



BOTSWANA INTERNATIONAL UNIVERSITY
OF SCIENCE & TECHNOLOGY



Driving Change

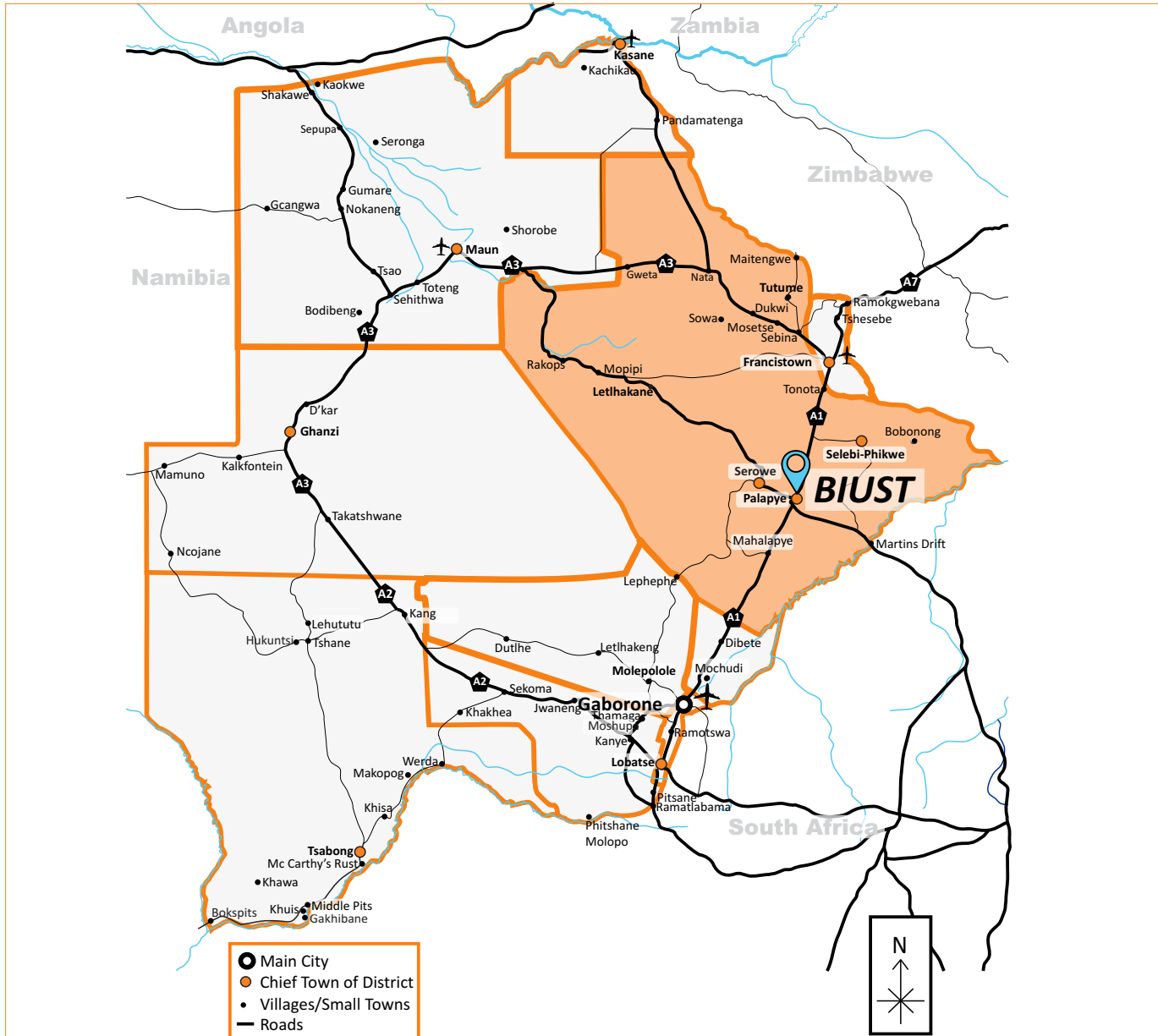
UNDERGRADUATE PROSPECTUS 2022/23

www.biust.ac.bw





Where we are



About us



The Botswana International University of Science and Technology (BIUST) is a government owned institution established through the BIUST Act [CAP 57:05] as a research-intensive University that specialises in Science, Engineering, Technology and Mathematics (STEM) at both undergraduate and postgraduate (master's and Doctoral) levels.

BIUST, established in 2006, was envisaged to be one of the key drivers in bringing about a fundamental transformation of Botswana as a catalyst for economic and social development. BIUST was established mainly to transform the country's economy from a resource based to a knowledge-based economy.

The realisation of BIUST mandate requires a coordinated effort across the University, the commitment and involvement of the Government, private sector, and the civil society. Its Mission is to produce world-class research and

innovation in STEM contributing to industry growth and development and advancement of a diversified knowledge-based economy.

The Vision of this specialised university is to be a 'premier research-based university of STEM internationally recognised for the quality and excellence of its teaching and learning by 2023. The University's Strategic Plan 'A Catalyst for Innovation and Transformation,' sets the direction of the University for the next three years from 2019/20 to 2022/23 and towards 2028, informed by an assessment of the external environment which provided an understanding of the future external environment the university would need to respond to.

The University's primary focus is centered on strengthening the academic value chain comprising three key elements of academic excellence, commercial attractiveness, and social relevance. This represents the university's mission's critical components which work together in a systematic relationship to transform the economy from a research based to a knowledge-based economy. BIUST remains the only STEM University in the country with a unique mandate to propel the university towards becoming a research-intensive institution characterised by international best practice and affiliation to reputable global bodies.





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Driven by the quest for zero defect in intellectual prowess, academic and commercial attractiveness as well as social relevance, it gives me great pleasure to welcome and ordain you to the prestigious Botswana International University of Science and Technology (BIUST). Our University is strategically positioned locally, regionally and globally as the home of research, development and innovation. I am equally delighted you made the right life transforming decision to come study at BIUST, simply because the right University will not only shape your career path; but will fast track the realization of your dreams and aspirations.

Through this Prospectus, you will unravel a great wealth of information and appreciate a variety of programme offerings, teaching and learning, student life on campus, sport and social activities.

Over the years I have given prospective students my best bet always and insisted that the best way to appreciate our international University, is for you to physically visit the campus rather than just online and find it opportune to interact with our continuing student community, academic

and support staff, as well as conduct a tour of our state-of-the-art facilities.

BIUST aims to provide its fresh crop of students with an outstanding teaching and learning experience that equips them with the requisite skills, experience, knowledge and confidence to out-perform competing students and future graduates. Our students have competed and emerged victorious in several research-funded initiatives which continue to transform the lives of communities facing challenges. Recently, BIUST impactful response to the COVID -19 pandemic through research and innovation of soaps, sanitizer, the famous COVID -19 dashboard.

The University upholds its core values of high performance and quality. The University strives for academic excellence as it has a significant bearing on our student's self-confidence, enthusiasm for their greater achievement in the world of work.

Our Alumni continue to be our country's most sought-after graduates owing to their employment-readiness, armed with requisite intellectual skills and knowledge to curb global challenges that may confront them.

I therefore look forward to welcoming you as the fresh crop of students to this safe, secure, environmentally friendly and vibrant learning environment. I beseech you to be stimulated for exploration, new discoveries, and apply your creative mindset under the guidance of our accomplished academics and professionals in their different Science, Technology Engineering and Mathematics (STEM) areas.

Professor Otlogetswe Totolo
Vice Chancellor

Why you should Study in BIUST



i. Specialised University Offering Only Science, Technology, Engineering and Mathematics (STEM) programmes

BIUST prides itself as the first specialised tertiary institution and a research intensive University in Botswana, aimed at being a catalyst for innovation and our country's economic transformation drive. If you choose to graduate in BIUST, you will be equipped with world-class education enriched with research-based solutions which will impact on communities locally, regionally and internationally.

ii. We Assist You to Get Your Career Right

Choosing the right university is an important decision and an investment in your future. The University has invested in various platforms such as the annual STEM Festival, Open Days and Secondary school visits to interact with prospective applicants, as well as provide first-hand information of programmes on offer, research opportunities and career prospects. Prospective students can also use various communication platforms to reach out to the Enrolment and Admission team and academic members of staff for consultations.

iii. Enriched Learning and Living Experience

The University has adopted a strong academic support model where students are paired with their Academic Advisors right from the registration period, to guide through their studies in readiness for graduation. Students are also supported by a tutor who provides them with practical guidance and extra lessons on a range of academic issues to help them excel in their studies. As a BIUST Student, you will also have a peer mentor - a trained student volunteer from your course, to help you with assignments and another course material, percolate to boost excellence in your respective modules.

iv. Teaching Excellence

The University has carefully selected internationalised experts who are tasked with delivering quality education to our students and in the process share their global experiences. The University aims to engage and inspire its students to challenge their thinking and support them to fulfil their potential during their stay in BIUST, through a combination of interactive lecturers, seminars, field work, research, practical sessions, industrial attachments, and stakeholder engagement. BIUST has invested heavily on providing state of the art facilities such as laboratories, research projects and other equipment needed to stimulate learning and facilitate innovative teaching

v. Graduates who STAND OUT from the crowd

The University is in the process of upgrading its learning programmes from Bachelor's to include Honours Degree qualification making our graduates more attractive to the global community. Our students are encouraged to make use of available opportunities to develop their leadership skills, establish sound networks and cement their position as captains of the industry.

Our graduates hold senior positions at reputable companies while others go on to establish successful business ventures.

vi. Entrepreneurship and Business Management Model

Through its Center for Business Management, Entrepreneurship and General Education, the University has introduced a range of business management modules which are meant to provide students with training on conceptualization of business ideas, development of business proposals, advice on business management, mentoring and guidance towards access to funding. As well as exposure to networking events which sets our students on the right path to be successful entrepreneurs.

vii. Industry Linkages and Partnerships

The University has a number of local and international stakeholders who contributes to curriculum enrichment and relevance to the diverse industry needs. The University has partnered with world-class universities, industries such as those from the Mining, Water and Energy sector, Research centres, Government departments and Parastatals to ensure that it produces industry ready graduates.





Apply Now



Apply on time. Early submission of your application allows you to receive relevant information about your programme of choice, as well as gives you ample time to make changes to your application as and when you wish.

Closing date for receiving applications is **30th April 2023**

Application Channels

1. Hand delivery at BIUST campus or any organised recruitment fair
2. Email address at admissions@biust.ac.bw

Application Guidelines

Applicants are required to apply only if they meet the **minimum entry requirements**. However, applicants must note that meeting the minimum entry requirements is not a guarantee for an admission. Due to the limited number of places available, the final selection is made subject to the availability of places, academic results and other entry requirements, where applicable.

To start the application process, please visit the University website to access the prospectus and download the application form. You may also send a request for the

prospectus and the application form through email at admissions@biust.ac.bw or simply contact Enrolment and Admissions Staff for further assistance with the application process on the following numbers:
+267 4931000/ 267 4931480/1/9.

Prospective student may also visit the University campus in Palapye to seek face-to-face career advice and complete applications.

Applicants must submit only one application. The application form allows an applicant to choose three (3) programmes. It is in the applicants' best interest to seek advice about his or her programme choices prior to submitting an application, since the order of programme choices affects an applicants' chance of admission.

Change of Programme Choice

Applicants should note that change of programme choice is possible but must be done within the application period. Therefore, applicants who decide to change the programme of study applied for, may do so not later than the stated closing date of receiving applications.

Applicants are advised to apply caution when selecting a programme of study, that is when indicating a first, second or third choice or making any other changes to the initial submitted application. Furthermore, applicants are advised to be realistic about whether they are likely to qualify for admission, and whether the chosen programme matches their interests and aptitude.

Applicants are also encouraged to consult an Enrolment and Admissions or Programme Lecturer for career counselling to determine an appropriate career path and consequently an appropriate qualification. All requests for change of programme should be done in writing and be emailed to admissions@biust.ac.bw

Entry Requirements

- The University considers and assesses every application on its own merits, considering the relevance of qualifications and experience each student has. For students with a Botswana General Certificate of Secondary Education (BGCSE) or equivalent, the following minimum requirements will apply for undergraduate degree programmes:
- A credit in at least six subjects in BGCSE or equivalent. These subjects must include a minimum of Pass (D) in English and at least a Credit (C) in Mathematics plus two Science subjects.
- BGCSE holders or equivalent should possess a minimum of 20 points from any of Mathematics, and Physics and/or Chemistry and/or Biology or Science double award
- A minimum combined point score for admission from the six subjects (including Mathematics, English, two science subjects or Science Double Award, must be above 38 points based on the points scores in the following table:

Grade	A*, A	B	C	D	E
Points	8	7	6	5	4

Points for Science Double Award are doubled E.g. Grade AA= 16 Points

- Students with other qualifications (i.e. non-BGCSE and its equivalents) including international students, will be considered on their own merits and equivalency to BGCSE.

Direct Entry into Second Year

- The University will consider A-level holders and those who have already completed year one (1) BSc General at any recognised University for direct entry into second year.
- Furthermore, applicants in possession of year one (1) BSc General or equivalent, are required to have attained at least 40 BGCSE points or equivalent and must have obtained an average of at least 65% without re-sits or retakes in their BSc transcript.
- A-level holders are required to possess at least 3 A-level grades with a C or better grade in Mathematics, and any 2 science grades in either Physics or Chemistry or Biology.
- Diploma holders will also be considered on the relevance of their prior programmes of study to their programmes of interest.



POINTS	GCE			GCSE			SENIOR CERTIFICATE			IB	
	A LEVEL/HSC	AS	COSC	NSSC/ OL/ SGCSE/ LGCSE	IGCSE	BGCSE	NSC	HG	SG	HG	SG
12	A									7	
11	B									6	
10	C	A					7	A		5	7
9	D	B					6	B		4	6
8	E	C	A	A	A*,A	A*,A	5	C	A	3	5
7		D	B	B	B	B	4	D	B	2	4
6		E	C	C	C	C	3	E	C		3
5			D	D	D	D	2		D		2
4			E	E	E	E	1		E		
0			F	F	F	F					

GRADES	A*, A, B, C	D	E, F, U
	CREDIT	PASS	FAIL

The University reserves the right to ask prospective students to sit a pre-admission examinations if required.

Please note that these are the only minimum entry requirements, and certain programmes may have additional entry requirements.

Information on additional requirements is available from the Enrolment and Admissions Office.

Point System

A LEVEL/HSC	Advanced level/ High school certificate
HG	Higher Grade
SG	Standard Grade
IGCSE	International General Certificate of Secondary School
BGCSE	Botswana General Certificate of Secondary School
O-LEVEL	Ordinary Level
COSC	Cambridge Overseas School Certificate
GCE	General Certificate of Education
GCSE	General Certificate of Secondary Education
HIGSE	Higher International General Certificate of Secondary School Education
AS	Advanced Subsidiary
NSC	National Senior Certificate
IB-HG	International Baccalaureate- Higher
IB-STD	International Baccalaureate- Standard
NSSC	Namibia Senior Secondary Certificate
LGSE	Lesotho General Certificate of Secondary Education
SGCSE	Swaziland General Certificate of Secondary Education



Our University offers an exciting place for you to study, learn a new skill, interact, and start new relationships with other students of different nationalities. Students will find the University hospitable, safe, secure, and friendly to acclimatise easily. The cost of travel to and from the University is entirely the student's responsibility. Some governments offer scholarships or grants to their students who are admitted to study in BIUST. Information about these scholarships should be obtained from the appropriate authorities in the country concerned.

BIUST International Office

The University has established an International Office to offer non-academic support services and ensure that all international students follow the University and Botswana Government immigration requirements, prior to registration and arrival in the country respectively.

The International Office creates a holistic environment which ensures that proper learning is the focus for all international students. This is achieved by establishing and developing a range of learning, social, cultural, and recreational opportunities that facilitate the full realisation of their potential for academic and personal growth.

The office is dedicated to ensuring that the needs and interests of international students are well represented.

The International Office is located at the Administration Block, 2nd Floor. Office 206-210.

Contact details; Tel: +267 4931225/28/33



HOW TO APPLY

Prospective International Students may download application forms from the website or make a request for application documents through email via admissions@biust.ac.bw

Applicants must submit the following:

1. Completed application form.
2. Full application fee receipt. (P200.00 for SADC residents) (P400.00 non-SADC residents)
3. A certified copy of your senior secondary school certificate or equivalent, accompanied (if not in English) by a certified official English translation.
4. Certified copy of valid Passport and Birth Certificate
5. Certified copies of additional official documents (e.g., post-school certificate, transcript, professional registration certificate, certifying letters from examining bodies, proof of change of name, etc.) where applicable.
6. For qualifications obtained in a non-speaking country, a TOEFEL internet-based score of 60 or IELTS score of 5 is required.

Completing application form and supporting documents can either be scanned and emailed to admissions@biust.ac.bw or submitted through postal mail below;

Enrolment and Admissions Office
Botswana International University of Science and Technology
Private Bag 16 Palapye, Botswana



IMMIGRATION (VISA AND RESIDENCE PERMIT)

All international students who are resident in the country for the duration of their studies are required to have a Residence Permit to study in the Republic of Botswana. BIUST is not permitted to register you unless you have a valid resident permit. This requirement includes International Students pursuing a Bachelors, Masters or Doctoral Degree and students participating in the Study Abroad, Exchange Students, and Visiting Postgraduate Students.

The International Student Office seeks to offer non-academic support services by ensuring that all international students are in compliance with the Botswana government immigration requirements prior to registration.

- Once the student has been admitted at BIUST, the requirements for VISA and Residence Permit Application must be prepared. It is important that the student must satisfy the Botswana Immigration Requirements before arriving in the country for study.

- Students are advised to check with Botswana embassy in their countries if they need a VISA to enter Botswana.
- VISA is the authority given to foreign nationals to enter Botswana; hence application of Visa is done before departure from your home country.
- Upon receipt of admission letter from BIUST students should liaise with Botswana embassies in their respective countries to enquire if they need a visa to enter Botswana. You can further visit at www.gov.bw.

Who needs VISA to Come to Botswana as a Student?

- Whether or not you require a VISA to come into Botswana to undertake your studies depends on the Country you come from. If you are from a VISA national country, you will need to make your application for VISA through Botswana Embassy in your home Country or Botswana embassy in the nearest country.
- Non-VISA Nationals [SADC Countries & Commonwealth Countries]
- Non-SADC and Non-Commonwealth Countries
- Please take note that only a **valid** passport will be accepted when processing a resident permit [*emergency travel documents are not acceptable*]

Student Visitors

- The same requirements for VISA and Study Permit stated above apply for visiting students whether it is the exchange students, study abroad, or visiting post graduate students of 6 months and above. If you are a student visiting for a few weeks only you will not need study permit, but you will need a VISA to enter the country if you are a national of a country that require VISA to enter Botswana.
- You must ensure that all supporting evidence (for VISA or Residence Permit) meets the immigration rules at the time of application as failure to comply could lead to the application being refused. You must ensure that your application is correct and complete before you submit.

REQUIREMENTS FOR VISA APPLICATION

1. Fully Completed Immigration Application Form D [available at Botswana Embassy where the application is to be submitted]
 2. Application fee of BWP500
 3. Application letter
 4. Admission letter or covering letter from the host institution.
 5. Certified copy of passport [page showing applicant picture, passport number, date of birth, expiry date]
 6. Four identical and recent passport size photos
 7. Copy of sponsorship letter
 8. Copy of travel itinerary
- ❖ Please take note that VISA to enter Botswana is applied for when still outside the Country.

Who needs Study Permit to Study in Botswana?

All International Students are required to apply for Residence Permit to allow them to Study at the University they have been admitted to. In Botswana the Residence Permit is also your study permit. Upon arrival each student is given 90 days (3 months) to process the resident permit.

REQUIREMENTS FOR RESIDENCE PERMIT APPLICATION

Residence /student Permit- an authority that allows you to reside or stay in Botswana

1. Valid Passport [valid at least for the duration of the programme offered]
2. Certified copy of valid passport [page showing passport number, date of birth and expiry date]
3. Certified copies of birth certificate
4. Completed Immigration Application form [form 1]
5. Proof of payment of tuition fee [deposit receipt for tuition fees]
6. Study Permit fee of BWP1500
7. Proof of sufficient financial means to cover tuition fees, subsistence, and incidental costs [in the form of a bursary, sponsorship letter, or bank statement and/or support letter]
8. Medical Report [forms are available at the immigration offices]

9. Admission letter or letter confirming enrolment stating the duration of the programme offered [start and end date of the programme]
10. Two (2) identical and recent passport size photos [background should be white]
11. Student's personal application letter [should indicate the duration - start and end dates of the programme]
12. Certified copies of previous certificates attained
13. Cover letter from BIUST International Office

NB: Please take note that only a valid passport will be accepted when processing a resident permit [emergency travel documents are not acceptable] The Residence Permit allows you to travel in and out of the Country for as long as it remains valid

ARRIVAL INFORMATION

Upon arrival in Botswana, students must be in possession of their valid passport, admission letter and other relevant supporting documents such as proof of sponsorship which might be requested by the immigration officials at the border.

New international students are advised to inform the BIUST International Office officials about their travel arrangements prior to their departure from their respective countries, to ensure that the Office arranges shuttle services to collect them from various ports of entry, and transport them to the campus.

For more information regarding International Students go to www.biust.ac.bw and click on International Students page where you will see a whole range of services and products.

You may also contact the International Student Office on the following details.

Ms Tebogo Kebonye

Tel: +267493 1233/25/28

Email: kebonyet@biust.ac.bw

Our Valedictorians



Class of 2021 Valedictorian BSc Statistics

Agolame Motlalekgosi Seboka Puoetsile

"I have had the pleasure of working with some of the greatest Mathematical and Statistical minds our country has to offer. The lessons and mentorship afforded to me is insurmountable. You have helped me grow in ways that transcend the qualification I am being awarded. For this I will forever be grateful, I intend to continue learning and growing as a person". Being named the 2021 Valedictorian is a great honour and it is only possible due to the efforts of the BIUST management and academic Staff. I am honoured to have been given the chance to study under the best Mathematical and Statistical minds Botswana has to offer. It is imperative that I also thank the sponsors for my various awards, namely Liberty Life Botswana, BIFM and BIUST for recognizing and rewarding excellence. Your continued investment in young minds has proven not only to be a source of motivation but also a statement of how much you recognize hard work. I would like to take this moment to forward my deepest gratitude and offer thanks for the support I've been given by all these institutions. I have had so much great influence from role models and mentors throughout my entire life. Circling down one particular motivation to me is akin to asking a mother to choose a favourite child, a daunting task indeed. My most prominent motivation is the deep-rooted thirst for knowledge, the never-ending search for knowledge is one of the key motives that have kept me going. I'd advice anyone trying to achieve their own set goals to firstly look inward, know yourself and who you want to be then find a motive that is unique to you that will steer you towards your dreams. Everyone has success dormant in themselves, it's up to you to unearth it.



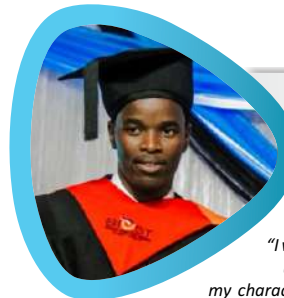
Class of 2020 Valedictorian BEng Materials & Metallurgical Engineering

Collieus Lebudi

Through the experienced lecturers and support teaching staff specifically at the department of Chemical, Materials and Metallurgical Engineering, I have grown to appreciate the field of materials engineering. I gained invaluable knowledge and experience in research and scientific communication. With the rigorous training I received, I was able to take part in research with collaborations from across the world from which I co-authored several scientific works and presented at various international conferences. I am currently enrolled in a master's program in materials science and engineering at

Tsinghua University – a top ranked university in China and Asia. With that, I can say BIUST has succeeded in giving me a competitive edge on the international stage as an aspiring scholar.

There is still so much one can achieve in BIUST and you don't even have to be the brightest of students because the fish of the sea does not always belong to him who weaves his net big and strong. Here is a little secret - as you work with BIUST to discover and sharpen your skills, gifts, talents, and intellectual capacities, equally strive to constantly develop a good character, because where your natural abilities fail your good character will carry you. I was not the most gifted student, but having found good character, I was able to make the most out of the little I had.



Class of 2019 Valedictorian BEng Chemical Engineering

Emmanuel Makhura

"I wish to thank BIUST for not only enabling me to excel academically but also for strengthening my character. The University taught me that 'Life is a journey, time is a challenge, but character is a MUST-HAVE because it is the platform of life'.

The opportunities I received from BIUST makes me confident about my ability to succeed after graduation. Here is a few of my achievements;

- While at BIUST, I took part in the 2017 BIUST Research Symposium with a project on the pyrolysis of plastics.
- While at BIUST, My Biogas project secured me a position as a top-5 finalist in the 2018 CEDA/DBSA University Entrepreneurship Challenge.
- While at BIUST, My project on printing inks has ALREADY secured me a position in the top-50 of KBL's Kgalagadi Breweries Kickstart Youth Entrepreneurship Program.
- While at BIUST, I have written 5 academic papers, 3 of which are awaiting publication, AND
- I am currently working on a book on Basic Process Engineering Control with my professor: Paul Agachi"





**Class of 2018 Valedictorian
BSc Pure & Applied
Mathematics**

Karabo M.T. Kwelegano

As a young enthusiast of theoretical Mathematics, I truly did not understand the importance of having to take courses such as Programming and most of all, courses from the Department of Business, Management and Entrepreneurship. It was not until later on that I appreciated how vital the structure and content of the BIUST curriculum and environment as a whole was, in propelling me to a position where I am a force to be reckoned with, not only locally but in the global landscape as well. In addition, owing to my graduate days at BIUST, I got inducted into the intriguing world of research. This allowed me a great opportunity to gain the skills and experience necessary for producing quality research that is right at par with international standards, an opportunity that is available to you as well, even in your undergraduate studies. I write to you today, a product of BIUST, as the first Motswana to be offered admission into a fully sponsored PhD program at a prestigious university in Japan, and my advice to you is simple.

1. Be obsessed with what you do and have hard-core discipline in order to get the job done.
2. You are going to fail, it is part of the journey to success, so dust yourself off and soldier on.
3. Network and be curious to find out about the qualities that make those you look up to who they are.
4. Soak in the intellectual prowess availed to you by the staff with great enthusiasm. . I wish you a well-rounded university experience that will prepare you for life afterwards. Remember this, you are ONLY competing with who you were yesterday



**Class of 2018 Valedictorian
BSc Pure & Applied
Mathematics**

Sefiso Amantle Refilwe Phuti

Allow me to introduce myself as Sefiso Amantle Refilwe Phuti, the class of 2018 BIUST co-valedictorian and a proud BIUST alumni.

I remember looking at the BIUST 2014 prospectus, particularly at my area of interest, "Pure and Applied Mathematics", it stated how the program would develop and harness ones analytic and rigorous skills, and looking back now, I can say without a doubt that the Department of Mathematics and Statistical Sciences has done that for me. I have on overall enjoyed studying the course, and I now have a deep appreciation for Both Pure mathematics, Applied Mathematics and Computer programming. With the skill sets I have obtained not only from the Faculty of Science but also from the Center of Business Management, Entrepreneurship and General Education I managed to get job offers. Within a space of one year from my graduation, I have worked as a Data analyst intern at Okavango Diamond Company and also managed to secure a Master's degree offer in Actuarial Science from the University of Kent in the United Kingdom, which I recently completed. I am currently working as a Teaching Instructor for the Department of Mathematics and Statistical Sciences here in BIUST, and I am thoroughly enjoying it-being inspired to inspire and impart knowledge! Moreover, I am working on being a qualified Institute and Faculty of Actuaries actuary, as well as doing consultancy work and research. Indeed, BIUST has been a key stepping stone in my career development, and I believe that someday my dream will be fulfilled; as a woman in STEM, to stand upon a summit of intellectual greatness and contribute immensely towards Socio-Economic advancements for my precious Botswana.



**Class of 2017 Valedictorian
BSc Pure & Applied
Mathematics**

Kagiso Molalapata

During my stay in BIUST, I encountered obstacles and challenges like any other student. I remember I once got a 42% in a test and that was my first test in BIUST. Then I thought to my self is this how I intend to live my life in BIUST? Do I want to be a miserable student who blames teachers and peer pressure for low marks? No I knew what I wanted. I started recollecting myself, putting more effort on my studies, even though it seemed hard; giving up was not an option. I kept on pushing. I started interacting more with my lecturers and classmates, I attended tutorials, I organised my time well which included time for my academic work, personal activities and other interests. Within a semester I had a beautiful testimony. My tests and examination marks had improved and I never looked back.



**Class of 2016 Valedictorian
BSc Applied Sciences**

Masuzyo Mwanza

My personal experience at BIUST was one of the most challenging and rewarding experiences of my life. The BIUST motto 'Driving change' best summarises the time that I spent there, being part of the first group of students at the university, I had an opportunity to grow alongside the University formed and led several student clubs geared towards improving academic performance and social life in the campus. Participating in the foundation of the student and academic community gave me opportunities I could not get anywhere else. I am a true starter. The BIUST experience for me was about always challenging yourself to do more than you ever thought capable.



Choose from a Wide Range of Programmes



PROGRAMME LIST

FACULTY OF ENGINEERING AND TECHNOLOGY

1. **BEng** Chemical Engineering
2. **BEng** Materials and Metallurgical Engineering
3. **BEng** Civil and Environmental Engineering
4. **BEng** Computer and Telecommunications Engineering
5. **BEng** Electrical and Electronics Engineering
6. **BEng** Geological Engineering
7. **BEng** Mining Engineering
8. **BEng** Industrial and Manufacturing Engineering
9. **BEng** Mechanical and Energy Engineering
10. **BEng** Mechatronics and Industrial Instrumentation

FACULTY OF SCIENCE

- 11 **BSc** Biological Sciences and Biotechnology
12. **BSc** Forensic Science
13. **BSc** Pure and Applied Chemistry
14. **BSc** Earth and Environmental Sciences
15. **BSc** Environmental Sciences
16. **BSc** Geology
17. **BSc** Pure and Applied Mathematics
18. **BSc** Physics
19. **BSc** Statistics
20. **BSc** Computer Science and Software Engineering
21. **BSc** Information Systems and Data Management

Faculty of Engineering and Technology





BEng Chemical Engineering

Award: BEng | Duration: 5 years

INTRODUCTION

The Bachelor of Engineering (BEng) in Chemical Engineering is offered in the Department of Chemical, Materials and Metallurgical Engineering at the Botswana International University of Science and Technology is unique in many respects. Firstly, the knowledge areas combining Biology, Chemistry, Mathematics and Physics create a sound scientific foundation for engineering students. Secondly, core modules offered in the early stages drawn from various engineering programmes give the students some interdisciplinary flair. Holders of the BEng degree in Chemical Engineering are widely sought after in industries in both developed and emerging economies.



Chemical engineers are principally involved in the production of a wide range of chemicals and materials such as soaps, dyes, polyethylene, detergents, paper, fertilizers, cement, bricks, food products (such as cooking oil, margarine, beverages), pharmaceuticals and petroleum products. They are also involved in processes for the production of potable water, cars, steel, mineral resources processing, production of energy, textiles, waste processing and minimization. In addition, chemical engineers address

environmental impacts such as water, soil and air pollution arising from the process industries and human activities. Chemical engineers design processes, build and manage chemical operations and ensure efficiency of production by intelligent control and optimization of physical, thermal and chemical parameters. Chemical engineering principles address grand global problems such as: energy systems, carbon mitigation, water management, food supply chains (including carbon and/or nitrogen cycles management), health care, medicine systems engineering, urban processes and systems, bio-engineering, biomedical and industrial biotechnology applications.

WHY IS THIS COURSE FOR ME?

The need to address climate change and develop industrial processes that would address the growing need for employment, sustainable resource utilisation, food and energy security, novel health care products and environmentally friendly materials is a global challenge. If you are looking for a programme that would equip you with the skills and knowledge to address these challenges, then chemical engineering is a course for you.

WHAT WILL I STUDY?

You would be taught courses that would enable you to develop, design, operate and control processes for the manufacture of a wide range of products such as chemicals, pharmaceuticals, plastics, petroleum products etc. In addition, you would also be introduced to courses that address mitigating environmental pollution, entrepreneurship, business management and process economics. You would also have an opportunity to undertake work integrated learning during the second semester of your fourth year to enable you to apply the engineering principles you have learnt and prepare you for the work environment.

THE MODULES CONTENT

For the first two years of study, students will study basic subjects that include inter alia, Mathematics, Physics and Chemistry, which form the building blocks for an engineering career. The core chemical engineering courses covered in the curriculum include the following:

Process Engineering Principles

Chemical Engineering

Thermodynamics

Heat and Mass Transfer

Unit Operations and Separation Processes

Chemical Reaction Engineering

Environmental Process Engineering

Bioprocess Engineering

Process Control and Instrumentation

Plant and Equipment Design



CAREER AND POSTGRADUATE OPPORTUNITIES

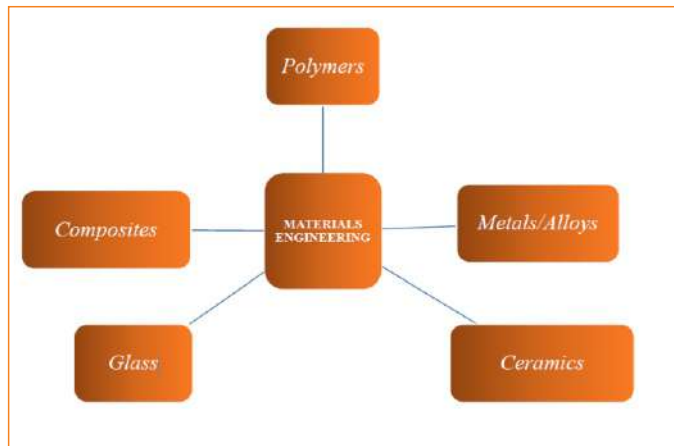
The course opens the door for postgraduate studies and a wide range of careers in industry, banks, government, consultancies, business, and R&D centres. Career opportunities for chemical engineers are found in chemical and petroleum processing plants, metallurgical and material processing plants, food and beverage industries, pharmaceutical plants, biotechnology and agro-based industries such as fertilisers, pesticides and veterinary products manufacture. Careers can be diversified to other associated functions such as energy utilisation, environmental protection, health and safety, disposal of hazardous waste, process control and quality management.



THE MODULES CONTENT

For the first two years of study, students will study basic subjects that include inter alia, Mathematics, Physics and Chemistry, which form the building blocks for an engineering career. Furthermore, they will be introduced to basic process engineering principles, and materials science. Other courses include:

Advanced Materials and Nanotechnology
Metallurgical Engineering
Thermodynamics
Green Energy Engineering
Process Control and Instrumentation
Metallurgical Engineering Design
Extractive Metallurgy
Heat and mass transfer
Mechanical Metallurgy
Polymer and composite technologies



CAREER AND POSTGRADUATE OPPORTUNITIES

The course opens the door for postgraduate studies and a wide range of careers in industry, mines, government, consultancies, business, and R&D centres. Career opportunities for materials and metallurgical engineers are found in mineral and materials processing plants, metal refining, metal forming and alloying industries. Further career opportunities are found in the production of bio-

medical materials, manufacture of polymeric materials, ceramics and composites. Careers can be diversified to other associated functions such as energy utilisation, environmental protection, health and safety, disposal of hazardous waste, process control and quality management.

POSSIBLE EMPLOYERS





BEng Civil and Environmental Engineering

Award: BEng | Duration: 5 years

INTRODUCTION

The Department of Civil and Environmental Engineering offers Bachelor of Engineering Degree in Civil and Environmental Engineering. This is a five-year degree programme providing students with detailed courses in the major areas of structural, geotechnical, environmental and transportation engineering together with water and wastewater management and construction materials. The department is committed to produce high quality engineers for the Civil and Environmental engineering industry through excellent education, research and partnership with the industry. The programme is quality assured by the Botswana Qualification Authority and a well-established advisory board made from professional civil engineers in the field.



WHY IS THIS COURSE FOR ME?

Civil engineering is arguably one of the oldest engineering disciplines and continues to provide the largest employment world-wide due to high demand of the much-needed construction industry. Civil engineers literally build nations by way of construction and maintenance of large and most essential infrastructures such as roads, bridges, railway lines, airports, buildings, dams, water supply and wastewater treatment systems.

WHAT WILL I STUDY?

Primary disciplines in civil engineering are structures, construction materials, geotechnics, transport, water and environmental engineering. This programme will give you

the theory and practical part of these disciplines that are well backed by the basic fundamentals of basic science and engineering such as mathematics, chemistry, physics and mechanics of materials. You will also be provided with soft skills that allow you to perform in the industry such as professional ethics, construction management entrepreneurship and communication skills.

CAREER AND GRADUATE STUDY OPPORTUNITIES

There is no fixed or standard career path for a Civil Engineer. In Botswana you can join the vast construction industry, consulting industry, Government Departments, Parastatals and the mining industry. You can also opt to further pursue your learning by joining the postgraduate programme at BIUST which will give you the opportunity to enter the academic world and open your career path even wider. The Department of Civil and Environmental Engineering offers MEng. and PhD degrees in all the major fields within the department such as water, environmental, structural, transportation and geotechnical engineering. Primary objective of the post graduate programme is to enable one to conduct intense/advanced research based on the fundamentals of civil and environmental engineering that can address national problems and provide high level of human resource to the industry.

RESEARCH OPPORTUNITIES

A wide range of research are being conducted at both undergraduate and postgraduate levels. These include research on the treatment of wastewater for reuse, water loss investigations, use of fly ash for building purposes, solid waste management, use of wastewater for irrigation, flood management, investigation on pore water pressure in Kimberlite tailings, stability analysis of tailings dams, fly ash stabilisation of black cotton soil, modelling of pavement performance, fly ash modified tiles, stabilisation of sand with fly ash.



INTRODUCTION

The driving force in our contemporary society is the engineer's ingenuity. There are only a few aspects of modern society that are not affected by computers and telecommunications. Computer Engineering has ushered in a lot of modern conveniences from microwave ovens, mobile phones, high and ultra-definition televisions, entertainment and automated systems, wireless high speed internet technologies that are controlled by computer systems. Communicating information over short and long distances over wired and wireless networks, and the security of such data, networks, power lines and electrical distribution is central to engineers who specialise in Computer and Telecommunications Engineering.

WHY IS THIS COURSE FOR ME?

As the world moves further into knowledge economy, the demand for high level qualifications has increased exponentially. The computer and telecommunications revolution has particularly impacted economic growth in Africa and the world over. In order for Botswana, and the other developing countries to compete with developed countries, computer and telecommunications engineering offer catalytic properties to speed up the process. The course will equip students with the concepts, theories and principles underlying the science and mathematics of electrical, computer and telecommunications engineering for a broad range of modern technologies.

WHAT WILL I STUDY?

Computer and Telecommunications Engineering have the first two years common with other Engineering disciplines. Students will learn the tools such as computer languages and software, computer systems and architectures, Networking and security, wired and wireless and mobile communication systems and networks, Signal processing technologies, convergence and broadband technologies.

THE MODULES YOU WILL STUDY INCLUDE;

- Analogue and Digital Electronics
- Automation and Control systems
- Electronic Circuit Design and Analysis
- Computer Networks and Security
- Analogue and Digital Communications
- Digital Systems Design
- Data Structures and Algorithms
- Microcontrollers
- Digital Signal Processing
- Engineering Mathematics
- Fundamentals of Communication Theory
- Microprocessors and Microcontrollers
- Mobile and Satellite networks & Infrastructure
- Transmission and Switching Engineering

CAREER AND GRADUATE OPPORTUNITIES

Whether one aspires to be an entrepreneur, an engineer, a social scientist, an economist or a banker, then Computer and Telecommunications Engineering will equip you with the necessary and crucial skills. There has never been a greater need for Computer and Telecommunications Engineers in high demand and well-paying industries. Engineers can work in research and development (R&D) centres, creating the products of tomorrow to help make modern life convenient. Some of the potential careers include consumer and professional electronics, robotics, Defence, broadcasting and telecommunications and the information technology sectors.





BEng Electrical and Electronics Engineering

Award: BEng | Duration: 5 years

INTRODUCTION

This is a 5-year programme which is concerned with the study and application of electricity, electronics, and electromagnetism. During the first year, the students are introduced to mathematics, physics, writing skills, and computing. In the subsequent years, the students learn basic electrical and electronic concepts. Towards the end of the programme, fine points of various areas of Electrical and Electronics Engineering are investigated. This programme deals with power generation and distribution on a large-scale. It is a discipline that uses scientific knowledge of the behaviour and effects of electrons to create components, devices, systems, or equipment that use electricity as part of their source of power.



WHY IS THIS COURSE FOR ME?

Electrical and Electronics Engineering offers solutions to some of the most critical problems facing the world today such as energy shortages and control, environmental impact, constant need for information security and informatics.

WHAT WILL I STUDY?

You will study varying levels of courses in Mathematics, Energy Systems, Embedded Systems, Power Systems,

Sustainable Energy, Computer Programming, Digital Design and Signals and Electromechanical Systems with increasing complexity as you advance in the programme.

THE MODULES YOU WILL STUDY INCLUDE:

- Analogue and Digital Electronics
- Automation and Robotics
- Digital Signal Processing
- Electric Power Systems
- Electric Machines and Control
- Electrical Circuits & Devices
- Power Transmission and Distribution
- Electronic Circuit Design and Analysis
- Electromagnetics
- Electromechanical Energy Conversion
- Digital Systems Design
- Micro-Controllers & Embedded Systems Micro-electronic systems
- Solid State Electronics

CAREER AND GRADUATE STUDY OPPORTUNITIES

The Electrical and Electronics programme grooms students to have the flexibility to be whatever they choose to be in later life. Electrical and Electronics Engineers are involved in a wide variety of technology ranging from huge global positioning systems which can pinpoint the location of a moving vehicle to gigantic electrical power generators. These Engineers are responsible for designing, developing, testing as well supervising the production of electrical and electronic equipment and machinery. Broadcast and telecommunication systems, electric motors, controls of machinery, lights and wiring in building complexes, vehicles, aircrafts, radar and navigation systems, power generation, control and transmission devices which are used by electric utilities are all examples of equipment built by these engineers.



INTRODUCTION

Geological Engineering is the practical application of principles, concepts and techniques of the earth sciences to provide sustainable engineering solutions to human needs. Geological Engineers help find the best ways to use earth's resources to solve technological problems in an environmentally sustainable manner. They deal with mineral resource exploitation and management, environmental and geotechnical design involving rock, soil and water interaction, and the non-destructive or geophysical investigation of the subsurface environment for engineering purposes.



WHY IS THIS COURSE FOR ME?

Geological Engineering is a field oriented practical discipline. It will expose students to methods and techniques to protect the earth while still exploiting it through careful industrial practices. This is of vital importance given the extensive mining activities and construction works in Botswana, the surrounding region and globally.

WHAT WILL I STUDY?

You will study fundamentals of Geological Sciences and Engineering. The programme emphasizes the integration of Geosciences and Engineering with applications in areas such as construction, foundation design, site selection, resource production, geo-hazard assessment and mitigation, waste disposal and restoration of pollution sites.

THE MODULES YOU WILL STUDY INCLUDE:

- Applied Hydrogeology
- Engineering Geology
- Foundation Engineering
- Geotechnical Engineering
- Geographic Information Systems
- Exploration geology
- Mineralogy & Petrology

CAREER AND GRADUATE STUDY OPPORTUNITIES

You can look forward to a secure and well-paid career in a wide variety of organisations including mining, exploration and construction companies, consulting firms, government agencies, research laboratories and environmental resources agencies. The programme also prepares you for eligibility to study for postgraduate degrees in Geological Engineering or related fields.





BEng Mining Engineering

Award: BEng | Duration: 5 years

INTRODUCTION

Adequate supply of mineral products at acceptable prices is indispensable to modern industrialization. Mining Engineering involves the practice, theory, science, technology and application of extracting and processing of mineral resources economically and in a sustainable manner. It also includes processing of minerals for value addition purposes.



WHY IS THIS COURSE FOR ME?

The course is designed to produce high quality mining engineers who are capable of applying engineering and technology to plan, design, operate and manage mining and mineral projects anywhere in the world in an environmentally friendly manner. Graduates are trained to carry out professional duties using their knowledge of sound engineering and environmental technology, innovative and entrepreneurial skills to maximise returns on investment.

WHAT WILL I STUDY?

Mining Engineering is an interdisciplinary field that includes elements of mining, geological, civil, mechanical, materials and mineral engineering. Students will learn how to carry out mining efficiently and safely while ensuring sustainability and minimal environmental impact.

THE MODULES YOU WILL STUDY INCLUDE:

- Surface and Underground Mining Methods
- Explosives & Rock Fragmentation
- Soil & Rock Mechanics
- Mine Health & Safety
- Materials Handling
- Mine Planning and Design (Surface & Underground Mines)
- Mine Ventilation

CAREER AND GRADUATE STUDY OPPORTUNITIES

You can look forward to a secure and well-paid career in a dynamic and challenging industry in mining and exploration regions around the world, academia and the investment banks. The programme also prepares you to be able to undertake postgraduate studies and research.





WHY IS THIS COURSE FOR ME?

If you are ingenious, probing, analytical and logical-oriented person; fascinated by how machines were made, designs and interactions of component parts, and interested in renewable energy sources and applications; then you should pursue a Bachelor of Engineering Degree in Mechanical and Energy Engineering at Botswana International University of Science and Technology.

WHAT WILL I EXPECT?

Botswana International University of Science & Technology students are prepared for engineering careers that solve real life societal problems, advance technology and improve the quality of life for the global community. During your first year of study, you will take preparatory courses in STEM subjects: Mathematics, Physics, Chemistry, Introduction to engineering, Engineering graphics, Workshop practice, Computer science and Technical writing

From second year of study, your required engineering courses will focus on modules such as:

- *Programming, Engineering Mathematics, Materials Science, Fluid mechanics, Thermodynamics, Theory of machines & mechanisms, Engineering mechanics, Renewable energy, Project management, Heat & Mass transfer, Linear control system, energy efficiency & management, Solar energy, Design of thermal systems and other optional and elective modules.*

During fourth year, second semester; students will be attached to any of the reputable companies in the country for an industrial work-base experience.

As you progress towards your degree in your final year of study, you will be required to solve a real-life problem based on your research interest, via your final year project, under the supervision of an academic staff of the department.

RESEARCH FACILITIES AND STUDENT SUPPORT

The department has a number of laboratories to facilitate experiments, problem base learning (PBL) as well as research, among them are:

- 3D lab
- Advanced machine lab
- Machine shop
- Welding lab
- Solar lab
- Materials lab
- Thermofluids lab
- Pyrolysis gasification plant

CAREER PATHWAY

- This degree prepares you for a career in, but not limited to any of the following:
- Manufacturing and product design
- Maintenance and Reliability
- Renewable energy
- Heating, ventilation and air conditioning
- Building energy efficiency
- Advanced materials design
- Energy management and conservation
- Nanotechnology and applications
- Energy production (oil, gas and nuclear)

CAREER AND GRADUATE STUDY OPPORTUNITIES

A graduate of mechanical & energy engineering at Botswana International University of Science and Technology may pursue postgraduate studies in any university of choice in related research niche or field of study.





INTRODUCTION

Mechatronics Engineering deals with systems that combine Mechanical, Electronics, Control, and Software components together to create intelligent systems while Industrial Instrumentation is the science of measurements, instrumentation, and control of process variables within a production or manufacturing plant.

Botswana has an established mining sector, but efforts are being made to diversify the economy away from minerals, through manufacturing and other related production industries. Systems, processes, and machineries used in such manufacturing and production industries are automated, hence electro-mechanical in nature. These types of systems require well-rounded engineers who understand them from all perspectives: mechanical, electrical & electronics, software and control. Hence, the need to train, develop and produce engineers with cross-disciplinary skills.

The BIUST BEng. (Hons) Mechatronics and Industrial Instrumentation programme is consistent with the requirements for industry 4.0.

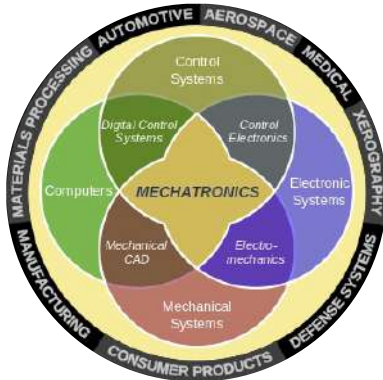


Figure 1:
Components and Applications of Mechatronics
(source: <https://en.wikipedia.org/wiki/Mechatronics>)

APPLICATIONS

- Automation and robotics
- Servo-mechanics Sensing and control systems
- Automotive engineering, automotive equipment in the design of subsystems such as anti-lock braking systems
- Building automation / Home automation Computer-machine controls, such as computer driven machines like CNC milling machines, CNC waterjets, and CNC plasma cutters
- Expert systems
- Industrial goods
- Consumer products
- Mechatronics systems
- Medical mechatronics, medical imaging systems
- Structural dynamic systems
- Transportation and vehicular systems
- Mechatronics as the new language of the automobile
- Computer aided and integrated manufacturing systems
- Computer-aided design
- Engineering and manufacturing systems Packaging
- Microcontrollers / PLCs
- Microprocessors



MODE OF STUDY

- Full time

COURSE STRUCTURE

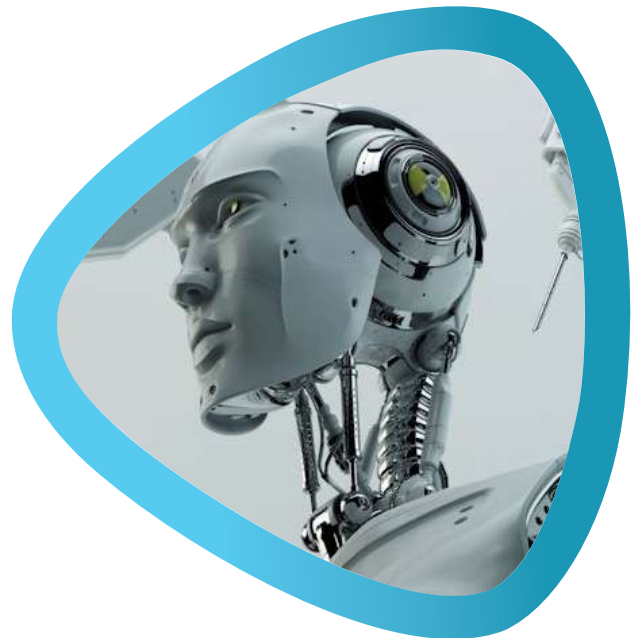
Mechatronics students take courses in various fields:

- Engineering Mathematics
- Mechanical Engineering and Materials Science and Engineering
- Electronics Engineering
- Electrical Engineering
- Computer Engineering (software & hardware engineering)
- Computer Science
- Systems Engineering
- Control Engineering
- Telecommunications
- Machine Learning & Artificial Intelligence
- Data Science / Data Analytics
- Information Technology
- Robotics
- Project Management
- Entrepreneurship

CAREER PROSPECTS

Students who take up this programme can work as:

- Robotics Engineers
- Software Engineers
- Automation Engineers
- Control Systems Engineers
- Instrumentation Engineers
- Maintenance Engineers
- Reliability Engineers
- Asset Management Engineers
- Mechanical Design Engineers
- Data scientists/big Data Analysts
- Electronics Design Engineers
- Electrical design Engineers
- Research Engineers
- Systems Engineers
- Biomedical Engineers





BEng Industrial and Manufacturing Engineering

Award: BEng | Duration: 5 years

INTRODUCTION

It is concerned with the development, improvement, implementation and evaluation of integrated systems of people, money, knowledge, information technology, equipment, energy and materials to create products and services. It employs knowledge areas of mathematics, physical and social sciences together with the principles and methods of engineering design to specify, predict, and evaluate the results obtained from manufacturing systems or processes

Its underlying concepts overlap considerably with certain business-oriented disciplines such as operations management, but the engineering side tends to emphasise extensive mathematical proficiency and usage of quantitative methods in designing functional products which meet customer's specifications.



WHY IS THIS COURSE FOR ME?

Industrial and Manufacturing Engineering combines knowledge fields of Mathematics, Materials Science & Engineering; Materials Processing/Manufacturing Technologies; Design Engineering; Business & Human Resources Management; Computing and Social Sciences. The programme seeks to emphasise a broad skills and knowledge set necessary to provide practical solutions to industrial and technological problems across power generation, mining, equipment maintenance and repair, manufacturing, defence, logistics and services industries in Botswana and the Southern African Development Community (SADC) region.

WHAT WILL I STUDY?

You will study courses in engineering mathematics, statistics, operations research, human factors and ergonomics, production planning, advanced materials & manufacturing processes, engineering design for manufacturing processes, engineering economics, business management, quality control and simulation & modelling of engineering systems. The skills set you will acquire will enhance the use of mathematical models and methods to identify and come up with solutions for a range of technical and scientific problems across a range of industries including manufacturing. You will also participate in a work-based training in reputable industries such as Debswana, Botswana Power Co-operation, Morupule Coal Mines, Xaaloo Technologies, Botswana Railway, Botswana Oil, Air Botswana e.t.c.

THE MODULES YOU WILL STUDY INCLUDE:

- ✿ Industrial Statistics & Quality Management
- ✿ Logistics & Supply Chain Management
- ✿ Engineering Mechanics
- ✿ Entrepreneurship
- ✿ Managing Business, People & Money
- ✿ Material Science & Engineering
- ✿ Manufacturing Technologies
- ✿ Advanced Manufacturing
- ✿ Production Methods and Planning
- ✿ Work study and Ergonomics Design for Manufacturing
- ✿ Engineering Ethics & Law
- ✿ Project Management
- ✿ Reliability and Maintenance Engineering
- ✿ Materials & Product Characterisation
- ✿ Engineering Law & Ethics

CAREER AND GRADUATE STUDY OPPORTUNITIES

A graduate from this programme can expect to obtain employment in all types of industries. They can join private companies, private consultancy firms, manufacturing industries, automobile, aeronautics, fabrication, designing, government organisations and research institutions etc.

They can also work as Production and Operations Engineers, Quality Assurance and Control Engineers, Manufacturing/Process Engineers, Supply Chain Engineers, Purchase Engineers, Technical Sales Engineers, Production and Industrial Engineers. They can also pursue higher degrees in the discipline towards becoming researchers.



Faculty of Sciences



B1118/21
DBM



INTRODUCTION

Welcome to the Department of Biological Sciences and Biotechnology, Faculty of Sciences, BIUST. Welcoming you to our department is also welcoming you to the science of the 21st century where Biology is playing a key role in tackling major global challenges. To make use of its full potential for the benefit of society, biology needs intelligent, competent and creative scientists. If you believe you are one of them, come and join us and be part of this exiting field of study where big discoveries are always happening!

We are currently witnessing an exciting revolution in the biological sciences. After the first industrial revolution of the 19th century and the second technological revolution in the area of computers/electronics in the 20th century, many believe biotechnology is the third technological revolution of the 21st century. Biotechnology is a multidisciplinary science that applies the principles of biology, chemistry, physics, engineering, medicine, mathematics and computer science to solve problems in health, agriculture, environment, and industry. Therefore, the ultimate aim of the biotechnology revolution is to ensure food and nutritional security for an ever-growing world population, to discover new diagnosis and treatment methods in medicine, to generate new and novel industrial products from renewable resources, to produce renewable energy, to ensure clean and safe water, and to maintain and as well as remediate our environment for the present and future generations.

In order to use the full potential of biotechnology, understanding basic biological principles is a prerequisite. Our goal at the Department of Biological Sciences and Biotechnology is, therefore, to equip our students with basic understanding of life in its different forms and to apply the acquired knowledge in developing bio-based processes

and products for the benefit of society. Accordingly, the department teaches fundamental knowledge and skills in the biological sciences for studying life in its different forms while our training in biotechnology builds on that knowledge and skill to enable students manipulate and exploit the biological systems in many fields of human endeavor.

Our programme strongly emphasizes sustainable utilization, management, conservation and restoration of natural resources. To support our mission, BIUST offers a beautiful campus with new and state-of-the-art facilities for undergraduate and postgraduate research while the department has a team of experts specialized in broad areas of biological sciences and biotechnology. The programme also offers opportunities for field experiences, external laboratory visits and workplace attachments to ensure well-rounded and market-ready graduates.

MODULES

The programme includes courses that cover Principles of Biology, Microbiology, Genetics, Cell Biology, Developmental Biology, Zoology, Biochemistry, Plant Sciences (Botany, Plant Development and Physiology), Molecular Biology, Bioprocess Engineering, Enzyme Technology, Protein Chemistry, Metabolic Engineering, Biotechnology (Environmental, Industrial, Animal and Plant), Immunotechnology, Tissue Culture, Research methods and Ethics. Theory, case studies and practical applications of traditional and current content are offered to enhance perspective and encourage critical thinking and critical analysis.

CAREER OPPORTUNITIES

Manufacturing industry, health, agriculture, environmental protection, research institutes and institutions of higher learning among many others.



BSc Pure and Applied Chemistry

Award: BSc | Duration: 4 years

INTRODUCTION

The need for Chemists in Botswana, the region and internationally has been indicated in various reports, surveys and documents such as the Botswana National Research, Science and Technology Plan Final Report (2005). The Botswana Human Resources Development Council (Top Occupations in high Demand as of December 2016) lists Water Chemists and Chemical Technicians as being in demand in Botswana.



According to the Department of Research and Technology report (DRST 2019), chemistry professionals are required in the mining, energy, agriculture and health sectors. Chemists are among the 42 professional categories enjoying scarce skill allowance in the civil service owing to their scarcity in Botswana.

Botswana's economic development has been heavily dependent on mining and as such Botswana has undertaken research in Chemistry aimed at contributing to improved value addition and beneficiation of natural resources through research in areas such as;

- i. Research into mining bi-product utilisation,
- ii. Research into Environmentally Cleaner Production Technologies and
- iii. Research into improved extraction and processing technologies.

Graduates of the Pure and Applied Chemistry programme at BIUST puts Botswana in a strategic position in so far as analysis of the chemicals arising from mining is concerned, their environmental impact as well as benefits that can be derived from useful by products emanating from mining activities. In Addition, Chemistry is required to support other disciplines such as biology, engineering, pharmacy, and medicine.

The Pure and Applied Chemistry programme will also cover materials chemistry where new discoveries such as nanomaterials or new functional materials have the capacity to make major and immediate contributions to growth in the manufacturing industry. Botswana as a cattle country has potential for vibrant soap and leather industries. In addition to this, Botswana has the potential to develop fluids and drugs.

Botswana can also convert its huge supply of coal into high value petroleum and chemical products. This could replace imported fuels and other chemicals. Water is a scarce natural resource in Botswana, owing to the country being semi-arid (Botswana Climate Variability and Change: Understanding the Risks Draft Policy Note 2010) and this has put constraint to economic development and growth for the agricultural (irrigation) and mining sectors. As a result, future growth of these sectors will require much more emphasis on re-use of wastewater, rainwater harvesting and desalination. Graduates of the Pure and Applied Chemistry programme will be critical in these regard in ensuring that re-use of wastewater and harvested rainwater

are safe for use and consumption by people and animals. Therefore, the purpose of the Pure and Applied Chemistry programme is to produce graduates with good foundation knowledge and skills that draw from analytical chemistry, materials chemistry, drug design and development. Graduates will be able to develop and use of analytical techniques to obtain data to solve environmental problems such as pollution of the air, soil, and water. Graduates will also be able to develop and synthesize new materials and subsequent processes, apply research skills to conduct applied research to address various materials science problems involving applied chemistry facing the country and the world at large working in multidisciplinary teams. Furthermore, the graduates will be to develop drugs and pharmaceutical products at both research and production level. This critical area of the sciences is at the core of the rapidly expanding healthcare sector.

MODE OF TEACHING

The teaching and learning in this programme is carried out using the following modes;

- (i) Face-to-face classroom teaching and learning
- (ii) E-learning
- (iii) Laboratory practical classes
- (iv) Internship (part of curriculum)
- (v) Work-based learning (for credit)
- (vi) Entrepreneurship, incubation
- (vii) Multidisciplinary learning
- (viii) Student centred learning
- (ix) Problem based learning
- (x) Inquiry based learning
- (xi) Student participation in research
- (xii) Blended Learning

INDUSTRIAL ATTACHMENT

After completion of their third year of study, students are placed on industrial attachment at various government and private sector organisations for a period of three months. The industrial attachment comprises the Work-based learning portion of the Pure and Applied Chemistry

programme. The following are some of the government and private industry organisations where the Pure and Applied Chemistry programme students are placed for their industrial attachment.

- (i) Botswana National Environmental Laboratory
- (ii) Department of Water and Sanitation
- (iii) Department of Environmental Affairs (DEA)
- (iv) Botswana Institute for Technology Research and Technology (BITRI)
- (v) Botswana Geoscience Institute (BGI)
- (vi) Botswana Vaccine Institute (BVI)
- (vii) Botswana National Veterinary Laboratory (BNVL)
- (viii) Morupule B Power Station
- (ix) Morupule coal mine
- (x) Botswana Ash
- (xi) Mupane Gold Mine
- (xii) Kgalagadi Soap Industries
- (xiii) Okavango Research Institute (ORI)
- (xiv) Water Utilities Corporation (WUC)
- (xv) Dulux Botswana
- (xvi) Kgalagadi Breweries Limited



AVAILABLE RESEARCH OPPORTUNITIES

The BSc Pure and Applied chemistry programme also exposes learners to research activities taking place in the department. Students are required to join an academic research group in their final year and carry out a research project under the supervision of an academic staff. The following are some of the research activities in the department that the learners will be exposed to;

- i. Sensor Development and Monitoring
- ii. Novel Chemical Materials and Energy

CAREER PROSPECTS

After completion of the BSc Pure and Applied Chemistry, graduates can find employment in both government and the private sector. In addition, students can proceed to do postgraduate studies at both Masters and PhD level. The following are the possible career paths for the graduates

- (i) Water Chemists
- (ii) Soil Scientists
- (iii) Environmental Protection Professionals
- (iv) Chemical Technicians
- (v) Research Technicians
- (vi) Science and Technology Researchers
- (vii) Environmental Managers
- (viii) Safety, Health, Environment and Quality Practitioners
- (ix) Air Pollution Analyst
- (x) Food and Beverage Chemists
- (xi) Manufacturing Chemists
- (xii) Water Inspectors
- (xiii) Site Chemist
- (xiv) Materials Chemist
- (xv) Research and Development Chemist
- (xvi) Development Chemist
- (xvii) Medicinal Chemist





This is a four-year teaching and learning programme which is carried out using the following modes:

- (i) Face-to-face classroom teaching and learning
- (ii) E-learning
- (iii) Laboratory practical classes
- (iv) Internship (part of curriculum)

INTRODUCTION

The students will be introduced to principles of Forensic science, covering elements that range from crime scene to court room. You will get the chance to analyse and investigate a range of evidence in both outdoor and indoor crime scene rooms and the forensic laboratories. Our students also get hands-on experience with specialist analytical equipment and get an opportunity to learn outside the classroom too. This includes visits to local and international forensic science labs, courts of law, morgues, and working with local law enforcement agencies such the Botswana Police Service, Department of wildlife and the army.



WHAT STUDENTS WILL STUDY

Year 1

Some of the foundation lectures students will take include Chemistry and Mathematics, Statistics, Physics, Biology,

Computing as well as learn technical writing and academic literacy skills. Practical chemistry laboratory sessions help them to master basic preparative and analytical skills. They will also spend a portion of their time in the laboratory and the rest in lectures and tutorials.

Years 2 & 3

Students will be taught fundamental inorganic, organic, biological, and physical chemistry, analytical chemistry and be introduced to some forensic science modules including forensic toxicology, forensic counterfeits, and others. Introductions to crime scene investigations, evidence handling and processing as well as the court process will be undertaken. There will also be a choice of other subject electives to choose from. Laboratory work increases and becomes more advanced to four enhance your practical skills. Group exercises will be introduced to develop presentational skills. In addition, you are given the opportunity to take elective classes including forensic science, drug discovery, chemical engineering, and subjects from other areas of the university. Business and Entrepreneurship skills are also introduced. Students will undertake a 3 month long industrial placement, specialising in either forensic or analytical chemistry and biology, and will specialise in research and knowledge exchange.

Year 4

In the final year, students will take more advanced modules of forensic science. These include DNA analysis, toxicology, analytical chemistry, and others. They will also participate in crime scene reconstruction exercise. In addition, students will undertake a research project leading to the submission of a dissertation in a specialist topic of choice. This work will be performed in partnership work with full-time researchers from different departments and stakeholders.

FACILITIES

Our laboratories and other university departments have a range of specialist equipment to allow our students to gain hands-on experience on the state-of-the-art equipment used in both industry and research.

CAREER OPPORTUNITIES

Upon graduating, students will be ready to join a global network of both local and international graduates; our forensic are highly respected throughout the world. The degree qualifies one as an all-round forensic scientist, with thorough training in the applications of forensic science. Graduates of this course go on to careers as Laboratory forensic scientists, Crime scene investigators, Fire/Arson investigators, Wildlife forensic experts, Customs and Boarder forensicexperts, Science teachers in secondary schools, Laboratory scientists, Research scientists in Forensic science, Entrepreneurs etc.

POSTGRADUATE STUDY

Many graduates from this course can proceed to enroll and complete both Master's and PhD in Forensic Sciences or related filed here at the BIUST or elsewhere. Such fields include Forensic Toxicology, Forensic Chemistry, Forensic Biology, Forensic and Transnational crimes, Chemistry (Drug Design and Development) and Chemistry (Environmental and Analytical Chemistry) The course empowers students for life after graduation, be that employment or further study.

STUDENT COMPETITIONS

The Dean of Science recognises exceptional performance each year through the Dean's certificate for the best students in the faculty.

ACCREDITATION

Our programme is accredited by the Botswana Qualifications Authority(BQA).





INTRODUCTION

Computer Science is the study of computational systems involving designing, building, evaluating performance of computer hardware and software. It spans theory and practice through programming languages and the development of computing solutions to our everyday life's problems. The necessities of the programme include designing and analysing relevant algorithms and/or application software.

One of the essential things Computer Science students study, is how to logically think through a problem and find a way to solve it. Computer scientists use technology to solve technical and social problems. They develop applications for mobile devices, websites, and software. Computer scientists are needed in every type of industry, from big tech firms, health care, and government agencies to start-ups and non-profit organizations. They theorise, design, develop, and apply the software and hardware for the programmes we use day in day out.

The field of Computer Science spans several core areas: computer architecture, high performance computing, software systems, graphics, artificial intelligence and machine learning, computational science, software engineering, computer systems and networks, security and forensic computing, database systems, human computer interaction, vision and graphics, formal methods and automata theory, bioinformatics, and simulation of complex societal and systems situations. The programme also has strong connections to other science and engineering disciplines.

WHY IS THIS PROGRAMME FOR ME?

Following the current world trends in required professional skills (Computer Science are most demanded), future opportunities in the field of Computer Science are

countless. Choosing the BIUST Computer Science degree in this digital age will enable you to be at the forefront of the next greatest technological innovations. With computer

technologies playing an ever-growing role in all aspects of modern life, in a four-year time you will likely find your Computer Science skills in high demand across many different industries. Computer Science manifestations indirectly affect areas such as medicine, business, law, physical and life sciences, therefore this means Computer Science related careers are available in different discipline altogether. The computation power of computers has been increasing exponentially over the years thereby allowing us to address problems that seemed intractable only a few years ago. This power is anticipated to keep increasing allowing computer scientists to solve even bigger problems. Therefore, the relevance of Computer Science is ever increasing in our lives and this will remain so in the coming years.



WHAT WILL I STUDY?

Computer Science is a discipline that has grown to be the backbone of a functional society proving pivotal to medicine, biology, entertainment, business, banking, sociology to archaeology. The modules you will study include (the list is non-exhaustive):

- Foundations of Computation
- Object-Oriented Programming
- Artificial Intelligence
- Mobile Computing
- Software Engineering
- Data Warehousing and Mining
- Computer Forensics
- Databases
- Professional Issues and Ethics
- Operating Systems Computer Architecture
- Discrete Mathematics for Computer Science
- Computer Networks
- Internet Programming
- Distributed Systems and HPC
- Data Compression
- Corporate Network Security
- Cryptography
- Software Analysis and Testing Human Computer Interaction
- Major Project in Computer Science (to be done in the fourth year in two semesters), etc.

CAREER AND GRADUATE STUDIES OPPORTUNITIES

Our Computer Science graduates' knowledge, skills and competence are based on principles which will outlast today's technology, making them highly sought after by industry and commerce alike. Career opportunities exist in a range of technology industries or visually every industry that relies on technology to develop products or provide technological services. Popular computer science career paths include Software engineers, programmers, network engineers, network administrators, Web developers, Cyber Security specialists, Computer Forensics investigators,

database administrators, and many more.

The Computer Science and Software Engineering graduates can also continue at the postgraduate level, as the department offers both Masters' and PhD programmes in different areas within Computer Science.





INTRODUCTION

Information Systems involve designing, implementing and evaluating computer systems that addresses organisational needs. The programme BSc Information Systems and Data Management develops your skills and knowledge in software development, programming languages, networking and the design and implementation of computer systems and information systems. The Information Systems degree is flexible and relevant to the ever-changing information technology environment. As a graduate, you will become a better problem-solver and innovative thinker than the students taught Computer Science (where the main focus is on programming). Information Systems as a discipline encompasses topics such as systems planning, requirements elicitation, system development, system development, system implementation and decision and knowledge systems. Rather than being about developing and enhancing the performance of computers (as Computer Science), Information Systems as a discipline is about client-facing and making computer systems work within the boarder socio-technical context.



WHY IS THIS PROGRAMME FOR ME?

The world is undergoing an information explosion. At the same time businesses are becoming more competitive. Individuals with the skills to help businesses innovate and better serve their customers are becoming more and more valuable. The BIUST Information Systems and Data Management programme enables you to manage data, information and knowledge resources within an organisation, giving you a competitive advantage in the current information driven era.

Working closely with our industry partners (CIO of the leading Botswana companies) we, as a department, ensure all modules remain relevant to modern industry trends and developments. Students implement real-world projects and interact with and learn from industry professionals to ensure their career-readiness upon graduation.

Botswana is now entering a new era requiring professionals with skills in Information Systems in order to enable and sustain our modern life in this advent of greatest technological innovations. Advances in Information Technology affect every aspect of daily activities in science, medicine, business, law, and many more. Information Systems skills become crucial to leverage the ever-increasing computational power.

WHAT WILL I STUDY?

The Bachelor of Science in Information Systems programme provides foundation knowledge of both Computer Science fundamentals and organisational aspects of Information Technology, including the following modules which you will study (the list is non-exhaustive):

- Foundations of Computation
- Object-Oriented Programming
- Mobile Computing

- Software Engineering
- Data Warehousing and Mining
- Web Design and Development
- Databases .
- Professional Issues and Ethics
- Information Management
- Computer Architecture
- Project Management for IT
- Computer Networks
- Internet Programming
- System Analysis Business Process Modelling
- Corporate Network Security
- IT Infrastructure
- ICT and The Society
- Human Computer Interaction
- System Development Methodologies
- Major Project in Information Systems (to be done in the fourth year in two semesters), etc

CAREER AND GRADUATE STUDIES OPPORTUNITIES

Your Information Systems knowledge, skills and competence will be highly valued in the organisational/industrial setting. You will be able to work in a range of industries including: business, financial services, technology, health, telecommunications, public sector, and many more.

One example of a career for an Information Systems graduate is to become a systems analyst. A systems analyst works with people to introduce or expand appropriate technology within their business or organisations according to their needs. The emphasis is on understanding the human need and ensuring that the final solution satisfies that needs. Hence, an information system professional is a leading figure in both organisational change and organisational performance.

Other career opportunities include business systems analyst, IS/IT architect, IT infrastructure developer, network developer, technical manager, IT solution lead, application developer, data engineer, technology specialist, project

manager, hospital system administrator, computer system officer, information centre manager, computer educator, database administrator.

BSc Information Systems graduates can also continue at the postgraduate level, as the department offers both Masters' and PhD programmes in different areas within Information Systems.





INTRODUCTION

The Earth is a dynamic and active planet, as revealed by events including volcanic eruptions, earthquakes, tsunamis, fires and floods. To understand how our planet works, how it has evolved and what we know about its future, the disciplines and principles of Physics, Chemistry and Biology are integral components of Earth and Environmental Sciences.

The understanding of the Earth and the processes that shape it is at the heart of many economic, social, and environmental issues; energy and mineral exploration; safe disposal of industrial and municipal wastes; preservation of ground water supplies; the choice of sites for development; the impact of climate change on our social and economic support systems and many others, all these issues that will become more complex as demands on the Earth and its resources increase. In recent times, the concern for our environment is increasing because of industrialisation and many other activities causing environmental deterioration due to pollution/contamination. It is generally accepted that a degraded environment cannot support good life.



WHY IS THIS COURSE FOR ME?

There has never been a better or more important time to study Earth and Environmental Sciences. Increasingly, environmental legislation is forcing businesses to account for their contribution on environmental impact, and with many countries putting sustainability at the heart of their policies, there is a growing shortage of skilled personnel to manage resources sustainably for future generations.

This programme will cover the importance of understanding earth systems (past, present, and future); the integration of theoretical and practical investigation; a holistic and multidisciplinary scientific approach; the importance of spatial and temporal scale; the importance of the concepts of sustainability and sustainable development; the examination of resource use and environmental management. This programme will provide sufficient knowledge of both theoretical principles and practical details which would enable the graduates to undertake self-employment. The graduates will be able to build up culture of self-reliance that is all in line with the vision, mission, and objectives of the University.

WHAT WILL I STUDY?

You start this programme by studying the basic sciences (Physics, Chemistry, Biology and Mathematical Sciences) and later on combining relevant core and optional Earth Sciences and Environmental Sciences modules.

THE MODULES YOU WILL STUDY INCLUDE:

- Earth and its materials
- Global Climate and Environmental Change
- Earth surface processes
- Environmental Geology and Waste Management
- Environmental Pollution and Remediation
- Mineral Exploration and Economic Geology
- Hydrogeology and Water Resources
- Energy and Environment
- Remote sensing in Earth and Environmental Sciences
- Geographic Information Systems
- Soils and geomorphology
- Structural Geology and Field Methods
- Sedimentology and Stratigraphy
- Atmospheric Physics and Chemistry
- Geology of Southern Africa and Botswana
- Petroleum geology
- Research methods
- Palaeopedology and Quaternary environments
- Research project (final year)

CAREER AND GRADUATE STUDY OPPORTUNITIES

This programme will equip you with the skills and knowledge necessary for careers in environmental, agricultural, engineering and ecological consultancies; regulatory authorities and government agencies; industry and private companies; conservation and natural resource management and research; environmental impact assessment. The communication, numeric and IT skills gained will also equip you for business or education-oriented careers. Students may go on to postgraduate study, either at Master's level, or at Doctorate level for those wishing to pursue an academic career.





INTRODUCTION

Environmental Science is a quintessential interdisciplinary scientific field with teaching and research goals of understanding Earth's dynamic history and processes that integrate the four terrestrial spheres: lithosphere, hydrosphere, atmosphere and biosphere for responsible stewardship of the Earth and her natural resources. Environmental Science provides a quantitative and qualitative approach to the study of human-environment interactions and their impacts as well as the concept of sustainability.

WHY IS THIS COURSE FOR ME?

Environmental scientists work on subjects like the understanding of Earth processes, evaluating alternative energy systems, pollution control and mitigation, natural resource management, and the effects of global climate change. Environmental issues almost always include an interaction of physical and biological processes with human impacts and development. Environmental Scientists bring a systems approach to the analysis of environmental problems. Key elements of an effective environmental scientist include the ability to relate space and time relationships as well as quantitative analysis. This programme will provide sufficient knowledge of both theoretical principles and practical details which would enable the graduates to undertake self-employment. The graduates will be able to build up culture of self-reliance that is all in line with the vision, mission and objectives of the university.

WHAT WILL I STUDY?

The programme will offer you analytical and practical skills in a range of areas including pollution and control, ecosystems, urbanization, population dynamics, environmental management and the management of biodiversity.

THE MODULES YOU WILL STUDY INCLUDE:

- Introduction to biophysical environments
- Environmental microbiology
- Environmental impact assessment
- Global Climate & Environmental Change
- Natural Resource Management
- Environmental pollution and remediation
- Remote Sensing & Geographic Information Systems
- Soils and geomorphology
- Climate modelling
- Water Resource and Hydrology
- Environmental law and policy
- Research methods
- Palaeopedology and Quaternary environments
- Waste management
- Botswana Wetlands and Ecology
- Environmental Quality
- Bioethics and Safety
- Environmental Mutagenes and Mutagenesis
- Research Project (final year)

CAREER AND GRADUATE STUDY OPPORTUNITIES

A degree in Environmental Science will pave the way for many careers opportunities both in academia and industry. These include jobs in Ecology Sustainability, Green Living, Atmospheric Science, Environmental Chemistry, Natural Resources Conservation, Tourism as well as management of contaminated sites (e.g. illegal dumping sites, abandoned mines, mine tailings, etc.). As many countries move toward cleaner energy choices, and sustainable development, Environmental Science is a career field that is poised to grow larger and stronger with each passing year.



BSc Geology

Award: BSc | Duration: 4 years

INTRODUCTION

The BSc in Geology includes the study of the Earth system, its continents, oceans, and its atmosphere. It encompasses the physical and chemical sciences, and will give you a full understanding of the Earth's history, including the formation and evolution of landmasses through magmas, erosion and deformation. The more that is known about the Earth's materials, formation, and structure the better we can plan their use and prevent their waste. This understanding applies to economic, social, and environmental issues related to water, soil, oil, mineral and energy exploration; rehabilitation of mined areas, safe disposal of industrial and municipal wastes; preservation of groundwater supplies; the choice of sites for dams, nuclear power plants and high-rise buildings.

WHY IS THIS COURSE FOR ME?

Mineral resources dominate the Botswana national economy (diamonds, copper/nickel and coal), and this will continue to be increased by diversification in terms of the types of minerals explored (e.g., gold, silver, uranium), gas production and geothermal capacity. It is important that the backbone of the economy is maintained and enhanced through innovative and substantial downstream processing. In view of the commitment of Botswana to diversify its economy it will become more and more important to have graduates that can fully appreciate the Earth system in its entirety. This programme will produce graduates who have the expertise to join the resources sector in Botswana and elsewhere in the region, through the exploration and resource development of minerals, energy, and groundwater and surface water systems.

WHAT WILL I STUDY?

You start this programme by studying the basic sciences (Physics, Chemistry, Biology and Mathematical Sciences). Starting from the second year of the Geology Degree you

will study a combination of core and optional geoscience modules including a winter semester dedicated to field mapping and reporting.

THE MODULES YOU WILL STUDY INCLUDE:

- Earth and its materials
- Earth surface processes
- Environmental Geology
- Geological Mapping
- Geophysics and Exploration
- Geochemistry and Exploration
- Hydrogeology and Water Resources
- Mineralogy and Mineral Microscopy
- Igneous and Metamorphic Petrology
- Mineral Exploration and Economic Geology
- Mining and Evaluation of Mineral Resources
- Petroleum Geology
- Sedimentology and Stratigraphy
- Engineering Geology
- Structural Geology and Tectonics
- Research methods
- Geology of Southern Africa and Botswana
- Research project (final year)

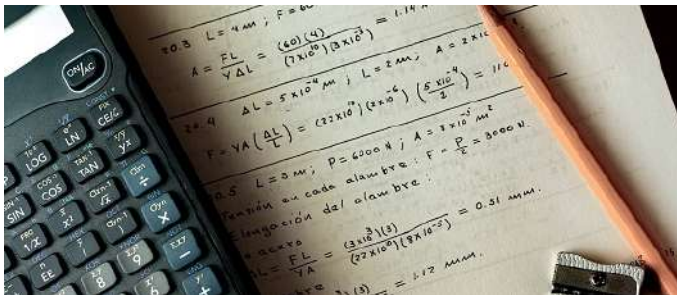
CAREER AND GRADUATE STUDY OPPORTUNITIES

The programme allows graduates to become professional Geoscientists in a range of careers in Mineral and Petroleum Exploration, Mining and Quarrying, Geosciences Information Analysis, Hydrogeology and Engineering Consultancy. Students may go on to postgraduate study, either at Master's level, usually with a particular specialised career path in mind, or at Doctorate level for those wishing to pursue an academic career. The communication, numeric and IT skills you will gain also make you a good candidate for business and education-oriented careers.



INTRODUCTION

Mathematics is "the Queen of the Sciences" which centres on concepts such as quantity, structure, space, and change, and the academic discipline which studies them. Mathematics has its roots many millennia ago in the systematic development of methods to solve practical problems. In the modern age the breadth of the applicability of Mathematics is immense not just in the areas of Science, Technology and Engineering but in Medicine, Business, Commerce and Finance. The principles and methods of mathematics are used in these fields to model real world processes and activities.



WHY IS THIS COURSE FOR ME?

The applicability of Mathematics is expanding as more areas of human work and endeavour require the analytical model building approach of modern mathematics. This programme will produce graduates who have the expertise to work as pure mathematicians and applied mathematicians in engineering, science based industry, commerce and in the public and private sectors in both research and education.

WHAT WILL I STUDY?

Mathematics is at the heart of problem solving and decision making in modern society and plays a crucial role in virtually all industries. A combination of pure and applied mathematics will provide the broad knowledge base and

skills necessary for problem solving and the modelling of natural phenomena.

THE MODULES YOU WILL STUDY INCLUDE:

- Algebra
- Analysis
- Computational Mathematics
- Financial Mathematics
- Information & Coding Theory
- Linear Algebra
- Mathematics Modelling
- Mechanics
- Numerical analysis
- Complex Analysis
- Number Theory
- Optimization

CAREER AND GRADUATE STUDY OPPORTUNITIES

Employers greatly value the intellectual skills and rigour in reasoning, the familiarity with numerical and symbolic thinking and the analytic approach to problem solving that well trained graduates in pure and applied mathematics have. Data and experience show that graduates in Mathematics usually find employment, in fields as diverse as teaching, research, industry, banking and insurance companies, commerce, as well as in other government agencies where judicious planning of resources and implementation of policies are required.

For instance, in operations research, mathematicians use mathematical modelling, computer software or other analytical approaches, to examine and analyse systems and operational procedures that will be used in developing strategic policies and in decision making. Operations research is particularly useful in military operations. Students may go on to postgraduate study, either at Master's level, usually with a career path in mind, or at Doctorate level for those wishing to pursue an academic career.



BSc Statistics

Award: BSc | Duration: 4 years

INTRODUCTION

Statistics is the Science of learning from data. As a discipline, it is concerned with the collection, management, analysis, and interpretation of data, as well as the effective communication and presentation of results of the analysis. Statistics is the basis for the quantitative reasoning necessary for making advances in the Sciences, Agriculture, Medicine, Industry and for making business and public policy decisions.



WHY IS THIS COURSE FOR ME?

The programme in Statistics will provide you with the necessary skills and tools in quantitative reasoning to extract information intelligently from the vast quantities of data generated in almost all spheres of human activity in the modern world. If you have an inclination towards mathematical reasoning, then Statistics is an option for you.

WHAT WILL I STUDY?

The programme in Statistics will provide you with a sound and broad knowledge, offering skills in rational decision making, data analysis and modelling of random phenomena.

THE MODULES YOU WILL STUDY INCLUDE:

- Mathematical Foundations: Calculus and Linear Algebra
- Mathematical Statistics
- Probability
- Statistical Methods
- Biostatistics,
- Experimental Design
- Industrial Statistics
- Survey Sampling

CAREER AND GRADUATE STUDY OPPORTUNITIES

One advantage of working in Statistics is that you can combine your interest with almost any other field in science, technology, education or business.

As a Biostatistician, you can work in the field of Health, Medicine and the Biological Sciences, using your statistical skills in the following areas: Animal Health, Clinical Trials, Epidemiology, Genetics, Pharmacology, Public Health, Ecology, and Forestry.

Statisticians also work in Business and Industry - Agriculture, Information Technologies, Engineering, Finance, Risk Assessment, Insurance, Manufacturing, Marketing, Quality Improvement and Reliability. Your statistical skills can also find you work in various Government Departments, Research Institutions and NGOs that are involved in sample surveys and in monitoring and evaluation. Students may go on to postgraduate study at the Masters, usually with a career path in mind or at the Doctoral level for those wishing to pursue an academic career.





INTRODUCTION



PHYSICS IN THE MOST BASIC SCIENCE:

Physics is the most fundamental Science and underpins the foundations of all Science, Technology and Engineering. Physics seeks to uncover, formulate, and apply the laws of Nature to benefit humankind through technological innovation, examples being the invention of the World Wide Web, the first digital computer, the satellite, detector technologies employed in cameras, smartphones, and medical imaging devices.

A HIGH DEMAND FOR PHYSICISTS:

There is a serious shortage of skilled scientists, engineers, and technologists, in Botswana, the region, and globally. The Governments of Botswana and South Africa have emphasized the high demand for Physics and Astronomy occupations in the region, meaning that these occupations

are currently experiencing shortages in the labour market (short term) or will show relatively strong employment growth (long term). Physics graduates from BIUST will readily be absorbed into existing and future job markets locally, in the region and beyond.

PHYSICISTS ARE HIGHLY EMPLOYABLE IN DIVERSE PROFESSIONS:

A BIUST Physics qualification will equip one with critical, scarce skills that are in high demand by local, regional, and international employers spanning diverse professions. Many physicists are employed by the private sector to solve complex technical problems in the fields of engineering, computer science, and information science, whereas the rest are either self-employed or work for educational institutions, government sectors, or in non-scientific organizations, such as: consulting firms, trading companies, investment groups, and international banks, patent attorney offices.

The Department of Physics and Astronomy is committed towards the realization of vision of Faculty of Sciences which is to be a World Class Centre for Research, Education and Innovation in the Sciences.

Our teaching and research programmes are aligned with Botswana's national priorities (as expressed in Vision 2036), to develop sustainable human capacity through the assimilation of knowledge and skills to drive industrialization in the region. Departmental research areas include:

- Materials Science, with focus on thin films, optoelectronics, solar energy materials, advanced characterization techniques, nanomaterials and their applications in electronics, pharmacological and food industries.

- Applied Nuclear Physics and Technology, with focus on radiation damage to nuclear detector materials, accelerator-based production of radio-isotopes, dense nuclear matter, development and application of nuclear technologies for studying and addressing local problems and monitoring environmental radiation;
- Astronomy and Astrophysics, with focus on extragalactic astrophysics using N-body simulations and dynamical modelling to study dark matter and galaxy evolution, exploding stars, properties of pulsars.
- Complex Systems, with focus on: Nonlinear Dynamics and Chaos in Complex Physical Systems, Biophysics, Quantum information Science and Engineering

RESEARCH EQUIPMENT:

Researchers have on-campus access to following specialized equipment: X-Ray Diffractometer, UV/VIS/NIR Spectrophotometer, Coating System, Atomic Force Microscope, Atomic Emission Spectrometer, Raman Spectrometer, Scanning Electron Microscope and Electron Microprobe, a Solar Simulator and a Keithley Multimeter.

UNDERGRADUATE PROGRAMME:

Our Department offers a four-year Bachelor of Science Degree in Physics designed to provide students with a strong foundation in the fundamentals of Physics, while emphasizing the increasingly interdisciplinary role played by physicists in the scientific and technological community. The curriculum focuses on preparing students with a rigorous theoretical, experimental, and computational education in Classical Mechanics, Electromagnetism, Thermal and Statistical Physics, and Quantum Physics, while also exposing students to departmental research specializations in Materials Science, Applied Nuclear and Radiation Physics, Astronomy and Astrophysics, and Complex Systems. Furthermore, students will acquire sought-after, scarce skills (problem-solving, investigation, analytical, communication, innovation, entrepreneurship, Information Technology, good working habits and personality traits, and ethical behavior) that are

transferable to all other scientific, engineering, and non-scientific disciplines.

UNDERGRADUATE ENTRY REQUIREMENTS:

Minimum Points for Best 6 subjects: 38 points; Minimum Points for Mathematics (minimum Grade of C) and two Science subjects/double Science: 20 points; Minimum Grade for English language: Grade D.

POSTGRADUATE PROGRAMME:

Students with a bachelor's degree in physics may enroll for Masters and Doctoral programmes (by research) in any of the Departmental research specializations.

CAREER OPPORTUNITIES:

A Physics degree provides a pathway into a wide variety of exciting and rewarding careers across the Science, Technology, Engineering and Mathematics spectrum. These include education (both basic and tertiary); energy companies; diagnostic and research laboratories; the banking industry; government agencies; mining, engineering and manufacturing companies. Self-employment is also a potentially lucrative avenue in an emerging economy such as Botswana. The degree will also lead to opportunities for higher education locally, regionally, or internationally, which is an excellent chance to visit other countries and be exposed to alternative ideas and practices.

For enquiries, please contact:

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Literacy is the most basic currency of the knowledge economy- Barack Obama

Library service's core responsibility is to facilitate access to multiple and flexible information sources, resources, and services for teaching, learning and research. The library is a fountain of information for students to increase their knowledge and understanding of concepts. The management and usage of the resources is managed through a fully automated library system that enables seamless 24/7 access. Due to COVID-19 pandemic, it is mandatory for users to follow COVID-19 protocols while using the library.

Resources

Collection: The library has a vast collection of information resources in both print and electronic formats.

- Print collections (i.e. books, magazines etc.) are housed within the library and request is sent through the

asklibrarian@biust.ac.bw due to COVID-19.

- Electronic collection includes databases; e-journals and e-books. The electronic collection can be used 24/7 from any location accessible at: <https://biulms.biust.ac.bw/>

Space & Facilities

- **Discussion rooms / Group study areas:** Safe, discussion or group study areas. Users must follow COVID-19 protocols and practice social distancing.
- **Reading Space:** The library has a sitting capacity of 500, with access to computers located on second floor at presidential Collection@BIUST.

Dedicated quiet study areas: This quiet and serene area is available during library open hours; it is set to help sharpen the mind and improve concentration for the readers who prefer quietness to stay focused with less distraction while studying. Study areas are available in the library & at remote locations. However, spaces in the main library are limited due to COVID-19 regulations. To book a study space inside the library, fill in a form accessed at https://docs.google.com/forms/d/e/1FAIpQLScnQHJvOrMLHva81a2w_t1cBSZvylqfceqQw_Kh00WRXV46w/viewform, or through the library Facebook page. The use of personal computer is allowed in this space

- **Remote reading space**
- **Library computer labs:** Computer rooms available (annex to the main library)

Services

- **24/7 access** to electronic information resources even beyond the four walls of the library.
- A student's library account should be active to access e-resources
- **BIUST Catalogue:** It is an Online Public Access Catalogue (**OPAC**) and it is the starting point for easy

access to the library information resources. It informs you on what is available; in what format (print or electronic); and where it is located. It accessible at: <https://biulms.biust.ac.bw/>

- **Circulation Services:** This service is available for students to borrow out and return library materials. Circulation desk also serves as the library inquiry or information desk. Inquiries and book request are sent through Asklibrarian@biust.ac.bw. Books are returned through a book drop dubbed "Morongwa" by the library entrance.
- **Information literacy skills:** In the transforming ICT led environment, learners need skills to navigate different information networks and platforms. Special Information literacy skills are needed to be able to access, use and generate information. The library has a unique information literacy skills program for BIUST first years. The students learn how to identify, find, evaluate, and use information effectively; It fosters effective self-service among students and create lifelong and self-directed learners.
- **Inter Library Loans:** In cases where a requested item is not owned by BIUST library, it is sourced through a special partnership with other local and international libraries. The library facilitates access to the needed information item on behalf of the user at no cost.
- **Course reserves:** Lecturers or Instructors may place special recommended course materials in the library. The library reserves and manages this collection to enable fair sharing and usage through special borrowing terms, this is for use within the library only for a specified period. The reserved collection also includes any other special or high demand information sources.
- **Research help:** The library has qualified and dedicated

Librarians who will assist students find the best resources for assignments, projects, and papers.

- **Research workshops:** The library organises workshops that are targeted to students' specific needs.
- **Library outreach programmes:** Student centred programs to engage with the library to build collections and services that you need; learn how to research; and participate as a responsible citizen of the global information environment.
- **Presidential Collection@BIUST:** this is special and rare collection that show cases the legacy of both the present and past presidents of the Republic of Botswana, a one stop shop for information on Botswana presidents. It is accessible in the main library.

Technology Mediated Tools

- The library has developed an **Institutional Repository** to enable global access and visibility of BIUST research output. Thesis; conference papers; journal articles etc can be accessed here. <https://repository.biust.ac.bw/>
- **Library Guide** has been developed specifically for students as a one stop shop for specific subject materials.
- **Online reference service desk:** It assists users in finding the information they require, on how to access and use it to meet their needs. Users can send their inquiries through the Asklibrarian@biust.ac.bw



- * **Library Facebook page:** The library uses the Facebook page to connect, update and inform its users about the library's programmes and services. Library users also uses this platform to engage with the library. It is accessible at <https://www.facebook.com/BiustLibrary/>
- * Discovery tool is a single search box that allows users to search seamlessly across multiple databases and present consolidated results of all available material in library. It is accessible through <http://biust.on.worldcat.org/atoztitles#journals>



OPERATING HOURS DURING SEMESTER

Monday – Thursday	08:30 - 2230
Friday	08:30 -1700
Saturday	10:00-16:00
Sunday	14:00– 20:00

DURING ACADEMIC RECESS

08:30 – 16:30

PRESIDENTIAL COLLECTION@ BIUST

Monday – Friday	0830hrs- 1630hrs
Weekends	Closed
National Holidays-	Closed





Student Life

Student services are of paramount importance in the University to ensure that students are holistically fit to pursue their studies. Student services fully contribute towards development of a well-rounded graduate considering the socio-cultural, psychological and spiritual aspect of an individual student. The services encourage students to fully engage, participate in all spheres of the society and to be innovative to contribute towards a knowledge-based society. The following units exist under student services:

a) Health Services

BIUST clinic offers youth friendly, affordable and accessible Primary Health care services to all registered students. The services are student oriented with a comprehensive continuous care for acute and chronic health problems, as well as a wide range of health promotion and disease prevention services. The nursing care model in place is well suited to achieve BIUST strategic goal which is to provide exceptional student experience by providing quality health care which encompasses all the principles of Primary health

care services include:

- Clinical Consultation and treatment with medical doctor / nurse
- Emergency Response Services
- Sexual Reproductive Health services
- Health Prevention and Health Promotion Activities
- The clinic operates from Monday to Friday from 0745hrs to 1630hrs. The nurse and ambulance driver are always on call after hours and during weekends to cater for emergencies.

Emergency Contacts:

- Toll free number: 0800600193
- Direct contact nurses: +267 73154388/9
- Direct contact ambulance: +267 73154189
- Email: health@biust.ac.bw

b) Support to Students with Special Needs Such as Disabilities

It is the mandate of the University to provide support services to students with special needs with respect and consideration of human dignity, rights and opportunities. In line with this mandate, this unit is obliged to offer support to students with special needs or health conditions that impact negatively on their ability to study or perform their academic activities and their daily duties. The unit ensures that students with special needs have equal access to learning and assessment opportunities. This unit supports students to help them pursue their academic, graduate and employment aspirations.

The unit ensures that:

- The accommodation is suitable for the students' needs
- Classroom or lecture theatre are accessible and can accommodate the individual needs
- During examinations the student's needs are catered for.

- The officer advocates for the student's needs in all aspects that influence their stay in the University
- The officer ensures that the student is not discriminated against based on their disability.

It is important to note that:

- At the time of applying to study at BIUST, a student with special needs is expected to submit relevant documents to confirm the diagnosis and intervention measures or kind of support needed to assist the student cope with the studies or daily life activities. This is to ensure that the needed resources are available. The documents must include all information related to, and confirmation of the special need, and recommendations on the type of adjustments required.
- Regular reviews and updated reports should be available; failure to do that may result in delays of the process because; the supporting documentation may not be acceptable if it is more than a year old at the time of submission. Considering that other conditions may change with time.
- All information received will be kept confidential; in the event any information needs to be shared consent will be sought from the concerned student.
- Students are not required to disclose their disability unless the disability or chronic health condition is likely to affect the student's capacity to meet the inherent requirements of a module, or program.

c) Careers and Counselling Services

The Careers and Counselling Unit actively assist students with a wide range of intervention strategies to help them recognize and resolve existing problems as well as learn how to cope with the current situations that might negatively impact on their studies and the ability to strive for academic excellence, further preventing them from developing complex issues. The Unit also emphasizes on helping students to develop personal awareness to realize their potential and how they could excel in life



d) Academic Support and Intervention Services

The goal of Academic Support and Intervention Office is to develop student centered strategies and interventions that enhance students' academic thinking as well as assist students to achieve full academic and personal potential. The main purpose of the office is to identify academically at-risk students (either by self-referral or by metrics approved by the faculties) for intervention strategies and learning remediation. The Office also serves to facilitate access to learning resources, additional teaching opportunities in consultation with academic staff to promote successful student learning and academic progression. Furthermore, the office responds to academic performance indicators and intervening to avert and mitigate academic risk. Services offered includes;

- Academic advising and support
- Academic Information support
- Academic clubs support
- Examination competency development
- Peer to peer mentoring
- Persistence and retention support services
- Referrals
- Student mentoring and coaching
- Study and Time management skills
- Student success programs

e) Sports and Recreational Services



Student will find the sports activities and social life vital and exciting ingredients to their wider university experience. Involvement in sporting activities, student clubs and societies enable them to explore their passion and realise their potential in other spheres of life. Student will be able to use available sporting facilities free of charge.

f) Gym

The sports and recreation also operate a gym to enhance the healthy lifestyle among the BIUST community. The gym offers a variety of fitness programs which cater for different interest groups.

g) Gym Operating Hours are as Follows

Monday-Thursday	0630-2030
Friday	0630-1830
Saturday	0730-1500
Sunday	0730-1230

h) Orientation Services

Student life services office organizes a week-long Orientation exercise at the beginning of the academic year to help first years to transition from senior school

environment to a university and to help them settle in. The event is also beneficial to new students who are joining the University for the first time to progress with their studies from second or third year.

First years and new students are expected to report on campus a week before commencement of their classes to be acquitted to the learning environment, to meet the teaching staff, appreciate University facilities and to conduct registration for their classes. Attendance of the orientation is compulsory.

During the orientation, students will be introduced to registered clubs and other sports activities available on campus and they will have a chance to register for their preferred sporting activities and connect with their new friends.

i) Shuttle Services

The University provides free bus shuttle service from the Campus to the malls and other shopping areas such as Old Mall, Lotsane mall, Engen Mall, Riverside Mall, Palapye Junction malls and Diphilana mall. The service is only open to BIUST Students and members of staff, therefore all those boarding the bus will be required to produce valid student and staff identity cards.

Shuttling times are:

10 am, 1pm, 4pm, all days of the week.

Those commuting to and from the village are advised to use alternative transport arrangements such as cycling and private taxis to reach the campus.



Fee Structure



FEE TYPE	DESCRIPTION	AMOUNT
Application fee for UG– Citizens/SADC	Subject to annual review	P200
Application fee for UG – Non-residents	Subject to annual review	P400
Late application fee for UG– Citizens/SADC	(Up to 14 days after close of applications)	P350
Late application fee for UG– Nonresidents	(Up to 14 days after close of applications)	P900
Tuition fees:		
Undergraduate citizens/SADC per Academic Year		P800 x 40cr = P32 000
Undergraduate non-SADC residents		P1100 x 40cr = P44 000
Masters Sciences & Engineering – Citizens/SADC		P17 000
Masters Sciences & Engineering – Non-residents		P23 000
PhD Sciences & Engineering – Citizens/SADC		P15 000
PhD Sciences & Engineering – Nonresidents		P16 000
Field work fees/day/student		See Excursion Fee Schedule
Transcripts sent to 3rd parties		P100
i. Within Botswana		P200
ii. Elsewhere		
Remarking		P300
Housing:		
Postgraduate – two semesters (Currently not offered)		P10 000
Postgraduate – two semesters calendar year (Currently not offered)		P13 000
Undergraduate - two semesters		P5 500
Undergraduate – during holidays per night		P150
Non student during holidays per night		P200
Student life fee		P150 (becomes SRC budget)
Late registration fee – per day (up to 14 days)		P150/day
Transcript fee		P60
ID Card replacement fee		P70
i. first time		P140
ii. Second time		
Laundry fee per year		P600



Excursion Fee Schedule



Excursion fees (per student)

Faculty of Engineering and Technology			
Chemical, Materials & Metallurgical Engineering	Year 2	4,516	4,516
	Year 3	1,902	1,902
	Year 4	4,516	4,516
	Year 5	766	766
Civil & Environmental Engineering	Year 3	539	539
	Year 4	796	796
	Year 5	766	766
Electrical, Computer & Telecommunication Engineering	Year 3	1,216	1,216
	Year 4	755	755
	Year 5	977	977
Mechanical, Energy & Industrial Engineering	Year 3	1,721	1,721
	Year 4	648	648
	Year 5	354	354
Mining & Geological Engineering	Year 3	26,800	26,800
	Year 4	954	954
	Year 5	1,216	1,216
Faculty of Sciences			
Environmental Sciences	Year 2	8,921	8,921
	Year 3	26,800	29,480
	Year 4	5,409	5,409
Earth and Environmental Sciences	Year 2	18,600	20,460
	Year 3	5,409	29,480
	Year 4	8,912	8,912
Chemistry and Forensic Science	Year 2		
	Year 3	2,087	2,087
	Year 4	2,162	2,162
Geology	Year 2	18,600	20,460
	Year 3	26,800	29,480
	Year 4	8,912	8,912
Biological Sciences and Biotechnology	Year 2	-	-
	Year 3	5,891	5,891
	Year 4	2,891	2,891
Physics and Astronomy	Year 3	6,316	6,316
	Year 4	5,616	5,616
All programmes	Year 4	6,500	6,500

Banking Details

Stanbic Bank Botswana

Account Name: BIUST OPEX Current Account

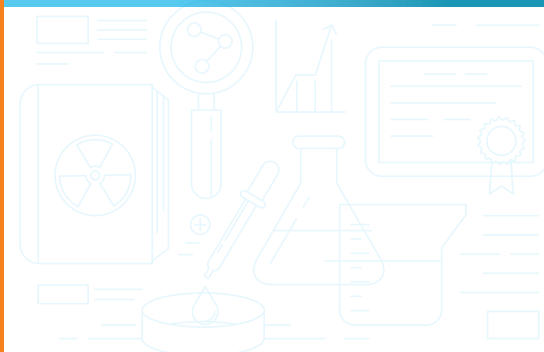
Account Number: 9060003441445

Branch code: 064967

Branch Name: Fairgrounds

Swift Code: SBICBWGX

Applicants / students should remember to always use their full name as reference.



CONTACT DETAILS

Directorate of Registry Services
Admissions & Enrolment Office

Private Bag 16, Palapye, Botswana
Plot 10071, Boseja Ward
Palapye, Botswana

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OF SCIENCE & TECHNOLOGY