UNIVOTEC

Bachelor of Technology
in
Software Technology
Multimedia & Web Technology
Network Technology

Student Handbook

Department of ICT
Faculty of Training Technology
University of Vocational Technology

June 2019

Rationale for the Bachelor of ICT Degrees:

The general and rapid spread of the ICT technology is very apparent in today's world. Computer technology is present in a very large percentage of appliances; elements of process control equipment and appear on almost every professional's desk as well as a multitude of smaller computerized devices in handbags or jacket pockets. Electronics, computing and communications are very widespread and have had a profound impact on most industrial sectors. In recent years the spread and dynamic of information and communications technologies (ICT) in Sri Lanka have been steadily increasing. Today the high importance of ICT for the economy and all areas including business, services, domestic and leisure is obvious. ICT developments have changed the society to an 'information society' and new possibilities as well as challenges in all areas of work and life have been arisen, in particular in ICT work areas itself.

The new technologies within Information and Communications Technology (ICT) are creating fundamental changes within business and the world economy as a whole and success in this new, and digitally driven, economy. The ICT sector itself faces particular challenges in fulfilling its role in contributing to the success of the national economic success. These include keeping pace with the demands of rapid technological development and the constant innovation in products and services.

The B.Tech in Information & Communication Technology (ICT) Degree is a three-year course of study that combines studies in computer science, software development, information systems, multimedia, web development and computer networks.

Establishment of University of Vocational Technology and the introduction of the degree of bachelor of ICT will be great landmark within the TVET in Sri Lanka. This will provide opportunities for the COT's (Colleges of Technology), NVQ level 6, past graduates who are serving in the industry as ICT professionals to obtain degree and post degree level qualification from their specialized fields of ICT. At present, the university has provided opportunities for the students who are qualified in G.C.E. Advanced Level to enroll as full-time undergraduates in an appropriate course, chosen according the their G.C.E. Advanced Level stream.

The program has a flexible structure allowing students to choose from a number of specializations: software development, information systems, computer networks, web development and multimedia production. The program includes the study of contract administration, business management and the presentation of information. Over and above this the student will be able to specialize in a field relevant to the industry, which will enhance the capability and value of the B.Tech graduate to the Information and Communication Technology Industry. These degree programs are specially designed for COT's NVQ Levels 5 and 6 graduates to upgrade their competencies up to degree level.

Faculty of Training Technology:

Mr. L.W.S. Kularatne , Senior Lecturer – Grade II, Dean of the Faculty

Department of ICT

Eng. HAPI Pathirana, Lecturer, Head of the Department
Ms. TK Malwatta, Senior Lecturer – Grade II
Mr. HA Seneviratne, Senior Lecturer – Grade II
Ms. KUM De Silva, Senior Lecturer – Grade II
Mr. P Uruthiran, Lecturer
Ms. SG Nambuwasam, Lecturer
Mr. RMCAB Ratnayake, Lecturer
Mr. ASK Wijayawardena, Lecturer
Mr. PHSS Wijayarathna, Senior Engineering Teaching Assistant

Admission Requirements:

    i.   NVQ level 5 or 6, ICT diploma holder from any College of Technology (COT)

<div align="center">**OR**</div>

    ii.   HNDE, NDT, NDES, NDET, NDICT in the field of ICT and acceptable to the Academic Council of UNIVOTEC

<div align="center">**OR**</div>

    iii.   Any other qualification which the Tertiary and Vocational Education Commission have accepted as deemed to be equivalent to NVQ Level 5 or 6.

<div align="center">**OR**</div>

    iv.   G.C.E. Advanced Level Physical Science/ Biological Science with Physics or ICT as a subject / Any other stream with ICT as a subject

Exemptions may be granted in relevant modules after a proper evaluation for those who have NVQ level 6 or equivalent qualifications. Preference will be given to those applications having past diploma industrial experience of at least one year.

Student Selection:

Eligible candidates are required to sit for an aptitude test. Selection is done based on the marks obtain by the candidates.

Registration:

Registration is the acceptance of the selected applicant as a student in the University. Prior to registration the applicant is issued with an offer letter for a particular academic program along with a voucher to pay the relevant course fee, of which following may be the constituents:

1. Registration fee – To be paid at the first registration and subsequently at re-registrations
2. Tuition fee
3. Facility fee
4. Library deposit (Refundable)
5. Library fees (nonrefundable)
6. Laboratory fee if applicable (nonrefundable)

The letter calling for registration will request the applicant to produce the original documents of the following:

1. School leaving certificate
2. National Identity Card or Passport
3. Birth Certificate
4. Certificates of all educational qualifications
5. Documents requested to be obtained from the employer
6. Any other documents depending on the study program
7. Documentary evidence for the payment of the Registration fees, course fees, Library fees, etc.

University has no obligations to refund the above fees in case of a disqualification of an applicant for reasons due to lapse/s from the part of the applicant at the registration stage. The applicant who is duly registered for an academic program shall become a student of the University and will receive a Student number and a Student Identification Card.

The selected candidate shall personally appear before the registration desk for registration, unless the provision is available for online registration.

Credit system and the Duration:

The course structure is based on module system. Each module has been assigned a credit value, depending upon the number of notional hours required to achieve the outcome of the module. Notional hours include directed learning as well as self-directed learning. One credit is equivalent of 25 notional hours of learning. This system is bench marked with the European Credit Transfer and Accumulation System (ECTS).

Duration of the degree program is 3 years. One academic year consists of two semesters. One semester may consist of 15 weeks for full time and 22 weeks for part time programs. Total notional hours per semester, is 750. A total of 25 notional hours is equal to 01 credit. Total number of credits per semester is 30. B.Tech. in ICT degree is a three-year full time course and four-year part time course.

Course Structure:

Module Code:

XX105011 - XX - Department offering the module
1 - Semester
05 - Number of Credits
01 - Serial number of the module
1/0 - 1 - This module has been revised.
0 - This module may be a new module/ This module has not been revised.

Module Type:

The degree consists of Compulsory (C) modules, Elective (E) modules and Optional (O) modules. Core compulsory modules and Elective modules designated as GPA modules will be used to calculate the grade point averages.

C - Compulsory   **E** - Elective
O - Optional   **G** - GPA
NG - Non GPA

B.Tech. in Software Technology:

Module Code	Module Title	Type		Credits	Year I		Year II		Year III	
					S-I	S-II	S-I	S-II	S-I	S-II
IT103011	Mathematics for ICT I	C	G	3	√					
IT104021	Computer Programming	C	G	4	√					
IT104031	Software Development Practices	C	G	4	√					
IT103041	Digital Electronics	C	G	3	√					
IT103051	Data Communication and Networks	C	G	3	√					
IT103061	Database Design	C	G	3	√					
IT104071	Internet Technologies	C	G	4	√					
LS103101	Communication Skills in English I	C	NG	3	√					
IT202011	Operating Systems	C	G	2		√				
IT203021	Mathematics for ICT II	C	G	3		√				
IT203031	Computer Architecture	C	G	3		√				
IT204041	Data Structures and Algorithms	C	G	4		√				
IT206051	Database Systems and Programming	C	G	6		√				
IT204061	Visual Programming I	C	G	4		√				
IT206071	Web Programming	C	G	6		√				
IT203081	Computer Networks	C	G	3		√				
LS203111	Communication Skills in English II	C	NG	3		√				

Code	Course	C/E	G/NG	Credit					
IT304011	Web Technology and Applications	C	G	4	√				
IT304021	Platform Independent Programming	C	G	4	√				
IT306031	Visual Programming II	C	G	6	√				
IT306041	Software Architectures and Design	C	G	6	√				
IT304051	Software Deployment and Evolution	C	G	4	√				
IT304061	Database Implementation	C	G	4	√				
MS304121	Entrepreneurship Development and Management	C	G	4	√				
IT302160	Psychology	E	NG	2	√				
IT302170	Soft Skills and Personal development	E	NG	2	√				
IT404010	Mobile Application Development	C	G	4		√			
IT404020	Cloud Based Application Development	C	G	4		√			
IT402030	Human Computer Interaction	C	G	2		√			
IT404041	Real-Time Programming	C	G	4		√			
IT406051	Software Testing and Reliability	C	G	6		√			
IT403061	Enterprise System Technologies and Architectures	C	G	3		√			
IT402070	UX Engineering	E	G	2		√			
MS403130	Research Methodology	C	G	3		√			
IT402170	Meditation & Stress Management	E	NG	2		√			
EE402911	Energy Management in IT Environment	E	NG	2					
IT514011	Work Based / Industrial Training	C	G	14				√	
IT604011	Professional Issues in Information Technology	C	G	4					√
IT604021	Enterprise System Design	C	G	4					√
IT604030	Enterprise Resource Planning Systems	C	G	4					√
IT604040	Intelligent Systems	C	G	4					√
IT604051	Information Systems Security and Practices	C	G	4					√
IT604061	Software Project Management	C	G	4					√
IT604071	Enterprise Application Development	C	G	4					√
IT602080	Photography	E	NG	2					√
MS602910	Occupational Health and Safety	E	NG	2					√
IT604090	Game Development and Programming	E	G	4					√
IT603100	Digital Marketing	E	G	3					√
IT612111	Final Year Project (Software Development Project)	C	G	12					√

Description	Credit Value (GPA)	Credit Value (NGPA)	Credit Value (E/GPA)
Total number of credits of the degree program	167	18	9
Minimum number of credits required for graduation	167	8	5
Maximum number of credits can be obtained	167	14	*

B.Tech. in Multimedia & Web Technology

Module Code	Module Title	Type		Credits	Year I S-I	Year I S-II	Year II S-I	Year II S-II	Year III S-I	Year III S-II
IT103011	Mathematics for ICT I	C	G	3	√					
IT104021	Computer Programming	C	G	4	√					
IT104031	Software Development Practices	C	G	4	√					
IT103041	Digital Electronics	C	G	3	√					
IT103051	Data Communication and Networks	C	G	3	√					
IT103061	Database Design	C	G	3	√					
IT104071	Internet Technologies	C	G	4	√					
LS103101	Communication Skills in English I	C	G	3	√					
IT202011	Operating Systems	C	G	2		√				
IT203021	Mathematics for ICT II	C	G	3		√				
IT203031	Computer Architecture	C	G	3		√				
IT204041	Data Structures and Algorithms	C	G	4		√				
IT206051	Database Systems and Programming	C	G	6		√				
IT204061	Visual Programming I	C	G	4		√				
IT206071	Web Programming	C	G	6		√				
IT203081	Computer Networks	C	G	3		√				
LS203111	Communication Skills in English II	C	G	3		√				
IT304011	Web Technology and Applications	C	G	4			√			
IT304021	Platform Independent Programming	C	G	4			√			
IT304071	Fundamentals of Mass Communication and Media Design	C	G	4			√			
IT303081	Art and Design	C	G	3			√			
IT306091	2D and 3D Graphics	C	G	6			√			
IT304101	Video Production Techniques	C	G	4			√			
IT304111	Animation Technology and Applications	C	G	4			√			
MS304121	Entrepreneurship Development and Management	C	G	4			√			
IT302160	Psychology	E	NG	2			√			
IT302170	Soft Skills and Personal development	E	NG	2			√			
IT404010	Mobile Application Development	C	G	4				√		
IT404020	Cloud based Application Development	C	G	4				√		
IT402030	Human Computer Interaction	C	G	2				√		
IT406081	Digital Signal Processing Techniques and Image Processing	C	G	6				√		
IT402090	Audio Editing and Music Production	C	G	2				√		
IT404101	Audio and Video Postproduction Techniques	C	G	4				√		
IT406111	Multimedia Product Development	C	G	6				√		
MS403130	Research Methodology	C	G	3				√		
IT402170	Meditation & Stress Management	E	NG	2				√		

Module Code	Module Title	Type		Credits	Year I S-I	Year I S-II	Year II S-I	Year II S-II	Year III S-I	Year III S-II
EE402911	Energy Management in IT Environment	E	NG	2				√		
IT514011	Work Based / Industrial Training	C	G	14					√	
IT604011	Professional Issues in Information Technology	C	G	4						√
IT604021	Enterprise System Design	C	G	4						√
IT604121	Multimedia Project Management	C	G	4						√
IT603130	Content Management Systems and Frameworks	C	G	3						√
IT604141	Multimedia Data Processing	C	G	4						√
IT603100	Digital Marketing	C	G	3						√
IT602080	Photography	E	NG	2						√
MS602910	Occupational Health and Safety	E	NG	2						√
IT604090	Game Development and Programming	E	G	4						√
IT604040	Intelligent Systems	E	G	4						√
IT612111	Final Year Project (Multimedia and Web Development Project)	C	G	12						√

Description	Credit Value (GPA)	Credit Value (NGPA)	Credit Value (E/GPA)
Total number of credits of the degree program	167	18	8
Minimum number of credits required for graduation	167	8	5
Maximum number of credits can be obtained	167	14	*

B.Tech. in Network Technology

Module Code	Module Title	Type		Credits	Year I S-I	Year I S-II	Year II S-I	Year II S-II	Year III S-I	Year III S-II
IT103011	Mathematics for ICT I	C	G	3	√					
IT104021	Computer Programming	C	G	4	√					
IT104031	Software Development Practices	C	G	4	√					
IT103041	Digital Electronics	C	G	3	√					
IT103051	Data Communication and Networks	C	G	3	√					
IT103061	Database Design	C	G	3	√					
IT104071	Internet Technologies	C	G	4	√					
LS103101	Communication Skills in English I	C	NG	3	√					
IT202011	Operating Systems	C	G	2		√				
IT203021	Mathematics for ICT II	C	G	3		√				
IT203031	Computer Architecture	C	G	3		√				
IT204041	Data Structures and Algorithms	C	G	4		√				
IT206051	Database Systems and Programming	C	G	6		√				
IT204061	Visual Programming I	C	G	4		√				
IT206071	Web Programming	C	G	6		√				

Code	Course	Type	Grade	Credits					
IT203081	Computer Networks	C	G	3	√				
LS203111	Communication Skills in English II	C	NG	3	√				
IT304011	Web Technology and Applications	C	G	4		√			
IT304021	Platform Independent Programming	C	G	4		√			
IT304121	Network Administration	C	G	4		√			
IT306131	Internetwork Switching	C	G	6		√			
IT306141	System Administration	C	G	6		√			
IT304151	Wireless Communication	C	G	4		√			
MS304121	Entrepreneurship Development and Management	C	G	4		√			
IT302160	Psychology	E	NG	2		√			
IT302170	Soft Skills and Personal development	E	NG	2		√			
IT404010	Mobile Application Development	C	G	4			√		
IT404020	Cloud Based Application Development	C	G	4			√		
IT404121	Internetwork Routing	C	G	4			√		
IT406131	Windows Server Administration	C	G	6			√		
IT406141	Network Systems Implementation	C	G	6			√		
IT404150	Network Programming	C	G	4			√		
IT403160	IoT Device Programming	C	G	3			√		
MS403130	Research Methodology	C	G	3			√		
IT402170	Meditation & Stress Management	E	NG	2			√		
EE402911	Energy Management in IT Environment	E	NG	2			√		
IT514011	Work Based / Industrial Training	C	G	14				√	
IT604011	Professional Issues in Information Technology	C	G	4					√
IT604051	Information Systems Security and Practices	C	G	4					√
IT604151	Network Project Management	C	G	4					√
IT604161	Broadband Networks	C	G	4					√
IT604171	Photonics and Fiber Optics	C	G	4					√
IT603100	Digital Marketing	E	G	3					√
IT604030	Enterprise Resource Planning Systems	E	G	4					√
IT604040	Intelligent Systems	E	G	4					√
IT602080	Photography	E	NG	2					√
MS602910	Occupational Health and Safety	E	NG	2					√
IT612111	Final Year Project (Network Development Project)	C	G	12					√

Description	Credit Value (GPA)	Credit Value (NGPA)	Credit Value (E/GPA)
Total number of credits of the degree program	167	18	11
Minimum number of credits required for graduation	167	8	5
Maximum number of credits can be obtained	167	14	*

Work Based/Industrial Training:

Fifth semester of the study program is dedicated to this component of the degree. Propose of this module is to enable students to apply competencies required through the academic program to workplace experiences.

Students studying the degree in full time mode will be placed in various industrial establishments/worksites related to their fields of studying for a period of six months through National Apprentice and Industrial Training Authority (NAITA) under undergraduate in plant training scheme.

Those who are studying in the part time mode are required to undertake work based training in their places of work, under supervise of a senior officer. Work undertaken during this period should be different from the part time work which he/she is suppose to the in his/her job.

Final Year Project:

This module is given in the sixth semester. This is a group project, which provides opportunity for the students to enhance their ability in problem solving, team working and leadership using the competencies acquired throughout the undergraduate career through the implementation of a group project.

To successfully complete this module, students are expected to design and implement a challenging ICT related project applying knowledge and skills within a given timeframe and present technical ideas in written and oral form effectively.

Course Assessment System:

The performance of each student in each module will be evaluated by continuous assessments and a semester-end examination.

The weightings assigned for the continuous assessment component and the semester - end examination of a module will be as follows.

- Continuous Assessment   40% - 30%
- Semester - End Examination   60%   70%

The continuous assessment may consist of assignments, quizzes, laboratory work, practical, tutorials, demonstrations, presentations, projects, oral tests and mid semester tests. Weightings of each of these components used in the determination of the final grade for each module should be clearly conveyed in writing to the students at the commencement of each module along with the outline of the module.

The fulltime and part-time students should maintain 80% and 60% of attendance respectively and satisfy the requirements specified in each module descriptor to be eligible to sit for the semester-end examination.

All Candidates should obtain at least 30% of the marks allocated for continuous assessment to get qualified to sit for the semester - end examination.

Grading System and Computation of Grade Point Average (GPA):

A letter grade shall be awarded to each module. The cut-off marks for each grade and the corresponding grade points are given below.

Grades	Marks	Grade Points
A+	90-100	4.00
A	80 – 89	3.70
B+	70 – 79	3.30
B	60 – 69	3.00
C+	50 – 59	2.70
C	40 – 49	2.00
D	30 – 39	1.00
E	01 – 29	0.00
F	0	0.00

i.   Grade D or above is required to earn credits for a module.

ii. A minimum 30% should be obtained from continuous assessment for eligibility to sit for the end semester exam. A minimum requirement of 30% should be obtained from the semester - end Examination in order to obtain a grade D or above for a module.

iii. A student satisfying continuous assessment requirements and getting between 1 – 29 marks for the semester end examination receives a symbol as E(ET) while a student getting 0 for the semester end examination receives symbol F(ET).

iv. A student satisfying semester end examination requirements and getting between 1 and 29 marks for the continuous assessment receives a symbol as E(CA) a student getting 0 for the continuous assessment receives symbol as F(ET). A student getting between 1 and 29 marks for both the semester end examination & the continuous assessment receives the Grade E while a student getting 0 for both the semester end examination & continuous assessment receives the Grade F.

v.   A student must repeat the part of the module examination/complete module examination having Grade E or F & must improve up to Grade D or C. The modules having Grade D are allowed to repeat only when the Semester Grade Point Average

(SGPA) of a particular semester is less than 2.00. By repeating only the semester end examination/continuous assessment or both, the Grades F, E or D can be improved only up to a C grade and considered for calculating Grade Point Average (GPA).Repeating continuous assessment or semester end examination is considered as repeating the whole module.

Academic Concession:

Academic Concession may be granted to a student with the approval of the Faculty Board, in the event that a student is unable to sit for the semester-end examination due to illness or other compelling reason. In such instances the student must notify the Dean of the faculty within 48 hours of the cause. Further, the student should make an appeal with supporting documents to the Dean for an Academic Concession within one week from the date of the examination. The continuous assessment component can be carried forward to the next examination as the first attempt.

Semester Grade Point Average (SGPA):

The calculation of the Semester Grade Point Average will be based on the Grade Points earned for all modules registered in a semester (except those awarded with academic concession) weighted according to number of credits. The SGPA is rounded to the nearest second decimal place. The SGPA is reported on transcripts and Statement of Results that may be issued for each semester.

The formula for calculating SGPA is given below.

$$\text{Semester GPA (SGPA)} = \frac{\Sigma \text{ (Number of Credits for a semester module x Grade point obtained for the module)}}{\text{Total number of credits for the Semester}}$$

Final Grade Point Average (FGPA):

The Final Grade Point Average is the absolute academic standing of the student calculated on the basis of SGPA. The FGPA will be calculated using the following formula.

$$\text{Final GPA (FGPA)} = \frac{\Sigma \text{ (Semester GPA)}}{\text{Number of Semesters}}$$

Unsatisfactory Standing on Academic Performance:

If the student's SGPA falls between 1.50 and 1.99 the student will be placed on Academic Warning.

A student who falls into one of the following categories of the SGPA will not be permitted to register for a new module until the SGPA is upgraded to 2.00 or more.

    i.   SGPA < 1.50 in any two semesters

    ii.   SGPA < 1.50 in any semester and 1.50 < SGPA < 2.00 in any two semesters

    iii.   1.50 < SGPA < 2.00 in any three semesters

Further studentship is cancelled if you are not continuing degree for any two semesters according to the above criteria. You have to officially inform the department of ICT about the reason to be absent, if you are willing to rejoin the degree later.

Graduation Requirements:

Credit Requirements:

A student should satisfy the following requirements in order to be admitted to the Bachelor of Technology in Software Technology/Multimedia & Web Technology/Network Technology.

    i.   A minimum total of 180 credits from modules specified.

    ii.   A minimum Final Grade Point Average (FGPA) of 2.00

    iii.   Any other mandatory requirement specified by the Academic Council

Key to Final Results (FGPA – Final Grade Point Average):

FGPA	Final Results
3.7 or Above	First Class
3.30 – 3.69	Second Upper
2.70 – 3.29	Second Lower
2.00 – 2.69	Ordinary Pass
Below 2.00	Incomplete