A 4-Year Part-Time Degree Program for Working Professionals

Bachelor of Information and Communications Technology (BICT)

GYALPOZHING
COLLEGE OF INFORMATION TECHNOLOGY

Are You Ready to Transform Your Career in IT?

The

Bachelor of Information and Communications Technology (BICT)

program is designed for experienced IT professionals seeking to upgrade their skills and open new doors to career opportunities. This four-year, part-time program provides a comprehensive education across key areas in web development, mobile development, networking, artificial intelligence and cybersecurity, tailored to meet the needs of working professionals.

With GCIT BICT degree, you'll have the skills and qualifications to pursue roles in high-demand fields, from software development to AI and cybersecurity.

Embark on a transformative journey in ICT with the Bachelor of Information and Communications Technology program and be part of the next generation of IT leaders and innovators.

Why Choose This Program

Gain Cutting-Edge Skills
The BICT program covers in-demand skills, equipping you to build, secure, manage modern web, mobile and networking solutions.

Flexible, Blended Learning
Designed for working professionals, the program offers a blend of online and in-person instructional methods, allowing you to balance work and study.

Career Growth and Opportunities
This program opens up numerous roles, including network and cloud security specialists, AI and cybersecurity professionals, full-stack developers and IT consultants.

Industry-Relevant Curriculum
With modules focused on real-world applications and industry best practices, you'll be prepared for the rapidly evolving tech landscape.

BICT
Bachelor of Information and Communications Technology

What You Will Learn

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Web Development
Build modern front-end and back-end web applications, using industry standards for design and functionality.

Mobile Development
Develop advanced mobile applications, with an emphasis on security, user experience, and agile practices.

Networking
Secure networks and manage data efficiently, with a strong foundation in cloud and network security.

AI and Cybersecurity
Delve into AI, machine learning and advanced cybersecurity to address today's challenges in technology.

Professional Certifications
Gain industry-recognized certifications in specialized areas, enhancing your qualifications and value in the workforce.

This **four-year program** is structured to support working professionals in a part-time capacity, with each year focusing on core competencies essential for a successful ICT career:

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Foundation in Web Development

- Develop core skills in object-oriented programming, front-end development and computing fundamentals.
- Dive into database design and networking essentials to build a solid technical foundation.

Deep Dive into Mobile Development

- Advance your knowledge with modules on mobile application development, security principles and agile software engineering.
- Participate in mobile projects and professional certifications to deepen your expertise.

Focus on Networking and Data Security

- Learn secure coding practices and explore data analytics, visualization, and DevSecOps for secure, reliable systems.
- Complete a significant project that demonstrates your ability to solve complex networking problems.

AI and Cybersecurity Expertise

- Tackle emerging technologies, such as AI, machine learning and cybersecurity.
- Complete a capstone project that showcases your skills in solving real-world problems and designing cutting-edge solutions.

Career Prospects

Graduates of the BICT program will be well-positioned for a variety of roles in both public and private sectors, including:

IT Professionals

- System Analysts,
- Network Engineers,
- Cybersecurity Specialists

Specialists in Emerging Technologies

- AI Engineers,
- Machine Learning Developers,
- Cloud Specialists

Software Developers

- Web and Mobile Application Developers
- Full Stack Developers

Project Leaders

- Project Managers,
- Scrum Masters

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Course Modules

Students
will have to complete

60 credits

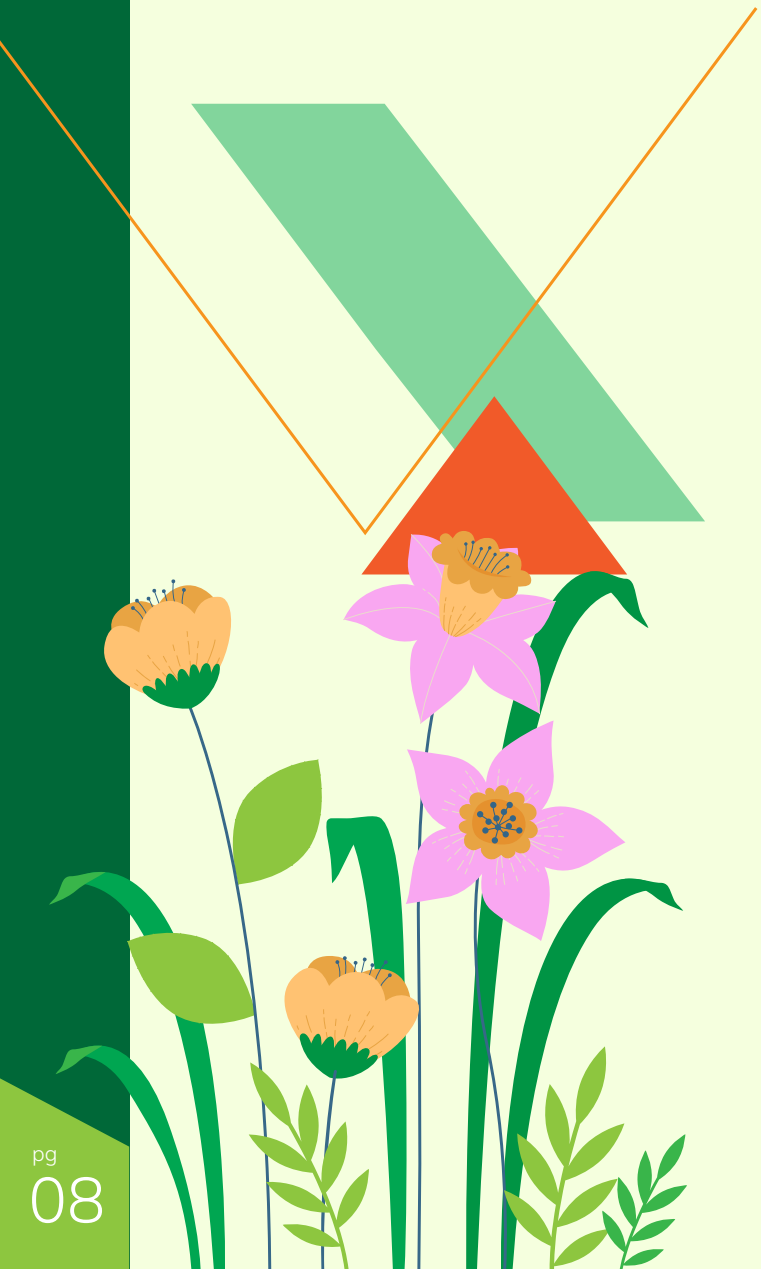
in each semester.

In total,
a student has to complete

480 credits

to be eligible for the award of a **Bachelor of Information and Communications Technology (BICT).**

SEMESTER I (SPRING)



Object-Oriented Programming

Programming involves creating, testing, and maintaining instructions for a computer to execute. Through this course, you will learn the foundational constructs of programming languages, including variable manipulation, decision making, repetitive statements, operators, and data types. Additionally, you will learn functional and object-oriented programming, which are valuable for developing front-end web applications.

Front End Web Development I

Front-end web development offers an immersive learning experience that aims to equip students with the essential concepts and skills required to develop and design functional and interactive websites.The content covers a comprehensive range of topics, including mark-up, styling, and interactive language, as well as basic web design principles. Students will be guided through the process of building a website from start to finish, with a focus on creating responsive and user-friendly interfaces. In addition, they will gain valuable knowledge on the production pipeline, from development to production, enabling them to work efficiently and effectively on web development projects. By the end of the module, students will emerge with the confidence and skills to tackle any web development challenges.

Computing Fundamentals

Students will be offered a comprehensive and hands-on exploration so that they will delve into the fascinating world of operating systems (OS) and computer networking. The curriculum is designed to provide a solid foundation in modern operating systems, with a particular focus on Command-Line Interfaces and key OS commands and tools. Students will gain practical experience in writing scripts for tasks such as user management, software installation, network administration, and service configuration. The module's emphasis on practical application is designed to prepare students for future careers in DevOps, ensuring they have the skills and knowledge to succeed in the fast-paced world of modern computing.

SEMESTER I (SUMMER)

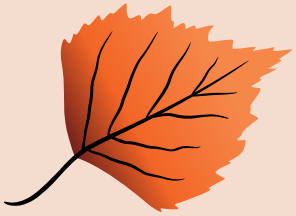
Modern Database Design

Students will be introduced to the fascinating world of modern database systems. They will gain a comprehensive understanding of both SQL and NoSQL databases, covering theoretical foundations and practical skills needed to design and implement these databases effectively. Throughout the module, students will learn SQL and NoSQL data handling methods and apply them in real-world application contexts. The emphasis is on practical application, empowering students with the skills they need to tackle any database project with confidence. By the end of the module, students will be proficient in database concepts, making them well-equipped for success in the dynamic world of modern database systems.

Essentials of Networking

Unlock the foundational secrets of computer networking with our Essentials of Networking module. This course covers everything from network topologies and protocols to architectures. You'll dive deep into network security principles, uncover common threats, and master defense mechanisms. By the end of this module, you'll be equipped to analyze and defend network infrastructures against cyber threats, making you an indispensable asset in any IT team.

SEMESTER II (AUTUMN)



Design for User Interactions

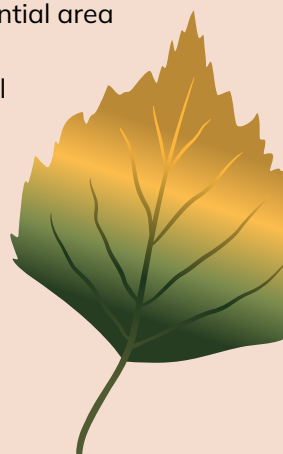
Knowledge and skills related to interactive design for various applications will be covered. Students will learn about interaction design principles, patterns, and processes, as well as rapid prototyping and UI/UX design. These skills will be applied to web and mobile development to create interactive prototypes using prototyping tools. Students will have a solid understanding of interactive design and the ability to create interactive prototypes for a variety of applications.

Back End Web Development

Students will delve into the world of backend web application development, focusing on building applications that are scalable and reliable in handling high volumes of concurrent connections. Through the course, students will be introduced to Object Oriented Design and the Model-View-Controller (MVC) architecture on the server-side, providing them with a strong foundation to build their applications. The module will also cover the exposure of necessary APIs to interact with the application. To ensure that their work is of high quality and reliability, the course will introduce students to automated testing and test management.

Mathematics for Programming I

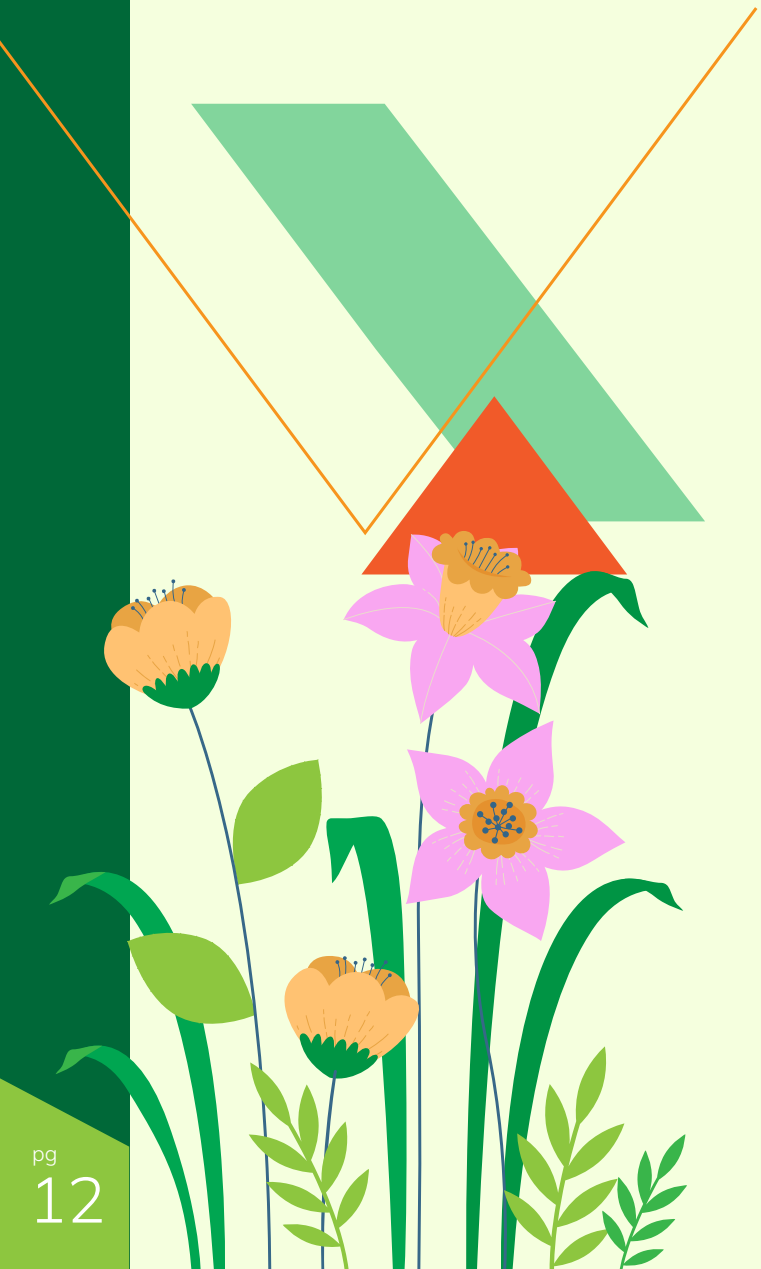
The world of Discrete Mathematics will provide students with a strong foundation in this essential area of computer science, with a particular emphasis on Graph Theory. Students will develop their mathematical maturity and ability to work with abstract concepts, while also gaining practical experience by implementing and illustrating mathematical concepts and techniques using a programming language.



SEMESTER II (WINTER)

ICT Innovation Project W

SEMESTER I (SPRING)



Front End Web Development II

The objective of this module is to enhance students' proficiency in front-end web development by utilizing contemporary front-end frameworks. Students will have the opportunity to take their front end web development skills to the next level. The module will cover advanced techniques such as reactive programming, as well as the design patterns for reusable Object-Oriented Software, including the implementation and discussion of MVC, MVP, and MVVM. The emphasis of this module is on practical applications of the concepts covered in the class, allowing students to gain hands-on experience and apply their newly acquired skills to real-world scenarios.

Information Security Principles*

Step into the world of information security with our comprehensive module on Information Security Principles. Explore the core tenets of confidentiality, integrity, and availability. This course will guide you through risk management, threat assessment, and the development of robust security policies. You'll gain the expertise to identify and mitigate risks across various information systems, ensuring the safety and integrity of critical data.

Mathematics for Programming II

Students will gain a comprehensive understanding of probability and statistics, essential tools for informed decision-making. Through the use of a programming language, students will apply statistical theories and techniques to real-world scenarios, gaining practical experience in the process. The module will cover key topics such as descriptive and inferential statistics, probability distributions, hypothesis testing, and regression analysis. With an emphasis on problem-solving, students will work through practical examples and apply their results using programming, allowing for a more dynamic and hands-on learning experience.

SEMESTER I (SUMMER)

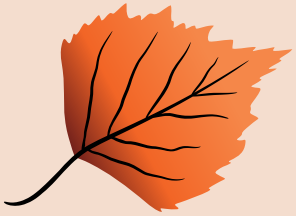
ELECTIVE: Professional Certification I

This module is designed to equip students with the knowledge and skills necessary to earn an industry-recognized IT professional certification. Through hands-on training and expert guidance, students will gain the confidence and credentials needed to excel in the competitive field of IT and stand out to potential employers.

Network and Cloud Security

Prepare to tackle the unique challenges of securing both traditional networks and cloud environments with our Network and Cloud Security course. You'll delve into cloud security models, data protection strategies, and secure network design. Learn to defend against sophisticated attacks targeting network and cloud infrastructures, and become proficient in using advanced cloud security models to safeguard sensitive information.

SEMESTER II (AUTUMN)



Mobile Application Development I

This module aims to transition students from web development to mobile app development with cross platform technology. Through hands-on projects, students will gain experience with mobile development and its paradigms, app architecture, and user interfaces. The module culminates in a mobile project for which students will implement an app entirely of your own design.

Agile Software Engineering Practice

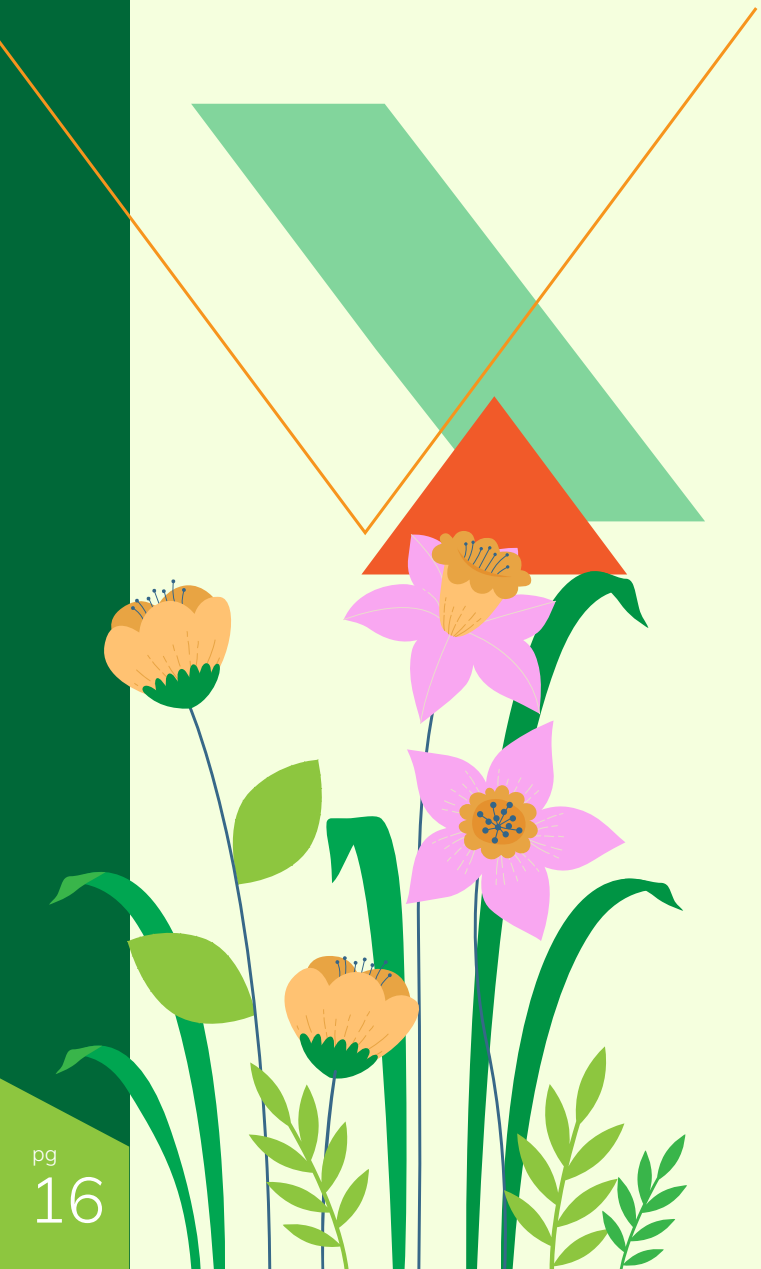
Students will dive into an immersive experience in Agile software development, covering both technical and social aspects of Agile. They will learn various Agile methodologies, including pair programming, test-driven development, behaviour-driven development, continuous delivery, clean code, refactoring, Scrum, and Agile project management. Through this, students will develop their skills in Agile software development, becoming effective leaders or team members of software development teams.ment.

Research Paper: Management of ICT Practices

SEMESTER II (WINTER)

ICT Innovation Project M

SEMESTER I (SPRING)



Secure Coding Practice

Advance your programming skills with a focus on security in our Secure Coding Practice module. Learn secure coding standards, code review processes, and how to avoid common vulnerabilities such as SQL injection and buffer overflows. You'll develop secure software using static analysis tools like Fortify, ensuring that your applications are robust and resilient against cyber attacks.

Mobile Application Development II

Ethics in Computing

Students will delve into the complex world of technology ethics and the legal considerations that come with it. The focus will be on exploring the codes of ethics outlined by professional computing societies, along with examining issues such as intellectual property rights, computer crimes, and security-related legal redress. In addition, students will explore the impact of computers, computing, and digital technologies on society, including the effects of social media and globalization on the economy. By the end of this module, students will have a comprehensive understanding of the intricate ethical and legal issues that accompany the use of technology in today's world.

SEMESTER I (SUMMER)

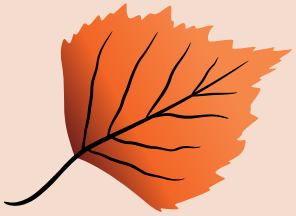
Data Analytics and Visualisation

With a foundational understanding of design fundamentals for effective data visualization, students will be able to design data story. Through the use of popular programming languages and data analytics tools, students will learn how to identify and critique the components of effective visualised data, such as charts and the visualisation of complex relationships. In addition, students will gain knowledge and skills in data wrangling and munging techniques to prepare the data for visualisation.

ELECTIVE: Professional Certification II

Through practical, hands-on training, students will be fully prepared to sit for industry-recognized certifications. With cutting-edge IT professional certification module, students are validated of their advanced skills and knowledge in the latest IT technologies thus boosting their credentials and standing out in the competitive IT job market.

SEMESTER II (AUTUMN)



Applied Data Structures and Algorithms

Unlock the power of data structures and algorithms with topics covering the comprehensive understanding of data structures and algorithms, including abstract data types, dynamic arrays, iterators, linked lists, generics, stacks, queues, binary search trees, collections, maps, hashing, graphs, and sorting. It also covers various application scenarios, such as graphics, web programming, and user interfaces. The course aims to equip students with the necessary knowledge and skills to develop efficient and effective algorithms for various computational problems, as well as to apply data structures and algorithms to real-world scenarios.

DevSecOps for Development

Transform your development skills with our DevSecOps for Development module. This course integrates security into every phase of the software development lifecycle. You'll learn to automate security testing, implement continuous integration and continuous deployment (CI/CD) pipelines, and foster seamless collaboration between development, security, and operations teams. By embedding security practices throughout the development process, you'll be prepared to build secure, efficient, and reliable software applications.

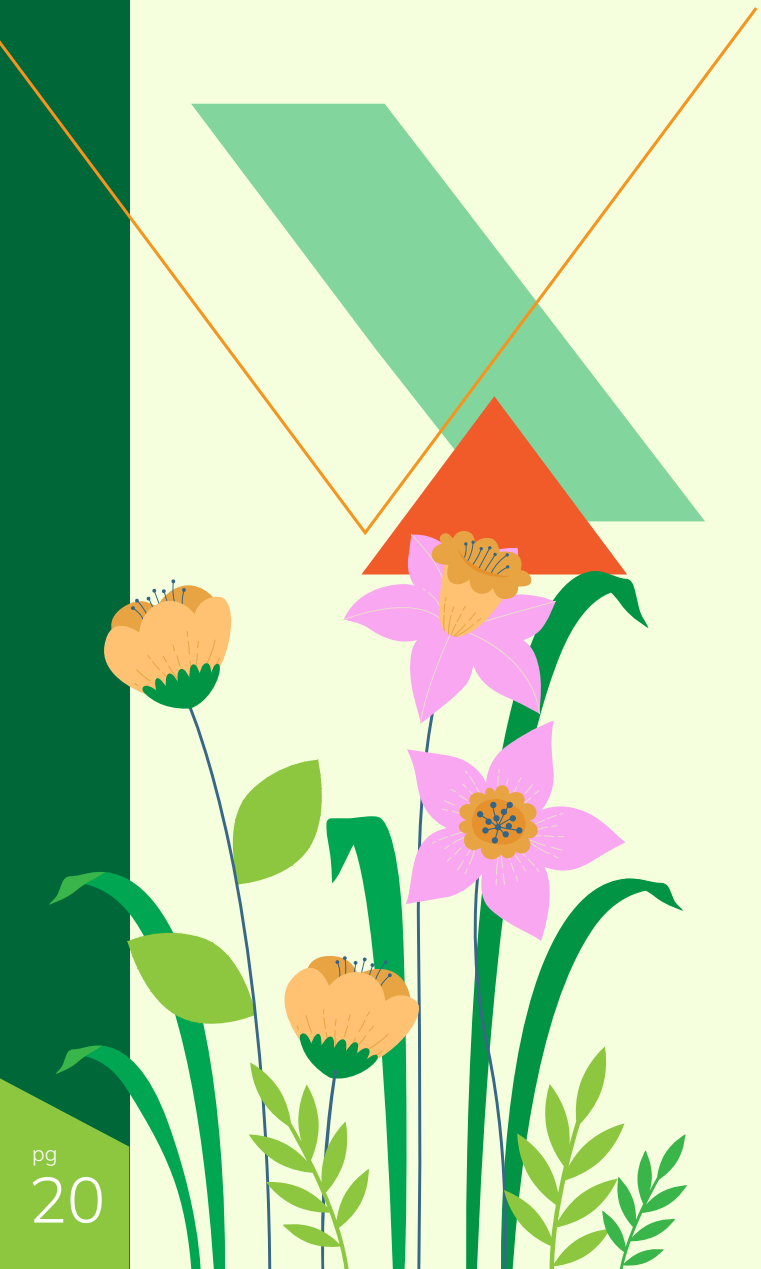
Artificial Intelligence and Machine Learning

Ready to dive into the world of Artificial Intelligence and Machine Learning! Students will learn the fundamental concepts and techniques in AI and ML, with a focus on hands-on experience building applications. Students will explore supervised and unsupervised learning techniques, as well as ensemble techniques, machine learning pipelines, and the data engineering process. By the end of the module, students will have a solid foundation in AI and ML and will be able to build their own intelligent applications.

SEMESTER II (WINTER)

Project III

SEMESTER I (SPRING)



Ethical Hacking

Learn the art of ethical hacking and become a cybersecurity hero with our Ethical Hacking course. You'll master techniques used by ethical hackers to identify and exploit vulnerabilities. The course covers penetration testing methodologies, tools like Metasploit, and legal considerations. Prepare to conduct ethical hacking engagements and enhance organizational security, making you a sought-after expert in the field.

Cryptography

Dive into the fascinating world of cryptography with our Cryptography module. Understand the intricacies of encryption algorithms, cryptographic protocols, and key management. You'll learn to implement cryptographic solutions to protect data and communications, utilizing powerful cryptographic libraries such as OpenSSL. Become a cryptography specialist and secure the digital future with cutting-edge encryption techniques.

Digital Forensics

Uncover the mysteries of digital forensics with our specialized Digital Forensics course. Address security challenges in both traditional networks and cloud environments. You'll learn to use forensic analysis tools like EnCase to defend against attacks targeting network and cloud infrastructures. This course prepares you to become a digital forensics analyst, capable of protecting the digital world from sophisticated cyber threats.

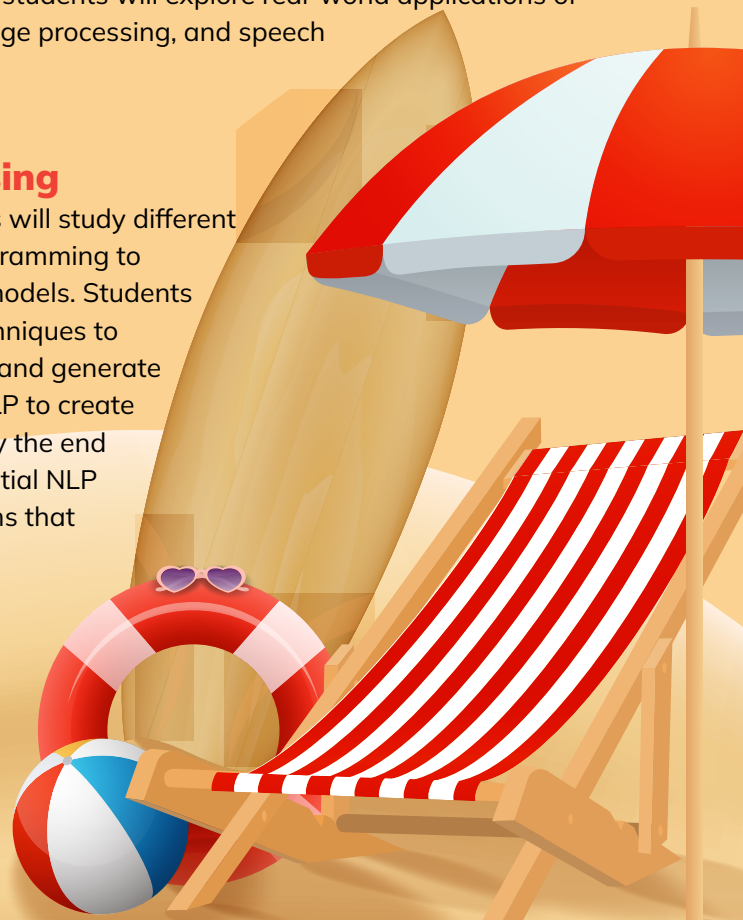
SEMESTER I (SUMMER)

Deep Learning

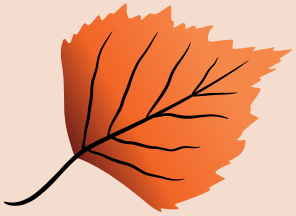
A comprehensive overview of deep learning and its role in modern AI technology will be taught to the students. Through a combination of lectures and hands-on practical sessions, students will gain a strong understanding of popular Python frameworks for deep learning, data cleaning and preprocessing techniques, and the design and implementation of various neural network architectures such as single and multiple layers of neurons, convolutional neural networks (CNNs), recurrent neural networks (RNNs), and autoencoders (AEs). Additionally, students will explore real-world applications of deep learning, including computer vision, natural language processing, and speech recognition.

ELECTIVE: Natural Language Processing

This module aims to be an introduction to NLP. Students will study different approaches to NLP tasks, and perform exercises in programming to understand the process of preparing datasets for NLP models. Students will use advanced NLP algorithms and visualization techniques to collect datasets from open websites, and to summarize and generate random text from a document. Students will also use NLP to create a chatbot that detects positive or negative sentiment. By the end of this module, students will be equipped with the essential NLP tools and techniques to solve common business problems that involve processing text.



SEMESTER II (AUTUMN)



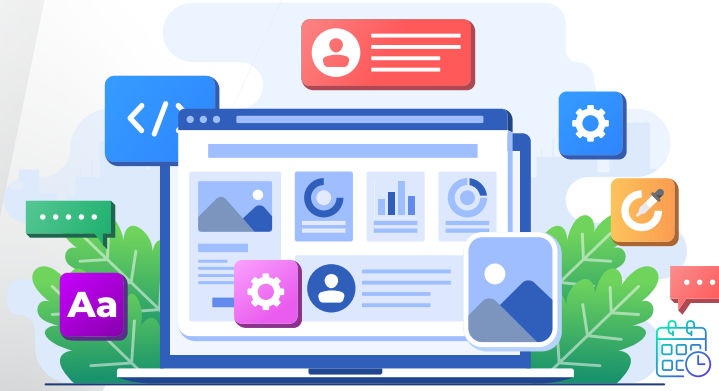
ICT Portfolio Design & Presentation

Students get to unleash the full potential of their professional portfolio. With expert guidance, they will be able to revive and improve their work from Year 1 to Year 3, by refining completed projects and incorporating innovative UI/UX designs. Through this process, students can define their design identity and present their skills and accomplishments in a way that reflects their unique creativity. The end result will be a polished and comprehensive portfolio that showcases their full potential and is sure to impress potential employers and clients alike.

ICT Capstone Project (Pt 1)

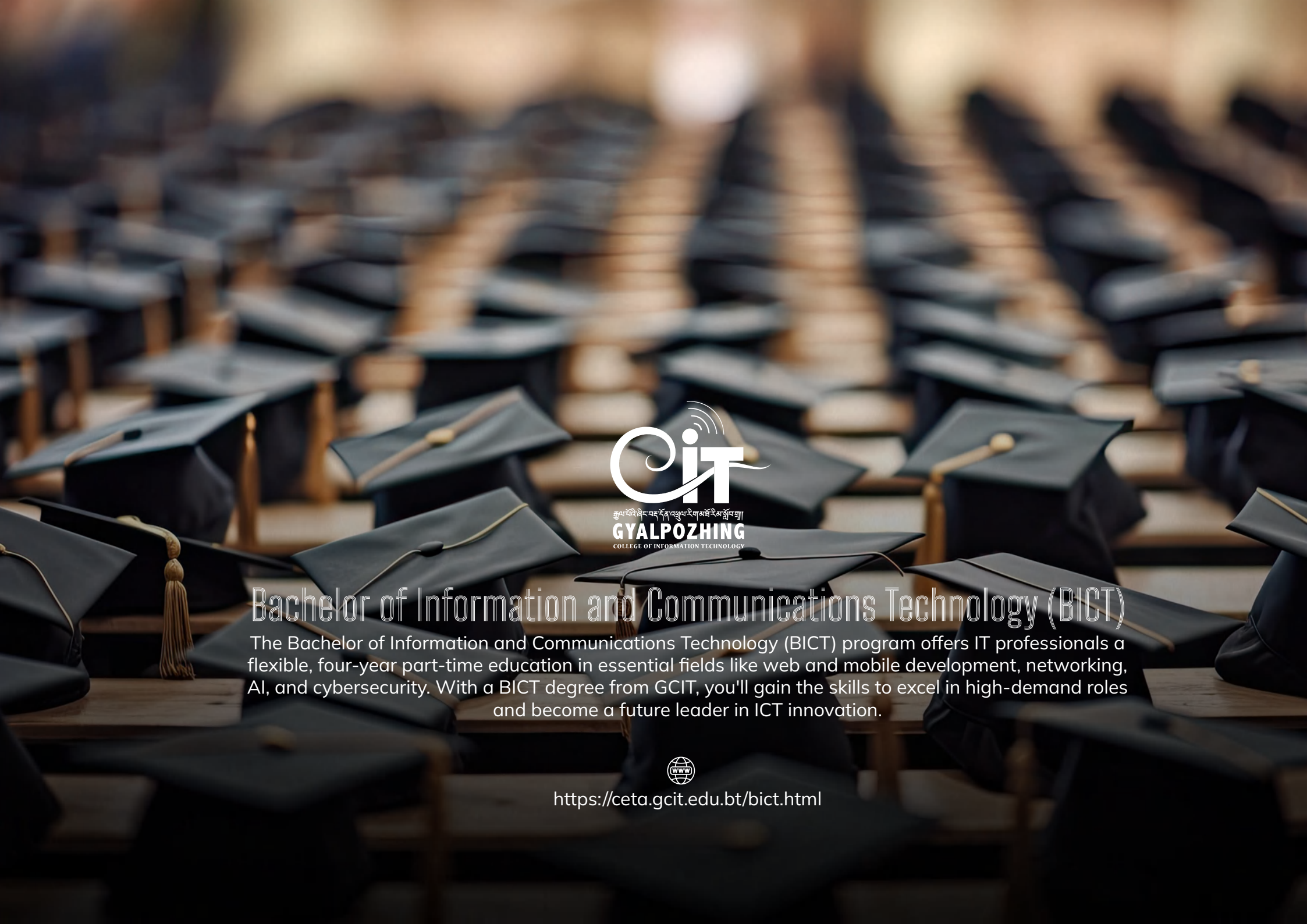
SEMESTER II (WINTER)

ICT Capstone Project (Pt 2) & Tech Showcase



BICT Academic Calendar for AY2025/2026

BICT Academic Calendar for AY2025/2026 (Autumn Intake)				
Activity	**Start**	**End**	**Duration**	**Remarks**
Orientation Day (for 1st-year students only)	Aug 2025 (Autumn Semester)		0.5 day	Actual date TBC.
Semester 1 (Autumn)	11 Aug 2025	21 Nov 2025	15 weeks	Actual dates TBC.
Vacation	24 Nov 2025	28 Nov 2025	1 week	
Semester 2 (Winter)	1 Dec 2025	23 Jan 2026	8 weeks	Actual dates TBC.
Vacation	26 Jan 2026	6 Feb 2026	2 weeks	
Semester 3 (Spring)	10 Feb 2026	23 May 2026	15 weeks	Actual dates TBC.
Vacation	26 May 2026	30 May 2026	1 week	
Semester 4 (Summer)	2 Jun 2026	25 Jul 2026	8 weeks	Actual dates TBC.
Vacation	28 Jul 2026	8 Aug 2026	2 weeks	



Bachelor of Information and Communications Technology (BICT)

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https://ceta.gcit.edu.bt/bict.html