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Department of Earth Sciences

# **Honours Programme Handbook**

**2021**

Welcome to Stellenbosch as an Honours student or a prospective Honours student. We hope you find this small information handbook helpful; we are always ready to improve it, if you have suggestions.

***A note about telephone numbers:*** All phone numbers listed in this handbook are given as extension numbers (e.g., x1111). To dial internally, you just use the 4 digits. To phone from outside the University, or on a cell phone, you need to dial 021 808 and then the 4 extension digits.

***A note about your SU email account:*** keep your inbox in good order. Many announcements will be sent by email to you and it is your responsibility to make sure that your inbox is not overfull.

# 1. DEPARTMENTAL RECRUITMENT AND ADMISSION PROCEDURE

This section sets out procedures and protocols for Honours student application and registration in the Department of Earth Sciences at Stellenbosch University. These requirements are *additional* to the regulations of the Science Faculty that governs enrolment, and to the Faculties' guidelines for the postgraduate students. The student must complete the departmental formalities before registering with the Faculty.

## 1.1. Application process and requirements

For application, a BSc degree with Earth Sciences or Geology as major is required.

**For Stellenbosch University students** the following selection criteria are applied:

Average marks for Third Year Earth Science subjects are used as a primary criterion. These are calculated differently depending upon the Honours Stream students apply for:

**Students doing Applied Geology**– average of best 5 of 314 (Igneous), 324 (Sedimentology), 344 (Economic), 354 (Metamorphic and Tectonics), 364 (Hydrogeology), 374 (Field Skills)

**Students doing Environmental Geochemistry** – average of 324 (Sedimentology), 344 (Economic), 364 (Hydrogeology), 314 (Geochemistry), 372 (Geo-environmental Field Skills)

If the average mark is 65% or higher a candidate shall be accepted for Honours. We will then look to fill the remaining places from students with average marks calculated as above, in the range 55-64%. Within this group the Department will look at a number of criteria to determine the successful applicants. These may include,

but are not limited to, any of the following:

- Does the student have a project organised?
- Is there a staff member willing to supervise the student?
- What is the diversity profile of the student (diversity used in a broad sense to include race, language, gender etc)?
- Does the student hold a bursary requiring them to do Honours?
- Has the student shown the right mental attitude to their studies?
- How many years did the student require to complete the BSc majoring in Earth Sciences

**For applicants from outside of Stellenbosch University** we will consider applications on a case by case basis. In general, we will give priority to students in the following order.

- Stellenbosch graduates
- South African graduates of other SA universities
- Foreign graduates of other SA universities (priority to SADC citizens)
- Foreign graduates of foreign universities (priority to SADC citizens)

The maximum class size for the Honours class is 25.

If you would like to apply for the Honours course you have to

- hand in the internal application form by the deadline stated on the [website](https://www.sun.ac.za/english/faculty/science/earthsciences/prospective-students/postgraduate-programme/prospective-postgraduate-students) of the Department of Earth Sciences (<https://www.sun.ac.za/english/faculty/science/earthsciences/prospective-students/postgraduate-programme/prospective-postgraduate-students>)

**and**

- apply [online](#) with the university by the university deadline of the preceding year. For eligibility and application requirements with the university, please consult the most recent Faculty of Science Calendar/Handbook. (<http://www0.sun.ac.za/pgstudies/>)

## 1.2. Recruitment procedure

The Head of the Department (HoD) along with the departmental lecturers forms the Honours programme selection panel. The final selection of students and allocation of supervisors will be carried out in a special meeting of the selection panel, and the results will be conveyed to the students as soon as practicable after that, usually at the beginning of December, once all final exam marks are available.

The selection process and criteria are summarized in the previous section.

To ensure that we can manage the numbers of students who we accept in various sub-disciplines, the following measures have been put in place. In addition to the maximum number of students to be admitted (25), there will be a notional limit on the number of Honours students whom each staff member can supervise. The limit is flexible (ideally 2 to 3) but 4 students/person will be the maximum for staff involved in the usual academic duties. Individual staff members **may put a lower limit** on their potential Honours supervisions (e.g., if they have heavy commitments in a particular year). We will honour such requests as long as they are not detrimental to the Honours programme.

While this is most likely not going to be a problem for some sub-disciplines, it may mean that, in some cases, we have too many students wishing to do their project in a specific field. To cover this eventuality, we will use the following procedures:

- During the second half of each year (around September), staff members will be asked to produce a list of possible Honours projects (either as well defined projects, or as a broader statement, such as “projects are available to work in the general area of ..., with individual projects to be defined in consultation with interested students”). At this point supervisors will also have the opportunity of specifying the (maximum) number of students who they wish to supervise.
- When applying, students will specify in which general field (or with which individual, if applicable) they wish to do their project. The students will tick a box or boxes for igneous/metamorphic petrology, sedimentology, structural geology, environmental geochemistry and economic geology.
- When selecting students for enrolment, the selection committee will try to ensure that we do not enrol more students than we can deal within each sub-discipline.
- If we see a potential problem developing, (e.g., too many good students applying in a given field), there are two options:
  - 1) We can advise the students of the problem and ask them whether they would consider a change of project area/supervisor.
  - 2) In a case where we have a very good student in an oversubscribed area we may exercise the option of asking the potential supervisor whether they believe that they can supervise more than the normal maximum of 4 students.

## 2. FACULTY ADMISSION

### 2.1. Registration

Following successful fulfilment of admission criteria, you will be permitted to register with the Faculty of Science. Registration with Faculty must have been finalised **prior to commencement of the programme (typically around the 3<sup>rd</sup> Monday in January)**, unless a later registration date has been explicitly and in writing granted by the Earth Sciences Honours admission coordinators Drs Susanne Fietz and Martina Frei (sfietz@sun.ac.za; mfrei@sun.ac.za).

**Registration process for internal students** (i.e. students who graduated within our SU Earth Sciences undergraduate programme):

- Students selected and invited into our Earth Sciences Honours Programme will receive a 'Postgraduate Postal Registration' form with the informal acceptance **email** from the Department (i.e. from Dr Martina Frei). This form is specific for the stream that you applied for (i.e. either for Applied Geology or Environmental Geochemistry).
- Take note: This email will indicate a deadline you must adhere to!
- Return the filled form, either for the Applied Geology or the Environmental Geochem stream, to **Dr. Martina Frei before the indicated deadline** (unless the Department's admission coordinators explicitly and in writing granted an extension).
- Dr Martina Frei will forward the forms to the Faculty Officer Mrs Meyer for registration. As from acceptance at Faculty level, you are officially an Honours student at Stellenbosch.

**Registration process for external students** (i.e. students who did not graduate within our SU Earth Sciences undergraduate programme):

- Students selected and invited into our Earth Sciences Honours Programme will receive two 'Postgraduate Postal Registration' forms with the informal acceptance email from the Department. One form is to apply within our Applied Geology stream and the second form to apply for our Environmental Geochemistry stream. More information on the two streams and the course structure can be found in section 3 below.
- For registration, choose your preferred stream that you would like to follow during the Honours year (i.e. either for Applied Geology or Environmental Geochemistry) and send the respective filled form to Dr Martina Frei ([mfrei@sun.ac.za](mailto:mfrei@sun.ac.za)) by the deadline (early-mid January) stated in the informal acceptance email. We will contact you should your preferred stream be oversubscribed.
- Please contact us before the deadline should you be in doubt about which stream to choose.
- Dr Martina Frei will forward the filled forms to the Faculty Officer Mrs Meyer for registration. As from acceptance at Faculty level, you are officially an Honours student at Stellenbosch.

## **2.2. Allocation of email address/ID card**

On registration, new students from outside Stellenbosch University are automatically allocated an email address based on their student number in the university-accepted format ([SNo@sun.ac.za](mailto:SNo@sun.ac.za)). Following registration, students must go to Admin A building for issuance of their ID card as well. This ID card is used to provide you access to the Earth Sciences building, specific laboratories and other amenities. Incoming Stellenbosch University students can



continue to use their previous student email address and ID card. However, the ID card must be reactivated for the year of their registration.

### 3. HONOURS PROGRAMME

#### 3.1. Structure

The Honours programme in Earth Sciences runs over one year, divided into two semesters, and does not necessarily follow the usual University calendar and examination timetable. Details of the timetable and examination dates are provided on the orientation day, prior to commencement of the programme. Within the Honours programme, the students have a choice of specializing in one of the two streams. The streams are: (1) Applied Geology; and (2) Environmental Geochemistry. The choice of stream will have been made already, during the application process.

The programme is composed of three compulsory modules, a research project and two further modules from one of the two streams. The content of each module is further divided into sections or sub-modules, at the departmental level, and may vary from year to year. The specific content of modules for each year is provided prior to commencement of Honours teaching. In consultation with their supervisor and the Honours coordinator, it is possible for students to take elements of different modules.

#### **Compulsory modules (credits = 80)**

54895 - 795 (35 credits) Research Project

12240 - 771 (20 credits) Geology of Southern Africa

Both streams: Sedimentology (Tucker) 5 credits

Both streams: Field tour (vd Heyden) 5 credits

Applied Geo: Geology of South Africa (Kisters) 10 credits

Env. Geochem: Hydrogeology (Chow) 10 credits

12241 - 772 (15 credits) Research Methods in Earth Sciences

Geostatistics (vd Heyden & external) 5 credits

GIS (Olivier) 5 credits

Introduction to sampling, analytical methods and record keeping (Fietz & CAF staff; not assessed) 2.5 credits

Writing Skills (not assessed) 2.5 credits

12242 - 773 (10 credits) Special Topics in Earth Sciences:  
Two Special topics, each worth 5 credits  
**plus**  
Earth Science seminars

As part of the Special Topics in Earth Sciences, students must choose two 5-credit sub-modules, either offered as a standalone special topic(s) or one or two of the existing 5-credit sub-modules from the stream other than their stream of specialisation i.e. for Applied Geology stream students you will be looking at topic(s) from the Environmental Geochemistry Stream, and vice versa. A standalone option not in either of the streams may be made available in 2021: Geometallurgy.

As part of the Special Topics in Earth Sciences in 2021, all students must attend all on campus departmental lunchtime seminars, as well as MSc and PhD defences. In addition, all Earth Science Honours students must submit a list with 10 seminars/webinars/defences on an Earth Sciences related topic that they attended during the year. The list must include the title, speaker and a brief take home message (<100 words).

### **Choice of one stream (credits = 40)**

#### **Stream A – Applied Geology (credits = 40)**

12243 - 712 (20 credits) Concepts in Crustal Evolution  
Structural Geology (Kisters) 5 credits  
Igneous Petrology (Stevens) 5 credits  
Metamorphic Petrology (Mayne) 5 credits  
Geochronology (Tucker) 5 credits  
12247 - 742 (20 credits) Economic Geology  
Geological Modelling (external) 5 credits  
Mineral Economics (von der Heyden) 5 credits  
Ore Microscopy (von der Heyden) 5 credits  
Geophysics (external) 5 credits

## **Stream B – Environmental Geochemistry (credits = 40)**

- 12244 - 714 (20 credits) Hazardous Waste Site Assessment  
Analytical techniques (Roychoudhury) 5 credits  
Intro. to soil and rock mechanics (Roychoudhury) 5 credits  
Hazardous Waste Assessment (Roychoudhury) 5 credits  
Env. Isotopes (Fietz/Chow/Roychoudhury) 5 credits
- 12275 - 744 (20 credits) Environmental Systems  
Climate of the Past (Fietz) 5 credits  
Climate Change: Present and Future (Fietz) 5 credits  
Marine Geochemistry (Fietz) 10 credits

### **3.2. Language**

In the Honours programme in Earth Sciences, the medium of instruction and examination is English.

### **3.3. Assessment**

All modules in the Honours programme, with the exception of the research project, are assessed through a combination of theory and practical work and/or an examination. Certain sub-modules are not assessed through a formal examination, as indicated below in the marking scheme. Also, certain sub-modules have no formal examination and are assessed on continuous basis, during the module, in the form of assignments and class tests. The research project is assessed through submission of a final research report and an oral presentation.

To pass the Honours year, students must pass all modules with a 50% sub-minimum. To pass Honours, students must pass each individual module (not sub-modules) as well as the project, and must have an overall average of 50% or above in 12918-778. **The**

**final mark for Honours is the weighted average (as determined by the allotted credits) of the different course work modules and the project module.** Some examples are provided in section 3.5 below and more details about the credit and weighting allocations will be explained during the information session(s) at the beginning of the programme.

### 3.4. Examinations

Examinations are held toward the end of each term (i.e. approximately quarterly). The dates for the examinations will be provided in the timetable. Note that the timetable and examination dates might change over the year and all students are required to frequently check their emails for updates. Communication regarding the timetable and examination dates will happen via email only. All exams are subject to external moderation for quality and fairness.

At Honours level, **second opportunity examinations are not an option** unless a student fails to write the exam because of a genuine serious medical condition. **A formal medical certificate handed in before the exam time, clearly describing the serious medical condition and signed by a qualified doctor** (*not the one obtained from student health centre*) is required for granting of a second examination opportunity.

The process that the Department will follow with regard to failed modules is given in section 3f (see below).

### 3.5. Marking scheme

When calculating aggregate marks, class marks and exam marks are weighted either as — class 40%; exam 60% OR class 70%; exam 30%, depending on the nature of the class assignments. The

weighting will be communicated by each lecturer at the beginning of the class in the respective course framework.

Furthermore, when calculating overall marks for the module, each sub-module is weighted according to credits and duration provided in section 3.1. Attendance at sub-modules that are not formally assessed is still compulsory and penalties apply for the module if students fail to attend sub-module activities.

*Examples of credits to weighting conversion:*

In module 771, sub-module Geol SA has 10 credits and sub-modules Sedimentology and Field Tour 5 credits each, which results in the following weighing: Geology of Southern Africa or Hydrogeology 50% + Sedimentology 25% + Honours Field Tour 25%

In module 772 only GIS and Geostatistics are assessed, each therefore weighing 50%: GIS 50% + Geostatistics 50% + Analytical Techniques (not assessed) + Writing Skills (not assessed)

In module 712 all sub-modules are worth 5 credits resulting in the following weighing: Igneous Petrology 25% + Metamorphic Petrology 25% + Structural Geology 25% + Geochronology 25%

The following weighing applies regarding module 795, Research Project: Thesis 70% + Presentation 30%.

The mark of the Thesis is composed of the average of mark from internal examiner and supervisor and the external moderator in selected cases. The mark for the Presentation is calculated as average from internal examiner and external examiner and supervisor.

The overall average 778 is calculated as **average of all individual modules, weighted by their allotted credits** e.g. for 54895 – 795 Research Project weighting is 35 out of 120 credits, for 12275 - 744 Environmental Systems weighting is 20 out of 120 credits etc. **See Section 3a (above) for number of credits for individual**

**modules.** To pass Honours the average for 778 must be 50% or above.

### **3.6. Conditions for exam re-sit opportunities and module failure**

At Honours level, for those modules that have examinable sub-modules, a student who fails one module will be given a second opportunity to re-sit the exams late in the academic year, after the Honours Thesis submission and Thesis Presentation have occurred. Eligibility for a re-sit is contingent on the following conditions:

- that the student has passed the project module (795);
- that the student has passed **all other** coursework modules;
- that an exam opportunity is available in the module under consideration. Note that some modules, such as 772 (Research Methods in Earth Sciences), are wholly subject to continuous assessment. Failure in such a module means that you will not be able to complete your BSc Honours degree in Earth Sciences in the current academic year. In this circumstance, subject to approval by the Head of Department, you **may** be allowed to repeat the module the following year.

#### **Note:**

- failure of the project module (795) constitutes failure of Honours Earth Sciences and the student will not be able to graduate with a BSc Honours degree.
- failure of two or more coursework modules constitutes failure of Honours Earth Sciences and the student will not be able to graduate with a BSc Honours degree.
- a student who fails one coursework module but passes the re-sit examination for this module, and has passed all other

modules, will not be able to graduate in the December graduations of the same year. Instead the student will graduate in the March graduation ceremony of the following year.

- a student who fails one coursework module, writes the re-sit opportunity and fails it again has failed Honours Earth Sciences and will not be able to graduate with a BSc Honours degree.
- modules that are failed in a given year cannot be repeated in subsequent years. At the discretion of the Head of Department, this condition may be waived in the case of a coursework module that does not contain an examinable component e.g. 772.

### 3.7. Honours thesis submissions

In short, you are supposed to submit your Honours thesis for examination by the deadline indicated on the timetable. If you do not make satisfactory progress during the year (as judged by your supervisors and the HoD) your registration can be terminated. Please remember that support for a research project is costly to the supervisor and the Department.

You will learn about formatting your thesis in your writing skills module. There are no page limits for your thesis. However, an Honours thesis is typically no longer than 40 – 50 pages of text (double spaced) and figures, excluding appendices. You are **required** to submit **one electronic copy to the Postgrad Administrator (Martina Frei: [mfrei@sun.ac.za](mailto:mfrei@sun.ac.za)) by the deadline given on your timetable. Please cc your supervisor into this submission email. Your electronic submission to the Postgrad Administrator, Dr Martina Frei, must be accompanied by an electronic copy of the full Turnit-In similarity report. In addition, you are required to submit your neat lab book(s) and a neat electronic version of your honours**



**project data to your supervisor. Failure to submit the thesis (including the required accompanying full Turnit-in similarity report, lab books and data) automatically disqualifies you from graduating with an Honours degree.**

Late submissions that are submitted up until 24 hours after the deadline will receive a 10% penalty (in terms of absolute mark value, i.e. if your thesis is marked as 50% your final mark after penalty deduction will be a 40%). Submissions received later than 24 hours after deadline will not be admitted and the Honours Research Project will be marked as failed. This leads to the failure of the Honours Programme and the student will not be able to graduate with a BSc Honours degree. **No further extensions are permitted under any circumstances.** A submission is only considered complete if all required documents are received prior to the deadline or the 24 hours extension period. The latter will result in a 10% (absolute value) penalty. For example, if a student submits his ring-bound hard copies in time but fails to submit the full Turnit-In report, the student will fail the Honours Programme and the student will not be able to graduate with a BSc Honours degree. Similarly, if a student hands in an electronic copy but fails to submit the required two bound hard copies, the student will fail the Honours Programme and the student will not be able to graduate with a BSc Honours degree.

#### 4. SUPERVISION OF HONOURS RESEARCH

All Honours students in Earth Sciences need to have at least 1 supervisor. The supervisor is the **staff member** with whom you have regular supervisory contact and the person who will guide you through your research project. You may have additional supervisors in other academic institutions, government facilities or industry, who may assist academically, if required. The role of the supervisor is to **guide you** through the learning process of conducting research through collection, manipulation and interpretation of data. At the end, students are examined on the thesis produced. Therefore, it is expected that most of **the interpretation of data and text in the theses reflect the student's own work or thinking, and not those of the supervisor(s).**

*Complaints or concerns regarding supervision should first be made to the Honours Programme Co-ordinator (Dr Susanne Fietz, Room 2010, sfietz@sun.ac.za).* If the student receives, in their judgement, no satisfactory resolution, representation should be made, in writing, to the HoD. The HoD will then meet with the student and supervisor to help resolve the issue. If the issue happens to be with the Programme Co-ordinator or HoD, as supervisor, representation should be made to another senior staff member (Professor/Associate Professor) of the department.

## **5. PLAGIARISM**

Plagiarism, as defined in the 1995 Random House Compact Unabridged Dictionary, is the "use or close imitation of the language and thoughts of another author and the representation of them as one's own original work". Within academia, plagiarism by students is considered academic dishonesty or academic fraud, and offenders are subject to academic censure, up to and including expulsion. The most common infraction is to cut and paste sections of previous work without reference to the source. Even if the source is referenced, this is still plagiarism unless the piece is given within quotation marks and the reference is given, with a page number in the original publication. Beware; the University has zero tolerance for plagiarism.

As per faculty of sciences regulations your thesis must be accompanied by a Turnitin report. A Turnitin sandbox on the SUNlearn will be made available in due time and you will learn more about the use in your writing skills.

## 6. IP RIGHTS

Since your thesis is part of your research output while you are a student enrolled at the University of Stellenbosch, the intellectual property rights (IP) resides with the University of Stellenbosch. In special cases, the IP rights may belong jointly to the University and an industry or government sponsor of the research.

Please also be aware that all samples that you use for your research must legally be archived by the Department. It is therefore your responsibility to ensure that each sample is catalogued, labelled and the sample locality accurately and fully specified. Thin sections, rock powders, mineral separates, epoxy mounts and XRF disks remain the property of your supervisor and the Department and must likewise be archived.

In addition to your samples, you must hand over a neat **electronic version of all your data** and your neat **lab book** to your supervisor the day of your research thesis submission. This is to ensure that your supervisor can use your research in case you will not stay in academia (i.e. not publish your results).

## 7. DEPARTMENTAL CONTACTS

***Your Honours Programme Co-ordinator is your first port of call for all enquiries related to the programme.*** After that you have a list of other people in the Department who can assist you in various ways.

*Honours Programme Co-ordinator* – general enquiries about admissions and overall programme co-ordination including timetabling and other requirements for the Honours year.

Dr. Susanne Fietz: Office 2010, tel: x3117, [sfietz@sun.ac.za](mailto:sfietz@sun.ac.za)

Dr. Martina Frei, Office 2040, tel: x4820, [mfrei@sun.ac.za](mailto:mfrei@sun.ac.za)

*Head of Department* (who also chairs the Research and Honours Admissions Committee) – general enquiries about matters that cannot be resolved through the programme co-ordinator or your thesis supervisor

Prof. A. Kisters, office: 1036, tel: +27-(0)21-808-3113,  
[akisters@sun.ac.za](mailto:akisters@sun.ac.za)

*Departmental Officer / Secretary* – financial enquiries, vehicle bookings (**at least 24 hours notice required**). Make sure you know the SU regulations before doing purchases, bookings etc. especially if you want to receive reimbursement.

Mrs Gillian Strydom, office 1011, tel: x3219, [gstrydom@sun.ac.za](mailto:gstrydom@sun.ac.za)

*Senior Technical Officer* – reporting of safety concerns, equipment faults and deficiencies in general, non-laboratory supplies

Mr George Olivier, office: 1037, tel: x3118, [olivierg@sun.ac.za](mailto:olivierg@sun.ac.za)

## 8. UNIVERSITY ADMINISTRATIVE CONTACT POINTS

*University Help Desk* – can potentially be useful but rather phone the section you really want to speak to. It will be more efficient and effective. tel: x4669

*Postgraduate and International Office* – general enquiries and assistance for international students, information on funding, skills development, accommodation, etc. tel: x2565, [interoff@sun.ac.za](mailto:interoff@sun.ac.za); website: <http://www0.sun.ac.za/international/>

*Faculty of Science* – rules and regulations and specific information about procedures, applications, bursary information

- Faculty Manager – general enquiries tel: x3760
- Faculty Officer – rules and regulations tel: x4832

website: <http://www.sun.ac.za/english/faculty/science/>

*University Language Centre* – general assistance with language issues, translations, short courses in writing skills, thesis editing, etc. tel: x2159, web site: <http://www0.sun.ac.za/languagecentre/>

*University Library* – The majority of science students make use of the central library (JS Gericke Library; <http://library.sun.ac.za/en-za/Pages/Home.aspx>) on the main campus. Details on how to make an efficient use of our library are available on the library website. For advance usage and information you may contact Science Faculty librarian (Currently Pieter Du Plessis, [pdupless@sun.ac.za](mailto:pdupless@sun.ac.za), tel: x4430)

*Campus Health* – medical services and advice, Monday – Friday: 08h00 – 17h00, tel: x3392; <http://www0.sun.ac.za/kampusgesondheid/>

*Student Counselling and Development* – careers, counselling, therapy, disabilities, tel: x4707; 37 or 49 Victoria Street, Stellenbosch; <https://www.sun.ac.za/english/learning-teaching/student-affairs/cscd>

*Campus Security* – patrols, emergency reaction, incident reporting

- tel. for service problems: x3775
- tel. for emergencies x2333

*Campus Map:*

<http://www.sun.ac.za/university/Virtual%20Views/map.pdf>

## 9. ACCESS TO ANALYTICAL FACILITIES

### 9.1. Central Analytical Facility

The Central Analytical Facilities (CAF) manages most analytical instrumentation that you are likely to use at Stellenbosch University. Many of the relevant instrument laboratories are actually located within the Chamber of Mines building (e.g. SEM, ICP) and some are located in other University buildings (e.g. XRF). You can find out what is available and whom to contact about access to a particular facility by visiting the CAF web site: <https://www.sun.ac.za/english/faculty/science/CAF>

This site also contains forms for sample submission to certain facilities. For access to all CAF units and instrument [training please contact the CAF staff](#).

There are three SEMs in the Chamber of Mines Building (room 1034/1035) – please contact the staff directly if you need to use the instruments. The Zeiss MERLIN has 8 different detectors and is used for high resolution SE (Secondary Electron), BSE (Backscattered Electron), EDS (Energy-Dispersive X-ray Spectroscopy), CL (cathodoluminescence) and STEM (Scanning Transmission EM) imaging. The Zeiss EVO is used mainly for elemental analysis using EDS and WDS (Wavelength Dispersive Spectroscopy) as well as for SE and BSE imaging. Both MERLIN and EVO instruments also have a cryo stage to stabilize samples and improve resolution.

At the EM Unit, group training is provided once a month as a one-day course, followed by one-on-one sessions using the students' own samples, until they are proficient to use the instruments independently.

Also for the ICP-MS, LA-ICP-MS and XRF you need to contact the CAF staff member responsible for the particular analytical facility to book time on instruments (LA-ICP-MS) or to have



samples collected for XRF. Find their contact details here: <https://www.sun.ac.za/english/faculty/science/CAF>.

**For all units: Make contact well in advance, as some instruments are being used constantly and have long waiting lists.**

**Never book analytical time without receiving prior approval to do so from your supervisor. All instrument time is charged for and you have to check that your supervisor is providing funds to cover this. If you book instruments without supervisor's permission, covering the associated costs, even for cancelling the reservation, remains with you.**

Training in analytical techniques, data reduction and interpretation is a fundamental part of a research degree. The extent of student participation within CAF varies, depending on the technique used. For example, after appropriate training, you can expect to be involved in all your imaging and collection of EDS/WDS mineral major-element compositions using the SEM, X-ray maps and all data reduction. On the contrary, for XRF you will not be running the instrument but, depending on the level of your supervisor's funding, you may have to crush and powder the samples yourself.

Note that, in early February, there will be a **short introduction to CAF facilities** and analytical methods given as part of the Honours course. Provided space is available, other postgrads (M and D) are welcome to take part in this course.

## **9.2. Departmental Facilities**

Some additional facilities that you may need to use fall under the control of the Department of Earth Sciences. The most important of these are:

### *Rock & Field Store*

This contains a variety of equipment that is available for use in the field and for camping. However, the equipping of undergraduate field trips must take precedence over your possible needs. If you wish to use something you need to approach the Senior Technical office, Mr Fiazal Timmey and Mr George Olivier

### *Research Microscopy Laboratory*

This facility houses the research-grade petrological microscopes, the photomicroscope and the A3 flatbed scanner. The Department's Senior Technical Officer (Mr George Olivier) oversees access. Always replace the microscope covers after using. Do not consume food or drink in this lab. If you wish to scan a solid specimen, always place a sheet of clear plastic between the sample and the glass on the scanner. Report any problems to Mr Olivier, immediately and police each other's use of this lab as well.

### *Environmental Geochemistry Research Laboratory*

This lab is exclusively for the use of students working on projects supervised by Prof. Roychoudhury and Dr Fietz. Access is restricted.

### *Ultra-clean Laboratory*

This lab is under the strict control of Prof. Roychoudhury and is only used for highly specialised sample preparation and analysis. Access is restricted.

### *Experimental Petrology Laboratory*

This laboratory houses high-pressure and high-temperature apparatus of various kinds, used to investigate Earth materials properties and behaviour at deep-Earth conditions. The equipment is the joint property of Profs Gary Stevens and John Clemens. Access is restricted to specially trained students working with one of these two staff members.

### *Geological Compasses, GPS units and Geiger Counters, etc.*

The Department has a stock of such items that you may be able to take into the field. The needs of the undergraduate fieldwork programme take precedence, however. If you would like to take such equipment for your own fieldwork, you need to talk with the Senior Technical Officer (Mr George Olivier), who has custody of these things and can arrange for the forms, etc. that you will need to complete to borrow them.

### *Computers and Software*

Honours students normally make use of the common computer lab in Room 2023. The lab is supplied with Windows desktop computers to use, and a connection to the Internet. Some basic and geology software is installed. However, if you require specialised software packages, the use of a laptop or a computer with an operating system other than Windows, you or your thesis supervisor must supply these for you, out of his/her research cost points.

Note that, as per University regulations, you must pay for your Internet access, as well as any printing or photocopying charges that you may incur.

We cannot stress strongly enough the need for **you!** to ***backup your important research files and thesis parts. In 2013 and 2014 students lost parts of their work close to thesis submission time through failing to backup.*** The worst has a way of happening, so regularly back up your data, etc. to an Internet Cloud, a hard disk or a large-capacity USB flash disk. Keep the backup disk in a separate place from your computer.

### *Telephones*

For organizing your project-related research field trip / accommodation / vehicle booking, you may, with express permission from your supervisor, request the departmental administrator to make use of her phone (Room 1011). For reporting emergencies in the laboratories, make use of the phone in the laboratory, if available. For all other purposes, you may only use your own personal phone.

### *Other Facilities*

In addition to the facilities above, individual supervisors may give you access to personal research equipment that they own (e.g., microscopes, slide scanners and special field equipment). It is your responsibility to see that you have the appropriate knowledge and training to use these things safely and without damaging them. Your supervisors will provide that training.

### *High-Resolution Slide Scanner* (for thin sections or colour transparencies)

Access to this piece of equipment is a special case. Although it is the joint personal property of Profs Stevens and Kisters, they are prepared to accord research students access to it. If you need to use

this, you should approach Prof. Gary Stevens. If access is granted, you will then need to arrange for access to Prof. Gary Stevens's office, as that is where this equipment is housed.

### 9.3. Rental Vehicles

You may need to hire a vehicle for the purposes of field work, or to visit another institution (for research purposes). The Department has no vehicles of its own. However, the University has a large variety of vehicles available in its Vehicle Fleet. Additionally, the University has an arrangement with Bidvest, to supply rental vehicles at an advantageous price. The Vehicle Fleet compound is located on Banghoek Rd, just north of the Campus. Bidvest currently delivers the cars to the campus.

If you need a vehicle, you and your supervisor must decide on the type required and the duration of the rental, and your supervisor needs to allocate funding (i.e., provide a costpoint number). Please check with the Departmental Officer (Mrs Strydom) which types of vehicles are available and what information she needs from you. She will arrange the rental for you once she has all your details. However, ***please remember that you need to make these requests at least 48 hours before you need the vehicle***, to ensure availability and minimise cost to your supervisor. Remember too that ***you are responsible for payment of any fines that you may receive as a result of traffic or parking offences***.

E-mail the following information if you would like to make a vehicle reservation to Mrs Strydom ([gstrydom@sun.ac.za](mailto:gstrydom@sun.ac.za)):

- Driver / drivers names and surnames
- Date of reservation
- Time of pick-up
- Date of return of vehicle
- Time of return
- Destination
- Cost Point

## 10. SAFETY AND SECURITY

***All laboratories contain protective equipment and first-aid kits. Please ensure that these are in place and use them, as directed.***

The Department has a number of trained and certified first-aiders; their names and office locations are given on the departmental directory, on the ground floor.

Each year, new research students have to attend a workshop on Occupational Health and Safety, run on behalf of the University. This course is compulsory, please check your timetable for the date.

***Safety on fieldwork is primarily your own responsibility.*** You must always operate vehicles according to the law and obey special safety instructions that may apply to the various places in which you may be working (e.g., mines, quarries, processing plants, slag heaps, laboratories in other institutions, etc.). You are personally responsible for paying any fines related to traffic or parking violations. Use portable and fixed equipment according to the instructions and training that you received. If you think you need training in something specific, ask for it. Mr George Olivier can help. Whenever hammering rocks to obtain samples, you must wear eye protection. Never use one geological hammer to strike another one, as this commonly causes metal fragments to be thrown off at high velocity. These can cause serious injury. ***Always think about the safety aspect before you decide to do anything.***

Security in the Chamber of Mines (Geology) building is another issue that you need to be aware of. There have been incidents of theft of University property, departmental property and personal property, including money. It is known that petty criminals and thieves do wander around the campus, looking for opportunities. Some are brazen enough to walk straight into buildings to look for things to steal. The following simple precautions should always be taken.

- ***Make sure the building entrance door is closed after you have entered.***
- ***Never block building entrance doors open*** unless the door is actually guarded, especially after normal business hours. If you see a door in this condition, close and lock it, or call security on x2333.
- ***Never leave laboratory or office doors open*** unless you are actually in the room.
- ***Always lock the door when you leave***, even if it is just for a minute or two
- ***Never leave bags, purses, wallets, cell phones, keys, etc. within sight.*** Always put these things away and preferably locked away when not actually in use.
- ***Never keep money in rooms overnight.*** If you need to store any large sum of money that is not your own property, Mr George Olivier or Mrs Gillian Strydom can assist. Never leave your own money on University property overnight.
- Small portable and valuable items (e.g., laptops, hard drives, etc.) should always be locked away, out of sight (or taken home) at night. ***In particular, if you received a laptop or similar device on loan by Earth Sciences staff members, it becomes your financial responsibility to replace the item if it is lost/stolen.***
- If you see anyone who you do not recognise in the building, you are perfectly entitled to ask who they are and what they are doing. If you are not satisfied with their answer, just call campus security on x2333.
- ***If you witness a crime or suspicious activity on campus, call campus security on x2333.***

***Security is as much your business as your personal safety is, so please be vigilant.***

### *Fire Alarms*

Please obey the fire alarm and vacate the building immediately. You can never know whether it is a drill or a real fire, so don't try to guess. A map of the location of the assembly point is found next to the entrance door.

### *Insurance*

As stated on your University registration documents, there is no insurance cover provided for you, either while you are on campus, in laboratories, or in the field. It is your personal responsibility to make sure that you have adequate personal insurance to cover the possibility of injury, hospitalisation or loss of or damage to personal belongings that you may have in your possession while you are on University property or in the field. Under no circumstances does the Department accept responsibility for loss of or damage to your personal property.



## 11. DEPARTMENTAL RESEARCH SEMINARS

As an Honours students you are **required** to attend departmental seminars held every Wednesday during lunch hour or as advertised by the seminar co-ordinator. You receive credits for attending these seminars and you must attend a minimum of 80% of all the seminars organised in the department to fulfil the criteria for getting full credit. Without the credits for attendance of seminars, **you may not graduate**.

## 12. TEACHING

As an Honours student, you are not allowed to perform any lecturing duties. However, as a senior student, you have knowledge that can benefit the undergraduate students. Worldwide, it is normal for senior students to demonstrate in undergraduate practical classes or on field trips. At Stellenbosch you may be asked to do some demonstrating, in the appropriate area of geoscience. However, you must speak to your supervisor and Programme Co-ordinator for guidance on interference with your programme before accepting demonstrating duties. If approved, you will be paid for this at standard rates and the Senior Technical Officer (Mr George Olivier) is the person to approach about all non-academic matters pertaining to demonstrating.

## 13. SOCIAL ACTIVITIES

Honours students are welcome to organise braais, held in the quad, and the Department will supply wood and two braais for this purpose. You just need to check with Mr George Olivier that there are no clashing events on the day that you wish to have your braai. Remember too that you are an example to the undergraduate students. So, make sure that you treat the building with respect and **clean up after yourselves**. At least one person responsible for

organization must give an undertaking to Mr Olivier that the area will be left clean after the braai is finished.

The Department typically organises and subsidises an Honours Welcoming and a Farewell event. Students admitted into the Honours Programme will receive relevant information in due time.

## 14. PROGRESSING FROM HONOURS TO MSc

The Department recognises that many students who successfully complete Honours studies will wish to carry on with a research-based degree, and therefore seek registration for an MSc. The purpose of this section is to make clear, to all parties, what their rights and obligations are.

- If the student is successful in passing Honours, and has obtained an average of at least 60% in those Honours modules relating to their intended research specialty, they will, in principle, be deemed qualified to register for an MSc.
- Notwithstanding the previous paragraph, it is to be understood that no student who completes Honours successfully is guaranteed a place as an MSc student in the Department of Earth Sciences.
- A student who wishes to do an MSc in the Department must first identify a member of staff who is prepared to act as their supervisor. That staff member needs to acknowledge to the HoD that he/she is prepared to supervise the project, and that there is funding in place to cover the costs associated with the project.
- Even with the supervisor and funding identified, the student will only be permitted to register with the Faculty of Science once they have completed the *Departmental registration document*, together with their CV and a research proposal, and these documents have been approved by the Head of Department. The research proposal must show the background to the project (with reference to previous literature), give the details of the problem to be addressed and the approach to be taken, and it must also provide a timetable for completion of the various parts of the study.

- Please follow the procedure on the website:  
<https://www.sun.ac.za/english/faculty/science/earthsciences/prospective-students/postgraduate-programme/prospective-postgraduate-students>