis; terrain and 3 and four ordinate analysis.</p>	10

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	TYPE OF WORK	WORKING DAYS
viii	REMOTE SENSING AND PHOTOGRAMMETRY: This includes basic digital image analysis, and image ortho-rectification.	10
ix	PROJECT MANAGEMENT: This includes project planning, costing, determination of work procedures, resource allocation, project control, progress monitoring and reporting.	20
	TOTAL	120

3.2.1 Additional Training

Not less than 100 working days in the following types of work, of which not less than 10 days or more than 40 days in any one category can be included, with the provision that work in at least three of the categories must be included:

- a) Data collection, capture and processing (Additional to above).
- b) Spatial Data Manipulation (Additional to above).
- c) Map Production (Additional to above).
- d) Databases and Spatial Data Modelling (Additional to above).
- e) Spatial Statistics, Interpolation and Analysis. (Additional to above).
- f) Project Management (Additional to above).
- g) Remote sensing and Image Processing (Additional to above).
- h) Spatial information management, manipulation and recovery.
- i) Spatial data quality assessment and error management.

Note: It is expected of the candidate to undertake the work at a complex level and degree of difficulty.

3.3 Notes

The WIL should include planning, specification writing, interviews with the client, writing of proposals to the client, analysis of results, and writing of the final report to the client. General office administration such as personnel management, logistics and financial management may also be included. The number of working days quoted in Paragraphs 3.2.1 and 3.2.2 includes both office and field work, of which not more than 10% may be field work.

A detailed daily diary of all work undertaken during the training period must be kept. This diary must give an adequate description of the work done, the dates and the category of work with the number of working days in each category.

The use of modern technology is essential and the candidate must be proficient with this technology.

3.4 WIL Schedule

When applying to the Council for evaluation of his/her learning, the candidate shall supply a WIL Schedule as an extract from the diary prepared in the form of the attached specimen. This schedule must be compiled in chronological order and totaled. Each page must be signed by the mentor (with whom the candidate has trained) and the candidate.

The WIL schedule must contain an adequate description of the work performed to enable the Council to evaluate the type and scope of the work completed.

The detailed day to day diary from which the WIL schedule is an extract must be retained by the candidate in the event of the Council requiring more detailed information.

Should the Council be of the opinion that the learning is inadequate or does not cover a wide scope of work, it may require the candidate to undergo further training.

3.5 Requirements of a Mentor

A mentor must be a registered, practising Professional GISc Practitioner who has been practising as such for a minimum period of five years. Provided that the Council may, on written application by the mentor, relax the requirement of the five years experience. Provided further that where the experience to be gained is in a field of expertise that could not normally be obtained under the guidance of a Professional GISc Practitioner then, with the consent of the Council, such experience may be obtained under the personal supervision of a suitably qualified person.

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Every mentor must provide, directly to the Council, a confidential written assessment on the competency of the candidate which assessment must include, *inter alia*, the type of WIL gained by the candidate while in his or her employ, with emphasis on the professional aspects such as dealings with clients, attitude to senior and subordinate co-workers and assistants, punctuality and reliability and management skills acquired.

A person who has been found guilty of improper conduct or is practising under threat of a suspended sentence may not act as a mentor.

4 LAW EXAMINATION

An applicant for registration as a Professional GISc Practitioner must apply to the Registrar to write a Law Examination in terms of Section 20(1)(c) of Act No 40 of 1984

Law examinations can be written in most major centres twice a year. Applicants will be notified of the time and venue for each examination accordingly.

The applicant will be expected to have a comprehensive knowledge of the laws relating to registration of a Professional GISc Practitioner. He or she should also be acquainted with certain aspects of related legislation as set out in the details below.

The law examination consists of two written papers.

The first paper will consist of questions on the Professional and Technical Surveyors Act [40 of 1984] and Rules. A pass mark of 65% is required for this paper.

The second paper will consist of questions on legislation related to GISc. A pass mark of 65% is required for this paper.

The Registrar will notify the candidate of a pass or failure.

4.1 Information to be Examined on during the Law Examination

The registrar will supply the candidate with a list of legislation related to GISc that the candidate will be assessed on.

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The law exam consist of the following parts (2 hours each):

Exam A

PLATO Act and rules: 2 hours open book:

Professional and Technical Surveyors' Act 40/1984.

Written by candidates for professional land surveyors, professional GISc practitioners, GISc technologists, GISc technicians, survey technicians and mine surveyors. Also written by applicants for registration as professional GISc practitioners, GISc technologists, surveyors and professional engineering surveyors who have not previously written this exam.

Exam B

Land Survey Act (8/1997) and Deeds Registries Act (47/1937): 2 hours open book.

Written by candidates for registration as professional land surveyors.

Exam C

Other acts and court cases as marked for **PLS** on the previous pages: 2 hours closed book. In most cases only an overview of the act is required. Completion of trial survey.

Written by candidates for registration as professional land surveyors.

Exam D

Other acts marked as **Sur.** on the previous pages: 2 hours closed book. In most cases only an overview of the act is required.

Written by candidates for registration as surveyors. Also written by applicants for registration as professional engineering surveyor who have not previously written this exam.

Exam E

Mining related acts marked as **Min** on the previous pages: 2 hours closed book.

Written by candidates for registration as Mine surveyors and Prof. Mine surveyors.

Exam F

Other acts as marked for **GISc** on the previous pages: 2 hours closed book. In most cases only an overview of the act is required.

Written by candidates for registration as professional GISc practitioners and GISc technologists.

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Candidates will therefore write the following exams:

1. Professional Land surveyors:	A, B, C
2. Professional Engineering surveyors:	A, D (if they have not previously written it)
3. Surveyors:	A, D
4. Survey technicians and GISc Technicians :	A
5. Mine surveyors and Prof. Mine surveyors:	A, E
6. GISc Professional Practitioners and GISc Technologist:	A, F

N.B. Most of the relevant legislation can be down-loaded from the Internet Web-site:
www.polity.org.za/govdocs/legislation

Or can be obtained from : **LexisNexis** on

Johannesburg **011-784-8009,**

Durban **031-2683111**

Cape Town **021-5558900.**

Plato Website www.plato.org.za

5 APPLICATION FOR REGISTRATION

When the candidate is of the opinion that all the requirements have been met as set out in Paragraph 3, they should apply to the Council for registration in the relevant category.

The application must be accompanied by:

- a) An application form and the relevant fee;
- b) The WIL Schedule referred to in Paragraph 3;
- c) A certified copy of his or her accredited GISc Qualification or equivalent qualification; and
- d) A Certificate of Employment as prescribed in the Rules. A separate Certificate of Employment is required in respect of each mentor with whom the candidate has served.

“Certified” means certified to be a true copy by a Commissioner of Oaths or a Justice of the Peace.

5.1 Details of Practical Test

The practical tests if deemed necessary could consist of one or more tasks.

A task could be to prepare a full proposal to a client for the implementation of a system, including the management of the information, and/or undertaking the analysis of a specified problem.

A candidate should not normally need more than three weeks to complete the practical test. Continuity of the work is essential and a break will only be permitted in exceptional circumstances due to factors beyond the control of the candidate.

Applicants who have applied for registration in the professional category will be required to submit in addition to the completion of the practical task an essay of approximately 1500 words on professionalism and ethics with special reference to the registration and practice of GISc and the laws and organisations responsible.

The candidate may make use of any reliable sources, but they should be fully referenced using the Harvard referencing style.

6 COMPLETION OF REGISTRATION PROCEDURE

Evaluation will take place as soon as possible after completion of the work and the applicant should remain in close touch with the examiner until all requirements have been met. A candidate will be informed at an early stage if there is a further requirement to take an oral examination or if an additional practical test is deemed necessary.

After evaluation has been completed the examiner will transmit all the results and papers to the Moderator. The Moderator will make a recommendation to the Registrar and Council accordingly. If the applicant has been unsuccessful in any aspect, he/she will be advised by the Registrar that certain parts (or even the whole) of the practical test(s) have to be repeated after a certain period has expired.

If the application was entirely successful in terms of the requirements of Section 20(1)(a), (b), (c), (d), and (e) of Act No 40 of 1984 the Registrar will inform the applicant accordingly thereafter the applicant may apply to the Registrar for registration as a Professional GISc Practitioner.

The Registrar will request the applicant to make (in terms of Section 20(1)(f) of the Act) a professional oath or affirmation in relation to his/her profession, to complete the relevant application form and to pay the registration fees.

When these formalities have been completed the candidate will become registered as a Professional GISc Practitioner with the South African Council for Professional and Technical Surveyors

APPROVED :

APPLICATION FOR REGISTRATION AS A
 PROFESSIONAL GISc PRACTITIONER IN TERMS OF SECTION 20 OF THE
 PROFESSIONAL AND TECHNICAL SURVEYORS' ACT, 1984
 (ACT 40 OF 1984)

The Registrar

The South African Council for Professional and Technical Surveyors

I the undersigned, (Full Names)

of (Address)

.....

hereby apply for registration as a Professional GISc Practitioner.

I swear/make affirmation* and declare that the contents of this application, as presented by this form and the accompanying **Form G2**, are true, and further :

- a) That I am the person mentioned on the certified copies of qualifications which I wish to be entered in the Register and which are hereby submitted in support of my application;
- b) That I am not according to law detained as a mentally ill person;
- c) That I have never been convicted of an offence and sentenced in respect thereof to imprisonment without the option of a fine;
- d) That I have never been removed from an office of trust on account of improper conduct;

That I am/am not* insolvent and that I have/have not* assigned my estate for the benefit of creditors, and that I have/have not* compounded with my creditors.

.....
Place

.....
Date

.....
Signature

NOTE : *This must be signed before a Commissioner of Oaths /Justice of Peace.*

I certify that before the despondent made the oath/affirmation* I asked him/her* the following questions and wrote down his/her* answers in his/her* presence:

a) Do you know and understand the contents of this declaration?

Answer: -----

b) Do you have any objection to taking the prescribed oath/making the prescribed affirmation*?

Answer: _____

c) Do you consider the prescribed oath/affirmation* to be binding on your conscience?

Answer: _____

I certify that the despondent has acknowledged that he/she* knows and understands the contents of this declaration, which was sworn to/affirmed* before me, and that the respondent's signature was placed thereon in my presence.

Commissioner of Oaths / Justice of Peace: _____

Designation (Rank): _____

Date: _____

* **Delete whichever is not applicable.**

APPLICATION FOR REGISTRATION AS A
 PROFESSIONAL GISc PRACTITIONER IN TERMS OF SECTION 20 OF THE
 PROFESSIONAL AND TECHNICAL SURVEYORS' ACT, 1984
 (ACT 40 OF 1984)

PERSONAL INFORMATION

a) Full Name(s) of Applicant _____

b) Postal Address _____

c) Telephone ; (W) _____ Fax ; _____

d) Cell _____ e-mail _____

e) Date of Birth _____ Identity Number _____

f) Current Employer _____

g) Present Position _____

h) Date Appointed _____

i) Previous Employer(s) _____

j) Higher Education Qualifications:

Qualification	Institute	Date Completed

k) Signature of Applicant: _____ Date: _____

CERTIFICATE OF EMPLOYMENT

I,

a (Designation)at (Organisation)..... do
hereby certify that

..... has been

engaged in GISc work under my personal supervision for the following periods and performing
work in the following categories :

Periods	Category (e.g. Map Production, data capture etc.)

PARTICULARS OF WHICH IN REGARD TO THE TIME AND NATURE OF THE WORK,
ARE ANNEXED.

Signed at on theday of

Signed :

(Designation)

PLATO

WORK INTEGRATED LEARNING FOR PROFESSIONAL GISc PRACTITIONERS

Full Name of candidate:

Dates	Work description	No. of Working days											TOTAL
		Data collection and capture	Data manipulation	Reproduction procedures	Database and spatial modelling	Map production	Spatial statistics and interpolation	Spatial analysis	Remote sensing and photogrammetry	Project management	Spatial information management, manipulation and recovery	Spatial data quality assessment and error management	
Compulsory Training (CT): 120 working days		CT20	CT15	CT5	CT15	CT20	CT5	CT10	CT10	CT20	AT	AT	TOTAL
Additional Training (AT): Not less than 100 working days in at least three of the above, provided that not less than 10 working days or more than 40 are done in any one of the categories, which include the CT fields.													
TOTAL													220

I certify that the training indicated above has been performed under my **personal supervision**.

Signed by Mentor: Date

Print name:..... PLATO registration:
.....

Candidate signature Date

Each page must be signed by the Mentor and the Candidate

Addendum

Notes to candidate:

1. Training:

The work should include planning, specification writing, interviews with the client, writing of proposals to the client, analysis of results, and writing of the final report to the client. General office administration such as personnel management, logistics and financial management may also be included. The work include office and field work, however field work may not exceed more than 10% of the work.

A detailed daily diary of all work undertaken during the training period must be kept. This diary must give an adequate description of the work done, the dates and the category of work with the number of working days in each category.

The use of modern technology is essential and the candidate must be proficient with this technology.

2. WIL Schedule:

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Should the Council be of the opinion that the learning is inadequate or does not cover a wide scope of work, it may require the candidate to undergo further training.

3. Mentor:

A mentor must be a registered, practising Professional GISc Practitioner who has been practising as such for a minimum period of five years. Provided that the Council may, on written application by the mentor, relax the requirement of the five years experience. Provided further that where the experience to be gained is in a field of expertise that could not normally be obtained under the guidance of a Professional GISc Practitioner then, with the consent of the Council, such experience may be obtained under the personal supervision of a suitably qualified person.

Every mentor must provide, directly to the Council, a confidential written assessment on the competency of the candidate which assessment must include, inter alia, the type of experience gained by the candidate while in his or her employ, with emphasis on the professional aspects such as dealings with clients, attitude to senior and subordinate co-workers and assistants, punctuality and reliability and management skills acquired.

A person who has been found guilty of improper conduct or is practicing under threat of a suspended sentence may not act as a mentor.