Vision and Mission of the University

VISION

To be an Internationally Renowned Centre in South Asia for Higher Learning and Innovations in Sciences, Technologies and Humanities

MISSION

To Provide Expanded Opportunities for Higher Learning of International Standards through Generation and Dissemination of Knowledge and Innovations Focused on Regional and National Needs, Social Harmony and Stakeholders' Empowerment and Satisfaction

Vision and Mission of the Faculty

VISION

To be the Centre of Excellence for Technology Education, Innovations and Entrepreneurial Leadership

MISSION

To create opportunities for mastering technology of international standards through generation and dissemination of knowledge and innovation focussed on regional, national and global needs towards sustainable development

Graduate Profiles

- **Technocrats and entrepreneurs with scientific background and social ethics**: Technical competence, entrepreneurship skills built on scientific knowledge and social ethics, through innovative ideas and systematic problem solving process.
- **Innovator and explorer:** Capacity and motivation for creation, innovation and critical evaluation. Demonstrate enthusiasm and curiosity to innovation applying competency.
- **Local and global human capital:** Capacity to take up local and global emerging technological challenges, abilities to go beyond geographical limits in meeting the demand for competency.
- **Ethical, Social and Professional Understanding:** Ability to critically reflect upon broad ethical principles and codes of conduct in order to behave consistently with a personal respect and commitment to ethical practice and social responsibility. Understanding of responsibility to contribute to the community. Respect and value social, multicultural, cultural and personal diversity.
- **Communication**: Effective and appropriate communication in both professional (intra and inter disciplinary) and social (local and international) contexts.
- **Teamwork, collaborative and management skills**: Ability to recognise opportunities and contribute positively to perceive the potential value of ideas towards practical applications and to collaborative scientific research, and Demonstrate a capacity for self management, teamwork, leadership and decision making based on open-mindedness, objectivity and reasoned analysis in order to achieve common goals and further the learning of themselves and others.
- **Information literacy**: Ability to make appropriate and effective use of information and information technology relevant to their discipline.

Message from the Vice Chancellor

South Eastern University of Sri Lanka, being one of the national universities, provides excellent leaning experiences providing state of the art facilities in technological education through combined efforts of all the stakeholders including academics and students. The Faculty of Technology is empowered with sophisticated technologies and facilities to empower the students with essential knowledge, required skills and competencies and positive attitudes. This Handbook 2017/2018 compiled by the Faculty of Technology, South Eastern University of Sri Lanka provides all the details needed by a student enrolled to the degree programmes offered by the Faculty. This handbook provides the students with a comprehensive insight into the academic programmes offered together with all other guidance needed to progress well in the learning process. Further, this Handbook provides useful information to all the stakeholders including prospective students and employers.

I am extremely pleased to welcome the students who are enrolled to the Faculty of Technology. I hope this Handbook will be used immensely and maximum by the students who are one of the main stakeholders and I hope they will be benefitted immensely from this Handbook. I invite the students to maximize the use of this Handbook and follow the guidance provided to achieve excellence in technology to face the challenges of the 21st Century.

I would like to extend my gratitude to the editorial committee members of this Handbook for their tireless efforts in producing a well structured and a resourceful Handbook. I would like to wish the students of the Faculty of Technology all the success in their future endeavors.

Professor M.M.M. Najim
Vice Chancellor
South Eastern University of Sri Lanka

Message from the Dean

As the Dean of the Faculty of Technology, it gives me a great pleasure to welcome you to the Faculty of Technology (FOT) of South Eastern University of Sri Lanka (SEUSL). In addition to the traditional streams like Science, Maths, Commerce and Art in the GCE Advance Level, the Government of Sri Lanka has identified and introduced one more stream as Technology as the fifth stream from the year 2015 onwards, being understood the paramount importance of technological studies for the development of economy and society of the country. The field of technological studies has been a long standing need in our country's education systems. The SEUSL has been gifted with the FOT comprising two departments namely Department Biosystems Technology (DBST) and the Department of Information & Communication Technology (DICT).

The Sri Lankan workforce lacks a mid-layer technocrats in the industry set up to connect the upper decision-making layer and bottom supervisory layer. The technocrats produced from the technological studies facilitate to fill this vacuum in the industry so as to maintain an efficient and effective industry set up in the country. The massive gap between the industry demand and the competency level of graduates has been minimized to a great extent with the introduction of the technological studies to the state universities in Sri Lanka.

The faculty has been established as a pioneering faculty in Sri Lankan state university system to produce quality technology graduates. The technology degree programs at the FOT have been designed to cater the needs of local and international demands while satisfying the relevant quality standards. The degree programs offered by the FOT are certified by the professional certifying bodies. Accordingly, the Information and Communication Technology (ICT) degree program is certified by the Computer Society of Sri Lanka (CSSL) while the Biosystems Technology degree program is certified by the National Biotechnology Industry Association of Sri Lanka (NBIA).

The FOT has housed numerous teaching-learning facilities with the ultra-modern gadgets to make the students more competitive and job oriented. Further, the faculty has a core of highly qualified, experienced, hardworking and committed academic and academic supporting staff, supplemented by similarly qualified and experienced expertise from the industry. As such the faculty expects many of its graduates to hold key positions in public and private sectors locally and internationally.

I wish you a bright future.

Dr. U. L. Abdul Majeed
Dean
Faculty of Technology
South Eastern University of Sri Lanka

Table of Content

1. Introduction of the University

1.1. About the University

The establishment of South Eastern University of Sri Lanka (SEUSL) and its predecessor - the South Eastern University College of Sri Lanka, certainly accomplished not only the needs of the people of the South Eastern region but also the need of the entire Island. The main campus of SEUSL is located in the coastal town of Oluvil, in the Ampara district, which is about 350 km away from Colombo while its one of the six faculties; the Faculty of Applied Sciences is located in Sammanthurai.

The birth of SEUSL also coincided with more positive thinking and policy of the Government to broad-base university education further, by extending it to periphery and less developed regions in the country such as the South Eastern region. But it was due to certain special and unfortunate circumstances in the country caused by the ongoing militancy at that time and civil unrest in the North and East of the country, which actually hastened its establishment. When the militancy and civil strife in the North forced out the Muslim staff and students of the University of Jaffna, ad-hoc arrangements were made to accommodate them mainly at the Eastern University at Vantharumulai in Batticaloa district. But owing to deteriorate communal harmony between the Tamils and Muslims and several unfortunate incidents, which took place in that region, the Muslim staff and students were compelled to leave the Eastern University too, with their studies abruptly interrupted. This problem promptly took up to the notice of the Government to find a lasting solution.

It was under such circumstances that the SEUSL was established for the displaced students and academic staff from the Eastern University by an order through gazette notification 88/9 of 26 July, 1995 under the provisions of section 24A of the University act No. 16 of 1978 as amended by Act No. 07 of 1985. By October 1995, basic facilities were found and nucleus staff appointed to commence academic activities in part of the premises of the Government Teachers' Training College at Addalaichenai. University College was ceremonially inaugurated with a batch of 33 students belonging to the

1992/93 academic year, who had already completed their first year of studies at the Eastern University. Soon after commencing academic activities with these students, the University College admitted two batches in December 1995 for the First Year Course of Studies, by the admission of The University Grants Commission, consisting of 91 students of academic year 1993/94 and 108 students of academic Year 1994/95.

By gazette notification 916/7 of 27th March 1996, the South Eastern University College raised a National University under the corporate name of South Eastern University of Sri Lanka. Consequently it started its academic activities as a fully-fledged university from 15th May 1996 under two Faculties, namely the Faculty of Arts and Culture and the Management and Commerce at Addalaichenai, sharing the premises of the Government Teachers' Training College while the construction work of its permanent premise at Oluvil where 220 acres of land has been acquired, was in progress.

The Faculty of Applied sciences was established in 1997 with the first batch of 40 students for the Academic Year 1997/98 for the B.Sc in Bio Science and Physical Science program. In May 1998, Faculty of Arts and Culture and Management & Commerce, main University Library and all administrative offices were shifted from Addalaichenai to Oluvil and the Centre for Extension Studies of the university remained at Addalaichenai.

In October 2005, the Faculty of Islamic Studies and Arabic Language was established with first batch of 50 students for the Academic Year 2005/2006. There is no any Faculty of this nature established in any other universities in Sri Lanka.

The Faculty of Engineering was established in 2013 with five departments: Civil Engineering, Mechanical Engineering, Electrical and Telecommunication Engineering, Computer Science and Engineering and Interdisciplinary Studies.

The newly established Faculty of Technology was ceremonially opened on 05th December 2016. It is the First Technology Faculty founded in Sri Lanka with two departments namely, Department of Biosystems Technology and Department of Information and Communication Technology.

1.2. Authorities of the University

(i) The Council

The Council of a University shall be the executive body and governing Authority of the University and shall consists of Vice Chancellor, Deans of Faculties, two members elected by the Senate from its members, persons appointed by the University Grants Commission. The Chairman of the Council shall be the Vice Chancellor who shall preside over the meeting of the Council. If the Chairman is unable to preside over a meeting, the meeting shall be presided over by a member to be-elected by the members present. The Council without prejudice to the generality of the powers conferred upon it by the University Act will discharge such powers and duties to hold, control and administer the property and funds of the University.

(ii) The Senate

A University shall have a Senate, which is the academic authority of the University. The Senate of the University shall consist of Vice Chancellor, Deans of Faculties, Rector of each campus, Heads of Departments of Study, Permanent Professors, Librarian and two teachers elected by each Faculty Board. The Senate will decide on the conduct of all the academic programs including the examination in the University and award of degree.

(iii) The Chancellor

His/Her Excellency the President of the Democratic Socialist Republic of Sri Lanka will nominate the Chancellor of each University who shall be the Head of the university, hold office for a period of five years reckoned from the date of his nomination, and shall preside at any convocation of the University.

(iv) The Vice Chancellor

The Vice Chancellor of a University shall be appointed by the President of the Democratic Socialist Republic of Sri Lanka for a term of three years who shall be the principal Executive and Academic Officer thereof. He or she shall be an ex-officio member and Chairman of both the Council and the Senate. The Vice Chancellor is entitled to convene, be present, and speak at, any meeting of any other authority of the University or other body. Vice chancellor is also the Accounting officer of the University and responsible for the execution of policies and measures approved by the Council in relation to the University and, subject to such policies, the direction, supervision and control of the University, including its administration, and for the maintenance of discipline within the university.

(v) The Dean

There shall be a Dean of each Faculty who shall be a full time officer of the University and the Academic and Administrative Head of that Faculty. The Dean shall be elected by the Faculty Board from among the Heads of the Departments of study comprising such Faculty for a term of three years. The Dean is the ex-officio Chairman of the Faculty Board and an ex-officio member of the Council and the Senate. The Dean shall subject to the provisions of any appropriate instrument, holds office for a period of three years reckoned from the date of the election.

(vi) The Registrar

The Registrar of a University shall be appointed by the Council upon the recommendation of a selection committee. The Registrar shall be the full time officer of the University and shall exercise, perform and discharge such powers, duties and functions as may be conferred or imposed on or assigned to him by University Act or by any other appropriate instrument. Registrar is responsible for the custody of the records and the property of the University and shall be the ex-officio Secretary of the Council and the Senate. He is also the Assistant Accounting Officer of the University and shall subject to the direction and control of the Vice Chancellor, be responsible for the general administration of the University and the disciplinary control of its non-academic staff.

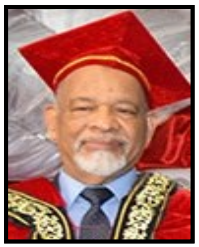
(vii) The Librarian

The Librarian is appointed by the Council who, subject to the direction and control of the Vice Chancellor, discharges such duties and functions. He / She shall be a fulltime officer of the University and shall be responsible for the administration of the libraries and ex-officio member of the Senate.

(viii) The Bursar

The Bursar shall be appointed by the Council. The Bursar shall, subject to the direction and control of the Registrar, discharges such duties and functions while being responsible for the custody of the funds of the University and its administration.

1.3 Chancellor



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1.4 Officers of the University

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2. Introduction of the Faculty of Technology

2.1 Faculty of Technology

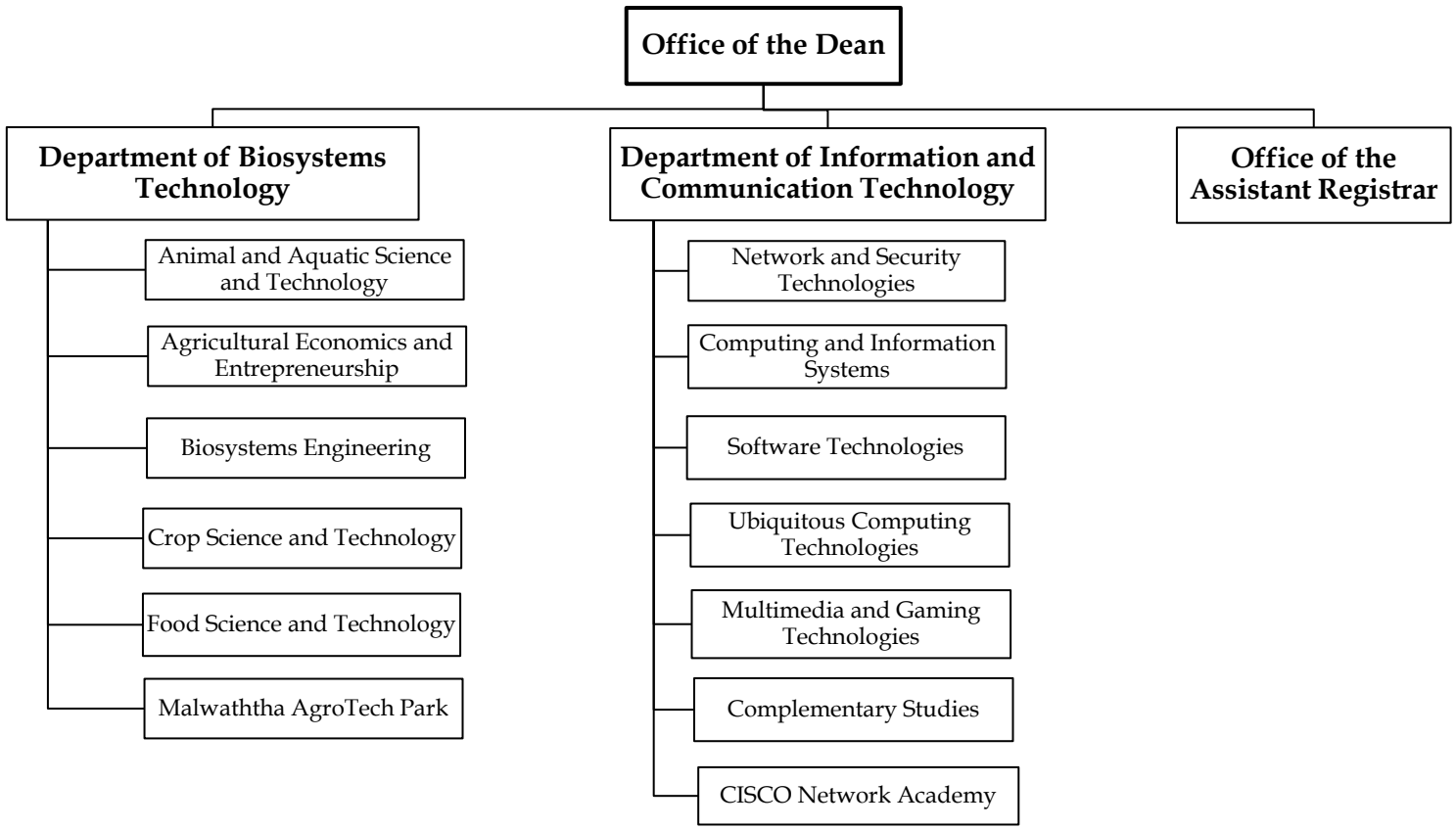
Faculty of Technology of the South Eastern University of Sri Lanka (SEUSL) is proud to be the first Technology Faculty inaugurated its academic activities in the country. The Faculty comprises of two departments, namely Department of Biosystems Technology (DBST) and Department of Information and Communication Technology (DICT). Both are functioning efficiently at the faculty building in the Main University Park at Oluvil.

The Faculty is equipped with state of the art facilities such as laboratories, lecture halls, auditorium and other physical resources. In addition, the Faculty has acquired 28 acres of agricultural land at Malwatha, Ampara and has taken up the task to develop into an 'AgroTech Park' with the funding from the Government of Sri Lanka and the collaborations of leading private sectors organizations.

As the faculty located inside the university park, it provides all facilities for students to involve in co-curricular and extracurricular activities and to get support from the relevant units i.e. Student Support Services and Welfare Unit, Career Guidance Unit, Physical Education unit, Student Recreational Center, Play Grounds and Student Accommodation Facilities located within the University Park.

Faculty Building Opening Ceremony

2.2 Organizational Structure of the Faculty of Technology



2.3 Staff of the Faculty of Technology

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Technical Officer

Mr. S. Ramees
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Staff Management Assistant

Mr. A. Mohamed Nihab
Management Assistant Gr.II

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Management Assistant

Mr. H.M. Rifnas
Management Assistant

Mr. I.L.M. Anas
Lab Attendant

Mr. I. Jawfer
Lab Attendant

Mr. A. Nusrath Ali
Lab Attendant

Mr. A.L.M. Riyal
Lab Attendant

Mr. N. Ramesh
Works Aid

Mr. A.M. Mohamed Ali
Works Aid

Mr. M.M. Mohamed Ali
Works Aid

3. Study Programs

3.1 Introduction

Sri Lanka, a nation striving for rapid development, identifying its necessity well in advance, has already introduced the technological stream of studies into the Advanced Level curriculum, which has become popular and has a higher demand among students and increasing the demand for seats in higher leaning in technology. Although science based higher education institutes are contributing towards this task to some extent, institutes completely geared to the task are a must to achieve development goals and the government is in the process of equipping selected universities towards this target.

The Faculty of Technology of SEUSL offers two degree programs namely Bachelor of Biosystems Technology (BBST) and Bachelor of Information and Communication Technology (BICT).

3.1.1 Bachelor of Biosystems Technology (BBST)

Sustainable Development Goals (SDGs) which came into effect on January 2016 are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. There are 17 SDGs following the success of Millennium Development Goals which includes new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The aim of SDGs is to end poverty, promote prosperity and peoples' well being while protecting the environment by 2030.

Integrated biosystems which makes functional connections among agriculture, aquaculture, food processing, waste management, water use and fuel generation play an important role in achieving SDGs. Carefully planned integrated biosystems with modern technologies will be capable of satisfying food production, fuel and fertilizer needs with near-zero environmental impacts to meet the SDGs. Technology has changed and keeps on changing day by day. Development, dissemination and mastering technology are musts achieving sustainability in a world of knowledge based economy.

Graduates versatile in knowledge and skills in Biosystems Technology will have a greater competing potential in the employment market as entrepreneurs, managerial and technical level workers in both production and service sectors. In this regard, Faculty of Technology, SEUSL is offering highly technical oriented multidisciplinary degree of Bachelor Biosystems Technology.

3.1.2 Information and Communication Technology (BICT)

The Bachelor of Information and Communication Technology degree is initiated at the Faculty of Technology realizing the importance of the degree program. The curriculum of the degree program has been developed in line with the UGC instruction. UGC has mentioned Computer Society of Sri Lanka (CSSL) as the ICT Degree Program Accreditation body. This degree program is designed based on the "Degree Specialization and Course Module" Guideline of CSSL with the vision of fulfilling the gap between the industrial requirements and the competencies of graduates with more focus on applications of modern technologies in Information and Communication Technology.

Students Enrolment

3.2 Admission Requirements

Admission to the study program of the Faculty of Technology are strictly under the general admission policy implemented by the University Grant Commission of Sri Lanka (UGC) and all applicants for the admission to this degree program must satisfy the general admission laid down by the UGC.

3.2.1 Bachelor of Biosystems Technology Degree Program

The students who passes GCE Advanced Level Examination in Technology stream including the subject of Biosystems Technology will be enrolled for this degree program offered by the Department of Biosystems Technology. At least "S" grades for Biosystems Technology, Science for Technology and for third subject from among; Economics, Geography, Home economics, English, Communication and Media studies, Information and Communication Technology, Arts, Business studies, Agricultural Science, Accountancy and Mathematics.

3.2.2 Bachelor of Information and Communication Technology Degree Program

The students who passes GCE Advanced Level Examination in Technology stream including the subject of Information and Communication Technology will be enrolled for this degree program offered by the Department of Information and Communication Technology.

3.2.3 Admission of Foreign Students

Foreign students are accepted for the degree programs under the guidelines decided by the UGC and on approval of the senate of the university.

3.3 Semester System

The Faculty of Technology offers Honours degree of four (04) academic years. The study program is based on a semester system. An academic year comprises of two (02) semesters. A semester consists of 15 weeks of academic activities.

15 weeks	Academic Activities
1 week	Mid-Semester Vacation
2 weeks	Study Leave
3 weeks	End-semester Examinations (ESE)

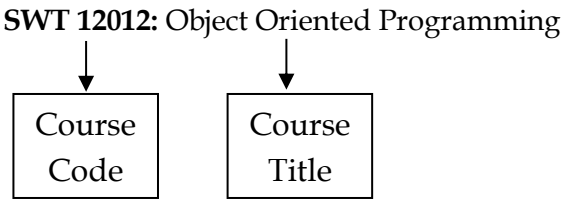
3.4 Medium of Instruction

The medium of instruction is **English.**

3.5 Course Unit System

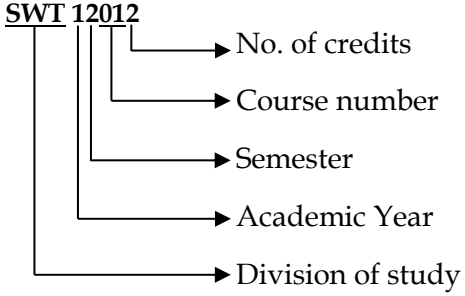
The degree program is conducted on a course unit system where each course is assigned credit(s) to indicate its relative weight within the degree program. The credit value of a course is indicated by the last numeral of the course code. One credit unit is equivalent to either 15 hours of lectures or 30 to 45 hours of practical/field or industry visits. The credit weight of a course unit may be one, two or more based on the lecture or practical hours.

3.6 Course Unit Notation



A particular course code is denoted by an alphanumeric notation. The code consists of five (05) numerals prefixed by three (03) letter code. The three (03) letter code refers to the division of study where the particular course belongs. The 1st numeral denotes the year, the 2nd numeral denotes the semester, the 3rd and 4th indicate the number assigned to the course unit by the respective division of study and 5th is the number of credits allocated for the course. Course title is the name of the course indicated after the course code.

Example: **SWT 12012**



N.B: For course SWT40016 and NST40046 conducted by Department of ICT, the 2nd numeral zero (0) indicates that the course will be carried out for both 1st and 2nd semester of that academic year.

Biosystems Technology laboratories

3.7 Pre-academic term

Prior to the commencement of the academic program, a pre-academic term (Induction, English and Computer Applications) is scheduled to prepare the students for more effective learning in the academic program and the Faculty board will decide the duration of pre- academic term.

3.8 Curriculum of Bachelor of Biosystems Technology

The curriculum of the degree program has been developed in such a manner to fulfill the gap between the industrial requirements and the competencies of graduates with more focus on applications of modern technologies in Biosystems under five major divisions as given in Table 3.8.1.

Table 3.8.1 Major divisions of Department of Biosystems Technology

Division	Code
Animal and Aquatic Science and Technology	AAT
Agricultural Economics and Entrepreneurship	AEE
Biosystems Engineering	BSE
Crop Science and Technology	CST
Food Science and Technology	FST

3.8.1 Structure of Academic Program

The program comprises eight academic semesters offered over four academic years; with the first two academic years of Common Program followed by last four semesters of Majoring Program. It comprises two compulsory Industrial Training

programs and other academic activities such as field studies, group works, and Technology/Innovation Project in the academic program.

Table 3.8.2 shows the overall mapping of the BBST degree program. It illustrates the number of credits gained from core courses, auxiliary courses and elective courses in each semester. The minimum total number of credits at the completion of the degree program is 120.

Table 3.8.2: Overall mapping of the BBST degree program

Program	Year	Semester		Credits		
				Core	Auxiliary	Elective (Total available)
Common Program	1	1		17 C	3 A	
		2		18 C		
	2	1	Industrial training (General)	6 C		
		2		14 C	6 A	
Majoring Program	3	1		14 C		8 E (16 E)
		2		14 C		8 E (14 E)
	4	1	Industrial training (Majoring area)	6 C		
		2	Research/innovation/system/product development project	6 C		
Total Core, Auxiliary and Elective credits				95	09	16
Total credits				**120**		

3.8.2 Core, Auxiliary and Elective Course Units

The Semester course units can be Core (C) or Auxiliary (A) and/or Elective (E). The students are required to complete course units that are compulsory for a given degree program. In addition to the compulsory course units, students are required to complete auxiliary course units, elective course units on languages and elective course units from their majoring division or any other division recommended by the academic advisor to gain the required total number of credits of the semester during the majoring program.

3.8.3 Industrial Exposure Visit

As a component of the BBST academic program, students shall be visiting numerous industries in their first year first semester to boost his/her industrial exposure and acquire latest state of the art technologies. The industrial exposure visit shall be continuous (up to 1 week) and the participation of the students is mandatory within the stipulated semester. The places of visit shall be decided by DBST upon the approval of Faculty board.

3.8.4 Field Studies and Training programs

As a component of the BBST academic program, students field studies and various training programs have been incorporated in their curriculum. Students shall be visiting to model farms, research stations private sector industries and related sites to boost their practical knowledge and acquire up to date information in their relevant courses. The field visit shall be coordinated by lecturer in-charge in DBST upon the approval of Faculty board.

3.8.5 Industrial Training

Two industrial training programs are designed in the second academic year first semester and the fourth academic year first semester. Each training shall be continuous for not less than 20 weeks and student are required to complete his/her training within the stripulated time frame. Sitting all the previous examinations of all the semesters is a pre-requisite to be eligible to register for the course unit "industrial training". Student should successfully complete both training

programs to be eligible for the award of the degree. The training programme is streamelinned and monitored by internal supervisors and external supervisor. The internal supervisor is / are appointed by the faculty board upon the approval of Senate to provide guidelines on student's training and deemed to visit their training places at least once in order to monitor and evaluate student's performance. In addition,the external supervisor from the industry is assigned to provide training and monitoring during student's training peroid. Each student shall receive a recordbook prior to the commencement of industrial training in which he / she should maintain daily activities in their relavent industries certified by the external supervisor.

3.8.6 Common Program

The common program conducted in the first two academic years is compulsory for all students of BBST degree program. The modules of the common program are shown in Tables 3.8.3-3.8.6.

Table 3.8.3: The modules offered in First year First semester

Course Code	Course Title	Credits	L (h/w)	P/FS (h/w)	T (h/w)	CA %	ESE %
AAT 11012	Introduction to Animal Husbandry and Biosystems	2 C	1.5	5/7	-	30	70
AAT 11022	Introduction to Fisheries	2 C	1.5	5/7	-	30	70
AEE 11012	Principles of Economics	2 C	1.5	5/7	-	30	70
BSE 11012	Basics of Soil Science	2 C	1.5	3/2	2/7	40	60
BSE 11022	Hydrology and Meteorology	2 C	1.5	5/7	2/7	30	70
BSE 11031	Mathematics for Technology	1 C	1	-	1/2	30	70
BSE 11042	Principles of Irrigation	2 C	1.5	5/7	-	30	70
CST 11012	Introduction to Crop Science and Biosystems	2 C	1.5	3/2	-	40	60
FST 11012	Introduction to Food Science and Nutrition	2 C	1.5	3/2	-	30	70
CCT 11012	English I	2 A	2	-	-	30	70
CCT 11021	Second Language (Tamil)	1 A	1	-	-	30	70
CCT 11031	Second Language (Sinhala)						
Total		**17 C + 3A**					

CCT – Common courses for technology, C- Core, A- Auxiliary, E- Elective, L- Lecture, h- hour, w – week, P – practical, FS - Field study, T-Tutorial, CA- Continuous Assessment, ESE- End Semester Examination

Table 3.8.4: The modules offered in First year Second semester

Course Code	Course Title	Credits	L h/w	P/FS h/w	T h/w	CA %	ESE %
AAT 12012	Principles of Animal Nutrition and Feed Technology	2 C	1.5	1.5	-	30	70
AEE 12012	Principles of Agribusiness Management	2 C	1.5	1.5	-	30	70
AEE 12022	Extension for Agricultural Technology Transfer	2 C	1.5	1.5	-	40	60
BSE 12013	Environment Management Technology	3 C	2	2	2/7	30	70
BSE 12021	Product Design and Workshop Practices	1 C	1/3	1.5	-	60	40
BSE 12031	Field Surveying and Levelling	1 C	1/3	1.5	-	60	40
CST 12013	Agricultural Field Crop Production	3 C	2	2	2/7	40	60
FST 12012	Food Processing Technology	2 C	1.5	1.5	-	40	60
CCT 12012	Occupational Health and Safety	2 C	1.5	1.5	-	40	60
Total		**18 C**					

CCT – Common courses for technology, C- Core, L- Lecture, h- hour, w – week, P – practical, FS - Field study, T-Tutorial, CA-Continuous Assessment, ESE- End Semester Examination

Table 3.8.5: The modules offered in Second year First Semester

Course Code	Course Title	Credits	L h/w	P/FS h/w	T h/w	CA %	ESE %
CCT 21016	Industrial Training - General	6 C	-	-	-	50	50
Total		**6 C**					

CA includes propress report and feedback from external supervisor
ESE includes presentation and final report

Table 3.8.6: The modules offered in Second year second Semester

Course Code	Course Title	Credits	L h/w	P/FS h/w	T h/w	CA %	ESE %
AAT 22012	Dairy Farming Technology	2 C	1.5	1.5	-	30	70
AEE 22012	Introduction to Agricultural Marketing	2 C	2	-	2/4	30	70
BSE 22012	Soil Nutrient Management	2 C	1	1.5	2/7	40	60
CST 22012	Climate Change and Agricultural Sustainability	2 C	1.5	1	2/7	30	70
CST 22022	Statistics for Biosystems Technology	2 C	1.5	1	2/7	30	70

CST 22032	Genetics and Plant Breeding Technologies	2 C	1.5	1	2/7	30	70
FST 22012	Food Law and Quality Assurance	2 C	1.5	1.5	-	30	70
CCT 22012	Introduction to Conflict Resolution and Sustainable Peace	2 A	-	-	-	30	70
CCT 22022	Psychology for Life	2 A	2	-	2/3	30	70
CCT 22032	English II	2 A	-	-	-	30	70
Total		**14 C + 6 A**					

CCT – Common courses for technology, C- Core, L- Lecture, h- hour, w – week, P – practical, FS - Field study, T-Tutorial, CA-Continuous Assessment, ESE- End Semester Examination

3.8.7 Majoring Program

Students may specialize in a field with strong commitment to a particular technology division from third year onwards and it allows a student to peruse an in-depth study in a particular division of study in DBST. The Department offers the following majoring division *viz* Agricultural Economics and Entrepreneurship (AEE), Animal and Aquatic Science and Technology (AAT), Biosystems Engineering (BSE), Crop Science and Technology (CST) and Food Science and Technology (FST).

Criteria for Selection of the Majoring Division

- A student who has not successfully completed the first three semesters in the common program will not be permitted to register for the fifth semester (majoring program) until the SGPA and grade in each of the first three semesters are improved as required.

- Student is considered to have completed a semester successfully only if he/she has achieved a SGPA of 2.00 or above, and has, in that semester no E grade and no more than three grades at the level of C-, D+ or D.(Note: E grade will be included in calculating SGPA)

- Grades C-, D+, D or E which can be improved to grade C are consired for calculating semester grade point Average (SGPA).

- Admission to each field is limited and determined by the Department on the recommendation of the particular division based on the availability of facilities to commensurate with quality standards.

- While a place in at least one of the majoring division is assured for every student who has successfully followed the Common Program, it may not be possible to accommodate every student's first choice of field.

- Streaming of a student into a majoring division is based on available positions under different fields, his/her preference and performance in the Common Program (GPA). Department shall be offering a majoring program only if a minimum number of applicantions (at least 10) are received.

- In situations where the number of applicants for a majoring division exceeds the number of places available in the majoring. concerned, the places would be allocated based on the Grade Point obtained at his/her first attempt in the Common Program modules of the division of his/her interest.

- Transfer from a majoring division would be permitted only in case when a student may be offered a placement in the field of a preferred choice due to a vacancy available therein. Such a transfer would only be permitted within two weeks of commencement of first semester of third year on the approval of the faculty board.

Course structure of majoring program

Tables 3.8.7 – 3.8.10 illustrate the compulsory and elective subjects during the majoring program. The modules of the majoring program are subjected to change by the Faculty board with the approval of the Senate.

Table 3.8.7: The modules offered in Third year First semester

Course Code	Course Title		L h/w	P/FS h/w	CA %	ESE %
AAT 31012	Captive Breeding and Aquaculture	2 C	1.5	1.5	30	70
AEE 31012	Research Methods	2 C	1.5	5/7	40	60
AEE 31022	Introduction to Entrepreneurship	2 C	1.5	5/7	40	60
BSE 31012	Human Factors Engineering for Technology	2 C	1	2	40	60
CCT 31012	ICT Applications in Biosystems	2 C	2	-	60	40
CST 31012	Statistical Designs and Experiments	2 C	1	2	30	70
FST 31012	Microbiology for Biosystems Technology	2 C	1.5	1.5	30	70

FST 31022	Post-Harvest Technology for Fruits and Vegetables	2 E	1.5	1.5	30	70
AAT 31022	Animal Breeding Technology	2 E	1.5	1.5	30	70
AAT 31032	Technology of Bee Keeping	2 E	1.5	1.5	30	70
AEE 31032	Agricultural Value Chain Management	2 E	1.5	5/7	40	60
AEE 31042	Agricultural Finance	2 E	1.5	5/7	40	60
BSE 31022	Soil Conservation Technology	2 E	1.5	1.5	30	70
BSE 31032	Process Control and Automation	2 E	1	2	30	70
BSE 31042	Agricultural Machinery and Automation	2 E	1	2.5	30	70
CST 31022	Integrated Pest Management	2 E	1.5	1	30	70
CST 31032	Plant Genetic Engineering	2 E	1.5	1	30	70
CST 31042	Technology for Protected Agriculture	2 E	1.5	1	30	70
CST 31052	Urban Agriculture Technology	2 E	1	2	30	70
FST 31032	Post-Harvest Technology for Cereals	2 E	1.5	1.5	30	70
FST 31042	Food Chemistry and Food Analysis	2 E	1.5	1.5	40	60
Total		**14 C + 8 E**				

CCT – Common courses for technology, C- Core, A- Auxiliary, E- Elective, L- Lecture, h- hour, w – week, P – practical, FS - Field study, T-Tutorial, CA- Continuous Assessment, ESE- End Semester Examination

Table 3.8.8: The modules offered in Third year Second semester

Course Code	Course Title	Credits	L h/w	P/FS h/w	CA %	ES E %
AEE 32012	Project Management in Biosystems	2 C	1.5	1.5	40	60
AEE 32022	Human Resource Management	2 C	1.5	5/7	40	60
BSE 32012	Energy Management Technology	2 C	1.5	1.5	30	70
CCT 32012	Project Proposal Formulation and Scientific Writing	2 C		-	30	70
CCT 32022	Professional Skills	2 C		-	30	70
CST 32012	Nanotechnology for Biosystems	2 C	1.5	1.5	30	70
FST 32012	Hygiene in Food Industry	2 C	1.5	1.5	30	70
AAT 32012	Poultry Farming Technology	2 E	1.5	1.5	30	70
AAT 32022	Goat and Sheep Farming Technology	2 E	1.5	1.5	30	70

AEE 32032	Innovation and Entrepreneurship	2 E	1.5	5/7	30	70
BSE 32022	Water Resources Development Technology	2 E	1.5	1.5	30	70
BSE 32032	Wood and Fiber Technology	2 E	1.5	1.5	30	70
BSE 32042	Remote Sensing and GIS Applications in Biosystems	2 E	1.5	1.5	30	70
CST 32022	Plantation Crop Production	2 E	1.5	1.5	30	70
CST 32032	Plant Tissue Culture	2 E	1	2	30	70
CST 32042	Horticulture and Landscape Management	2 E	1.5	1.5	30	70
CST 32052	Organic Farming and Food Certification	2 E	2	-	30	70
CST 32062	Bioinformatics	2 E	1.5	1.5	30	70
FST 32022	Food Packaging Technology	2 E	1.5	1.5	30	70
FST 32032	Food Product Technology	2 E	1.5	1.5	30	70
FST 32042	Sensory Evaluation and Food Product Innovations	2 E	1.5	1.5	30	70
Total		**14 C + 8 E**				

Table 3.8.9: The modules offered in Fourth year First semester

Course Code	Course Title	Credits	L h/w	P/FS h/w	CA %	ESE %
CCT 41016	Industrial Training – Majoring Field	6			100	-
Total		**6 C**				

Table 3.8.10: The modules offered in Fourth year Second semester

Course Code	Course Title	Credits	L h/w	P/FS h/w	CA %	ESE %
AAT/AEE/BSE /CST/FST 42016	Research project / Innovation project/ Business project / Systems development /Products development	6 C			100	-
Total		**6 C**				

AgroTech park

3.8.8 Course Units

Animal and Aquatic Science and Technology Division

AAT 11012 Introduction to Animal Husbandary and Biosystems

Domestication and history of animal husbandry, Classification and Distribution of Important Breeds of Cattle, Sheep, Goats, Swine and Poultry, Management Practices in Sri Lanka, Behaviour and Handling of Animals, Animal Product Technologies, Feed and Nutrients management, Pest and Disease management, Intensive and Extensive Management systems, Livestock Farm visit.

AAT 11022 Introduction to Fisheries

History of Fishing Industry in Sri Lanka, fish production, gear types, fishing crafts; Type of Fisheries carried out – marine, brackish and fresh water, Capture and Culture, for Food and nutrition and ornamental purpose, coastal, offshore and deep sea, international waters, subsistence, commercial and recreational; Fishing fleet, type of craft used in fisheries – traditional, mechanized traditional, dugouts, rafts, boats powered with inboard & outboard motors, sail and oars, multiday and day boats; Type of fishing gear practice in catching fish – simple traditional, modern gears, active and passive gear types, fishing techniques and tactics; Open access to fishery resource management for sustainable development; Law, treaties, conventions applicable to Sri Lankan fishing industry; Major problems encountered in fishing industry in the island; Importance of fishing industry of the island; Potential for development of fishing industry (marine, brackish and fresh water) in the island; Present Global and National scenarios.

AAT 12013 Principles of Animal Nutrition and Feed Technology

Digestive system, Importance of nutrients in animal production and health, Composition of animal body, Importance of minerals (major and trace elements) and vitamins, their requirements and supplementation in feed, Measures of feed

energy and their applications; Protein evaluation of feeds: Measures of protein quality in ruminants and non-ruminants; Methods adopted for arriving at energy and protein requirements; Common feeds and fodders; General principles of computation of rations; Feeding standards, formulation of rations and feeding of dairy cattle and buffaloes; limiting nutrients and strategic feeding of high yielding ruminants, concept of by-pass nutrients, Formulation of ration and feeding of goat and sheep; Feeding standards, their uses and significance with reference to poultry, feeding of poultry; Preparation, storage and conservation of livestock feed through silage and hay; Harmful natural constituents and common adulterants of feeds and fodders; Feed additives in the rations of livestock and poultry; Antibiotics and hormonal compounds and other growth stimulants, and their uses.

AAT 22012 Dairy Farming Technology

Development of dairy industry in Sri Lanka and world, Selection of high quality animals, Important dairy breeds of indigenous and exotic cattle and buffaloes. Housing, rearing systems and cow comfort, Body condition scoring and grouping, Calf rearing different methods, Management of dairy heifers and bull calves, Care of pregnant animals during and after parturition, Management and care of milking stock, dry stock and breeding bulls, Cleaning and sanitation of dairy yard premises & facilities, sanitation practices for dairy equipment, safety, hazards, hazards prevention, Clean milk production, principles of milking, milk recording, records essential to good herd management, Milk secretion, transport of animals by roads and rail, Disease management of nutrition-related diseases; ketosis and fatty liver, acidosis, milk fever, displaced abomasum (DA) and metritis, laminitis, Herd health and biosecurity; johne's, BVD, pinkeye, ringworm, heat stress, Waste management, Introduction to dairy plant design and layout, Space requirements for dairy plants, estimation of service requirements, Arrangement of equipment, milk piping, material handling in dairies, Precision dairy farming.

AAT 31012 Captive Breeding and Aquaculture

History of aquaculture and captive breeding in Sri Lanka, Present global and national scenario, Principles of aquaculture and captive breeding, Food fishery and ornamental fishery, Aquaculture vs. agriculture, Systems of aquaculture – monoculture & poly culture, pen culture and cage culture, fin fish and shell fish, Criteria for selection of fish species for aquaculture for both food and ornamental purposes, Pollution controlling methods practice in aquaculture fishery, Fishing crafts and gears practice in reservoir fishery of Sri Lanka, Economically important aquatic resources of Sri Lanka, Major culture fishery practices in Sri Lanka – prawn farming, sea bass culture, Captive breeding practices in Sri Lanka – seasonal tank, perennial tank fish stocking program, Ornamental fish farming, aquatic weeds and aquatic plant production, Integrated, animal-fish mixed cropping systems, Problems encountered in Captive breeding and aquaculture in Sri Lanka, Potential for development of culture fishery and captive breeding in Sri Lanka, Fish diseases and Control in culture fishery, Institutional framework applicable for reservoir fishery and aquaculture, Legal framework in place for development and management of captive and culture fishery in respect of fresh water fishery.

AAT 31022 Animal Breeding Technology

History of animal breeding, Anatomy of reproductive system in cattle/Buffalo, Breeding/selection techniques for optimal production, Bases of selection of individual, pedigree, family, sib, progeny and combined, Indirect selection, multitrait selection, Classification of mating systems, Inbreeding and out breeding, Systems of utilization of heterosis, Breeding methods for the improvement of dairy cattle and buffaloes, Conservation of germplasm, Current livestock and poultry breeding programs in Sri Lanka, Artificial insemination – definition, advantages & disadvantages, evolution of semen, collection of semen, dilution of semen, preservation of semen, handling & storing of semen, Bio-techniques in animal reproduction - A.I. –Time, technique, super ovulation, oestrus synchronization, ETT, Cloning.

AAT 31032 Technology of Bee Keeping

Introduction to Apiculture - scope, importance, Species of honey bees - indigenous, exotic - basic concepts of morphology, Life cycle of honey bees - seasonal management of colonies - swarming desertion - control measures, Honey - its medicinal properties - application in various fields - other valuable by products of honey bees, Bee keeping equipment - introduction to types of bee boxes - BIS standard Tools used in apiculture bee breeding multiplication of colonies - Queen reaching technique, Honey extraction & handling - Quality control standards - Honey testing kit, Processing of honey, Diseases of Honey Bees - Preventive and Control measures-Sac brood virus, Thai sac, brood virus, Nosema, American foul brood, European foul brood, Economics of beekeeping.

AAT 32012 Poultry Farming Technology

Origin and domestication of poultry species, Digestive and reproductive systems of poultry birds, Breeds of poultry, selecting poultry, genetic selection of poultry, Principles and methods of incubation, breeding, feeding, rearing and housing of poultry, Commercial table egg production systems: conventional and "cage-free", marking of eggs and birds, Broiler production, broiler chickens: conventional and "free-range", Hatching egg (breeder) production systems for laying hens, broiler breeders, Hatchery operations and management, Cleaning and sanitation of poultry premises and facilities, sanitation practices for equipment, safety, hazards, hazards prevention, Poultry disease management, antibiotics, biosecurity, Organic production, Facilities and equipment, Waste management, Introduction to poultry plant design and layout, Space requirements for poultry plants, estimation of service requirements.

AAT 32022 Goat and Sheep Farming Technology

Historical perspective of sheep and goat production, Breeds of sheep and goats, Selection and Evaluation, Meat performance of sheep and goat -- growth, carcass value, meat quality, Milk performance of sheep and goats: milk

production, milk quality, factors influencing production and performance, Sheep wool, production and quality of sheep wool, Sheep and goat feeding and nutrition, Diseases and parasite management, Housing, rearing systems, Goat and sheep housing design and layout, Cleaning and sanitation of goat and sheep yard premises and facilities, sanitation practices, equipment, safety, hazards, hazards prevention, Breeding programs in goat and sheep breeding.

Agricultural Economics and Entrepreneurship Division

AEE 11012 Principles of Economics

Nature, Definitions, Scope and importance of economics, Economics as a science, Basic micro-economic concepts, Theories of consumption, Production and markets, Pricing of products and factors of production, Profit maximization and cost, Indifference curve; Budget line, Marginal rate of substitution, Consumer's equilibrium, Theory of demand and supply, Monopolistic competition, Nature and Scope of Macro Economics, National Income, Elements of National Income, Theory of Income Determination, Consumption Function, Investment and Savings, Money and Inflation, IS & LM frame work, Monetary policy - Fiscal policy, Business/Trade cycles.

AEE 12012 Principles of Agribusiness Management

Introduction to Agribusiness and Entrepreneurship, Farm Management, Rural Farm Products and market Conceptualization, Problems and Potentials of Agribusiness: Identification of Opportunities, Data Collection, Business Plan Development, Marketing Strategies, Organizational and Financial Planning: Strategic Approaches, Risk Analysis and Financial Accounting, Agriculture Value Chains: Value Addition and Product Diversification, Small and Medium Enterprises: Concepts, Development, Management, Technology for Business Management, Agribusiness Models and Applications, Managerial Decision Making.

AEE 12022 Extension for Agricultural Technology Transfer

Introduction to Agro Extension Mechanisms, History and Present Status, Stakeholders, Basic Concepts and Principles of Rural Sociology, Rural Communities and Institutions, Social Stratification Changes, Traditional Knowledge and Extension Needs, Need for Extension for Agro-technology, Survey on Extension Needs, Concepts of Technology Transfer, Agencies for Technology Transfer, Use of Mass Media for Communication in Extension, Skills Development for Agricultural Machinery and Technology, In-Service Training Needs and Programs, Farmer Participation and Resolving Field Problems.

AEE 22012 Introduction to Agricultural Marketing

Introduction to Value Addition in Agriculture, Consumer and Stakeholder Need Analysis for Demand in Value Added Products, Value Addition and Product Development, By-products and Value Addition, Marketing Tools of Value Added Products, Assessment of Technical Feasibility for Value Addition, Technology for Value Addition, Financial and Economic Sustainability for Value Addition, Case Studies.

AEE 31012 Research Methods

Developing a hypothesis, A research problem and related questions, Framing the problem with the correct research methodology, Collecting data that accurately addresses the research problem, Measuring the effectiveness of a program, Using data to make decisions, Providing technical guidance to contractors for inclusion in contract documents related to research projects, Evaluating feasibility of research proposals, Presenting data to support programs to decision makers and other consumers.

AEE 31022 Introduction to Entrepreneurship

The role of entrepreneurship and small business, The Small Business Decision, Personality charac teristics of successful entrepreneurs, Individual assessment of interests, skills, and personality traits, Is entrepreneurship a good fit for you?, Advantages and disadvantages of small business, ownership, Evaluation of a New Business Opportunity, Critical factors for success, Sources of ideas for new ventures, Researching the opportunities, Screening the opportunities, Import/Export and Licensing opportunities and their implementation requirements, Preparing for Small Business Ownership, Sources of funding, Sources of support and resources, Developing the Business Plan.

AEE 31032 Agricultural Value Chain Management

Importance of Supply Chain Management and Marketing. Materials and Distribution Management, Marketing Channels and Logistics, Demand Forecasting and Forward Planning, Information Collection and Analysis, Inventory Planning and Supply Chain Management, Decision Making on Source, Transport, Price in Supply Chains, Retail Management, Marketing Strategy, Marketing Research, Marketing Intelligence and Consumer Behavior, Advertising and Promotion Management, Electronic Commerce, International Marketing, Strategic Logistics Management, Case Studies.

AEE 31042 Agricultural Finance

Introduction to the Course, Concept and Scope of Agricultural Finance, Scope of Agricultural Finance as a field of Study in Agricultural Economics, Basic Concepts of Credit) introduced, Needs and Roles of Credit in Agricultural Development Sources of Agricultural Finance, Decision Criteria in Agricultural Investment, Factors affecting supply and effective use of Credit, Classification of Credit, Credit Assessment: (The 5Cs of Credit). Project and Economic Development: Project Cycle Determination of project Needs Criteria for selection of projects, Project Appraisal, Monitoring and Evaluation, Project Re-financing.

AEE 32012 Project Management in Biosystems

History of Project Management and Introduction, Project Management Life Cycle, Project Management Standards, Project Manager and Team Building: Domains, Tasks, Knowledge and Skills, Project Initiation, Project Planning: Scope, Work Structure, Schedule Development, Resource Planning, Risk Assessment, Project Appraisal and Changing Scope, Project Execution, Monitoring, Controlling and Evaluation, Communication of Project Performance, Case Studies.

AEE 32022 Human Resource Management

Introduction to HRM: HRM Activities and Roles, Human Resource Policy and Legal Requirements, Ethics, Standards and Concepts of Safe Work Environment, Recruitment and Selection, Orientation and Training, Performance Management, Motivation and Incentives, Communication in HR Management, Work Environment and Relationship Management, Human Resource Auditing, Organizational Behaviour and Development, Career and Professional Development.

AEE 32032 Innovation and Entrepreneurship

Importance of Business Innovations in Agriculture, Innovation Models and Business Development, New Technologies and Product Platforms, Market Opportunities and Production Diversification, Building Innovation Networks, Innovation Capabilities in Farmer Organizations and Rural Community Organizations, Education and Training for Innovative Capacity Development, Extension and Advisory Services for Agriculture Innovations, Public-Private Partnerships for Innovations and Entrepreneurship, Intellectual Property Rights and Legal Support for Innovations.

Biosystems Engineering Division

BSE 11012 Basics of Soil Science

Soil as a natural resource and a medium for plant growth, Soil physical, Chemical and Biological properties, Soil water: types of soil water, Water Potential, Soil organic matter: decomposition and accumulation, organic soils, use of organic

matter, Soil classification: Particle size classification, Textural classification and Soil taxonomy, Soils of Sri Lanka, Soil survey and land use interpretations: making a soil survey, soil survey interpretations, soil surveys and agro technology transfer.

BSE 11022 Hydrology and Meteorology

Hydrologic cycle and its components, Measurements of Hydrologic cycle components: Precipitation, Evapo-transpiration, Infiltration, Runoff, Types and forms of precipitation. Storms, occurrence, variation and measurement of rainfall. Rain guages, Computation and analyses of data. Plotting of mass curve and rainfall, intensity curve. Run-off- Definition, types, factors affecting, estimation and measurement of runoff, Runoff analysis, Weather, climate and micro-climate, Elements of weather and climate, Earths' atmosphere: Composition and structure, Formation and classification of clouds, weather forecasting for agriculture, Introduction to monsoons, rainfall seasons, Climate Zones, Agro-Climatic Zones in Sri Lanka. Field studies

BSE 11031 Mathematics for Technology

Basic Algebra: Real numbers: Rational and irrational numbers, fractions, percentage, ratio, powers, reciprocals, surds. Solving equations with algebraic fractions, Algebraic equations - Trial and improvement method, Simultaneous linear equations, Quadratic equations - factorization method, completing the square method, Graphs: linear graphs, quadratic graph, solving equations by graphical method. Inequalities, graphical inequalities, **Trigonometry:** Measurement of angles, trigonometric ratios of angles from 0 to 360 degrees, application of elementary trigonometric functions, sine and cosine rules, solving triangles. **Geometry:** Circles, cylinders, spheres, cones.

BSE 11042 Principles of Irrigation

Soil Moisture constants. Water requirement of crops and factors affecting it. Effective rainfall, Leaching requirement, Intensity and Frequency of Irrigation, Irrigation Efficiencies. Approaches of irrigation scheduling. Systems and methods of irrigation. Quantity and quality of irrigation water. Measurement of irrigation water. Elementary idea of drainage on farms. Land Grading and Drainage for Irrigation. On farm conveyance. Gravity application Methods. Pressurized application systems. Pumping techniques, automatics of pumping stations, subsurface irrigation network. Visit to irrigation and drainage projects.

BSE 12013 Environment Management Technology

Introduction to Environment Management; Sustainable Development in Environment Management; Natural Resource Management and Biodiversity Conservation; Environmental pollution: Water, Air and Land Pollution, sources of pollution, harmful effects and pollution control technologies; Solid Waste Management: Solid Waste and Its Composition, Steps in Solid Waste Management, Methods of Waste Disposal: Landfilling, thermal treatment, biological treatments; R concepts and waste management pyramid; Drinking water and wastewater treatment: Drinking Water Treatment, Drinking Water Quality Monitoring, Wastewater Treatment Technologies: Classification of Treatment Processes, Sludge Treatment, Disinfection of Wastewater, Tertiary and Advanced Wastewater Treatment; Hazardous Waste Management: Definition of Hazardous Waste, Effect on Health, Treatment, Storage, and Disposal Facilities, Creation of Treatment, Storage, and Disposal Facilities;

BSE 12021 Product Design and Workshop Practices

Introduction to product design, CAD, Workshop terminology; ferrous and non-ferrous metals, steel and alloy steels, light alloys and non-ferrous heavy metals, heat treatment, case hardening, corrosions, Plastics, glue, grease, paint, varnish and lacquers. Carpentry: Timber classification and use of tools in carpentry, Fitting: Description and use of files, chisels,

hacksaw, vices, hammers and other measuring marking tools, precision measuring tools, dial gauges and inspection gauges. Machine Job: Classification and description of lathe machine, milling, drilling and grinding machine, special purpose machines- Turret and Capstan –Lathes, Welding Job: Types of welding oxyacetylene gas welding, electric arc welding, argon arc welding, MIG and TIG welding, resistance welding, Safety, precautions.

BSE 12031 Field Surveying and Levelling

Overview of plane surveying (chain, compass and plane table), Objectives, Principles and classifications, Distances and direction, Levelling and contouring, Computation of areas and volumes, Theodolite, Curves: Types of curves, design and setting out – simple and compound curves, Introduction to geodetic surveying, Total Station and Global positioning system.

BSE 22012 Soil Nutrient Management

Soil fertility, Problematic soils: acid, salt affected and calcareous soils, and their characteristics. Reclamation of soil: mechanical, chemical and biological methods. Soil fertility evaluation. Methods of soil testing: Chemical methods, critical levels of different nutrients in soil. Types and roles of organic manures. Fertilizers-Classification of fertilizers with nutrient content. Methods of fertilizer application. Type of bio-fertilizers and their potential. Merits and constraints of bio-fertilizer use. Precautions for the use of bio-fertilizers. Fertilizer recommendation. Soil test based fertilizer recommendations to crops. Factors influencing nutrient use efficiency (NUE) in respect of N, P, K, S, Fe and Zn fertilizers. Source, method and scheduling of nutrients for different soils and crops grown under rain fed and irrigated conditions. Balanced plant nutrient (BPN) concept, Integrated nutrient management (INM).

BSE 31012 Human Factors Engineering for Technology

Introduction to Ergonomics and Human Factors Engineering, Intro to Musculoskeletal System, Work Physiology, Performing an Ergonomics Risk Assessment, Work Related Musculoskeletal Disorders/Manual Material Handling-Workplace Analysis/Control Strategies and Survey Methods cont. RULA, REBA, and JSI in action, Human Error, Accidents, and Safety, Mental Workload, Working posture, Seat designing for tractor, Seat Design parameters, Controls of the machine,

BSE 31022 Soil Conservation Technology

Land degradation, soil erosion, Sediment transport, Soil erodibility and erosivity, Universal soil loss equation and application, Biological soil conservation measures, Mechanical soil conservation measures, Conservation farming practices.

BSE 31032 Process Control and Automation

Introduction to automated process control systems, applications, Sensors and Actuators, Microprocessors/and micro controllers, Computer control basics and PLCs, Control algorithms and programming, Circuit assembly using bread boards, Interfacing transducers, actuators, LCDs and key pads, PIC and Arduino programming, Stepper motors (bipolar, unipolar), servo motors.

BSE 31042 Agricultural Machinery and Automation

Introduction to Agricultural Machinery and Technology, Basic Farm Implements, Designs, Working Principles, Operations, Maintenance, Site specific Machinery Selection for Farm Operations: Land Preparation, Planting and Seeding, Fertilizer Distribution, Weed Control, Harvesting, Machinery for Postharvest Operations: Cleaning, Processing, Drying, Sorting, Packaging, Machinery for Animal Production: Machinery for Animal Health, Milking, Slaughtering,

Development of sensors, Control of equipments using sensors: Precision technologies for monitoring and control of agricultural systems; Applications include yield monitoring; variable rate control and sensing systems for planters, sprayers and pest pressure; electronic information transfer; automatic harvesting in greenhouse production and GPS-based vehicle guidance, Socio-economic and Management Issues Related to Farm Machinery: Safety, Proper Use, Energy and Mechanical Efficiency, Maintenance. Field visits.

BSE 32012 Energy Management Technology

Renewable and Non-renewable Energy for bio systems, Energy Sources and Farm Power in Agriculture, Alternative energy sources, Energy Conservation Technology, Energy audits, Green building, Field visits.

BSE 32022 Water Resources Development Technology

Assessment of Water Resources, Traditional Technology and Practices, Basic Hydraulics and Technology, Hydraulic Measurements, Hydrology and Dynamics, Water harvesting and Storage Structures, Water Conveyance and Related Technologies, Sustainable water resources management. Field visits.

BSE 32032 Wood and Fiber Technology

Growth and structure of trees, Classification of hardwoods and softwoods, Characteristics and properties of woods, Timber seasoning, Wood preservation, Manufactured Boards, Raw materials for papermaking and dry formed fibrous networks, The correlation between fibre and paper/fibre network properties, Influence of unit operations in fibre processing on fibre and network properties (mechanical and optical properties), Cellulose water interactions, Fibre swelling and its link to process/product properties.

BSE 32042 Remote Sensing and GIS Applications in Biosystems

Introduction to remote sensing, concepts, potentials and introduction to GIS, Electromagnetic spectrum and remote sensing windows, Arial photography and photogrammetry, Satellite remote sensing, satellite systems and orbits, Visual and digital analysis of satellite data, Field data collection, classification methodologies, Land resource mapping and interpretation, map production and map updating and use, History of GIS development, Concepts of space, Data models in GIS, Coordinate systems and map projections, Basis overlay analysis, Software and hardware for GIS, GIS databases, Agro-Ecological zone mapping, Case studies.

Crop Science and Technology Division

CST 11012 Introduction to Crop Science and Biosystems

Introduction to Plant Science and Agriculture, Plant cell ultra structures, Plant Kingdom and Classification, Origin and Development of Crop plants, Botany of Crops, Introduction to Plant physiology, Photosynthesis, Respiration, Soil, Plant and Water Relations, plant nutrition; macro, micro, beneficial nutrients, mechanisms of nutrient uptake, nutrient deficiency and toxicity, Photoperiodism in plants, Factors influencing yield, Field visit

CST 12013 Agricultural Field Crop Production

Introduction to major field crops in Sri Lanka, Tillage operations and land preparation techniques, nursery establishment, Internal seed quality parameters; seed germination, viability, vigor and dormancy, seed treatments, field planting, On-field crop management stratergies, Fertilizer and agrochemical Management, Weed Biology, herbicide formulations, Modified plant growth facilities, Soil-less culture techniques, Crop production systems: monocultures, mixed and multiple cropping, intercropping, crop rotations, Harvesting indices and harvesting techniques.

CST 22012 Climate Change and Agricultural Sustainability

Introduction to environmental impact; present status, Human activities and the consequences on climate change, Green house gases and effects on global climate, Reports on Intergovernmental Panel on Climate Change (IPCC), Free Air Enrichments experiments (FACE) and interpretations, Predicting the effects of higher temperature, rising CO_2 levels and scarce water resource and subsequent effects on C3 and C4 Crops, challenges for future crop production, Crop models, Case study: C4 Rice.

CST 22022 Statistics for Biosystems Technology

Natural variability and Statistics, Basic Inferential Statistics, Descriptive ststistics, mean median, mode, standard deviation, standard error, Frequency and Histograms, squeness, Concepts of Probability, Population and samples, Standard normal distribution, binomial distributions Analysis of variance, Correlation and regression, Non-parametric Statistics, Statistical interpretations and Decision making, Software for Experiment Data Analysis, Data analysis in spread-sheets, Data presentations, Graphs and Graphical representations, Case Studies: Handling experimental data.

CST 22032 Genetics and Plant Breeding Technologies

Principles of Plant Breeding: Historical perspective and importance of plant breeding, Fundamentals of Plant Genetics: Mendel's laws of inheritance, DNA, Gene interactions, Chromosome theory of inheritance, Chromosomal aberrations, Linkage; Domestication & Evolution of crops, Reproductive systems in crops (asexual/sexual methods), Breeding methods for cross pollinated crops and self pollinated crops, Hybrid seed production, Germplasm conservation, utilization techniques and potential uses

CST 31012 Statistical Designs and Experiments

Principles of Experimentation, Experimental Designs , Sampling techniques and methods, Analysis of Covariance, Factorial Experiments, Mean Separation, Randomized and Block Designs, Nested Designs, Software for Experiment Data Analysis, Case Studies of Experimental Data Analysis

CST 31022 Integrated Pest Management

Introduction to insects, insects structure, anatomy and physiology of insects, systematic nomenclature; Risk assessment and Crop Protection, Technologies Pest and Vector Management, Disease Outbreaks and Occurrences, Plant Protection Technologies, conventional and modern pest control methods, Policy and Legislative Mechanisms, Equipment for Pest and Disease management, Integrated Pest Management Concepts and Practice.

CST 31032 Plant Genetic Engineering

Plant genome, the molecular nature of genes, methods in molecular biology, transcription, translation, DNA replication and recombination, Techniques for plant transformation: *Agrobacterium* – mediated gene transfer, The Ti plasmids, Direct gene transfer methods, Binary vectors for plant transformation, Basic features of vectors for plant transformation, Optimisation, Clean gene technology, Application of GM technologies: The genetic manipulation of herbicide resistant crops, The genetic manipulation of pest resistance, Plant disease resistance, strategies for engineering stress tolerance, The improvement of crop yield and quality, Prospects for GM crops.

CST 31042 Technology for Protected Agriculture

Introduction to protected agriculture, Site Selection for Protected Agriculture, , Technology for Protected Agriculture, Structures and Composition of Green House, net houses and poly tunnels, Construction of Green House, net houses, poly tunnels their cost estimation, nutrient solution for soil less culture, cost benefit analysis and preparation of a budget for a greenhouse venture., Irrigation and Fertilization in Protected Agriculture, Soil and growing media for Protected

Agriculture, Selection of Crops for Protected Agriculture, Horticultural Perspectives for Protected Agriculture, Economics and Marketing.

CST 31052 Urban Agriculture Technology

Introduction to Urban Agriculture, Functionality of Urban Resource Systems for Agriculture, Environmental Considerations in Urban Agriculture, Benefits of Urban Agriculture, Vertical farming, Community Gardens and Landscaping, Poly-tunnels, Roof Gardening, Protected Houses, Aeroponics, Hydroponics, Pot Culture, Technology and Equipment for Urban Agriculture, Economics of Urban Agriculture.

CST 32012 Nanotechnology for Biosystems

Introduction to Nanotechnology and Nano Science, Nano scale Phenomena and Nano Particles, Nano Particle Synthesis and Characterization: Physical, Chemical and Biological Methods, Nano Materials and Characterization, Tools and Equipment used in Nanotechnology, Microelectronics and Sensor Systems, Nano Lithography and Nano Manipulation, Nanotechnology Applications, Case Studies

CST 32022 Plantation Crop Production

Introduction to Plantation Crops in Sri Lanka, History of Plantation Crops, Climatic and Soil Suitability for Plantation Crops, Land Management for Plantation Crops, Nursery Management and Establishment, Breeding and Vegetative Propagation of Plantation Crops, Planting Materials, Common Diseases and Pest Management, Fertilizer and Water Management, Harvesting Technologies, Processing of Major Plantation Crops, Quality of Produce and Grades of Major Plantation Crops

CST 32032 Plant Tissue Culture

Principles of plant tissue culture: plasticity and totipotency, Tissue culture Laboratory equipments and supplies, Plant growth regulators, Tissue culture media, Explant materials, Aseptic procedures, different tissue culture systems, Culture types: callus, cell-suspension cultures, Protoplasts, Root cultures, shoot tips and meristem culture, Embryo culture, Microspore culture. Micro propagation for production of planting materials of commercially important crops, Stages of micropropagation, tissue culture techniques and their applications in plant biotechnology.

CST 32042 Horticulture and Landscape Management

Introduction to Horticultural Crops (floriculture, Olariculture, fruit production, cut flowers & foliage plants), Horticulture Industry, Scope, Opportunities, Growing Media for Horticulture, Propagation techniques of Horticultural Crops, Floriculture production and Related Technologies, Introduction to landscaping and gardening, fundamentals of landscaping and gardening, materials in landscaping, maintenance of a nursery and plant propagation, establishment of a lawn, establishment of hedges and boarders, establishment of trees in landscaping, different landscaping and gardening, landscape architecture, landscape planning and designing, water in gardens, other garden structures, cost estimation and budget preparation, Floral Designing and interior decorations.

CST 32052 Organic Farming and Food Certification

Concepts of organic farming and alternative crop production; integration of crop components, integration of crop and livestock components, integrated soil fertility management, integration of plantations and/or annuals with other enterprises, livestock – livestock integration, livestock – fish integration, livestock – crop – fish integration, Organic farming and low input cropping systems; Development and management of organic farming systems; Nutrient management in organic with low input systems; Plant protection in alternative cropping; Biodynamic cropping; Research trends in organic farming; Organic farming systems in Sri Lanka; Organic certification standards: Organic certification

body of Sri Lanka, Auditing organic farm and food production, QMS of organic foods; Trends in organic food and awareness among the consumers. Marketing of organic foods.

CST 32062 Bioinformatics

Introduction to Bio-informatics, Bio-informatics problems, Biological databases, Algorithms and Analytical Tools, Information Need and Processing, Data Mining and Analysis in Biology, Experimental Data Analysis

Food Science and Technology Division

FST 11012 Introduction to Food Science and Nutrition

Fundamentals of food science and technology; Food raw material resources and food ingredient resources; Available of manufactured and processed food products; Chemical, physical and biological properties food raw materials and ingredients; Food microbiology, food spoilage and causes of food spoilage; Quality characteristics and specifications of food raw materials and ingredients; Food regulatory organizations; Common defects in food raw materials and ingredients and ways of correcting them; Procedures of purchasing food raw materials and ingredients and supplier selection. Human nutrition and digesting systems.

FST 12012 Food Processing Technology

Separation and concentration of food components; Fermentation and enzyme technology; Processing using electric fields; High hydrostatic pressure; Light or ultrasound; Pulsed electric field processing; High pressure processing; Heat processing using steam or hot water: Blanching, Pasteurization, Heat sterilization, In-container sterilization; Ultra high-temperature (UHT)/aseptic processes; Evaporation and distillation; Extrusion; Heat processing using hot air: Dehydration, Baking and Roasting; Heat processing using hot oils: Frying; Heat processing by direct and radiated energy:

Dielectric, Ohmic and Infrared heating; Processing by the removal of heat: Chilling; Controlled- or modified-atmosphere storage and packaging; Freezing; Freeze drying and Freeze concentration.

FST 22012 Food Law and Quality Assurance

National Food Act, Law and Regulations; National Standards; International Standards; Regulations including food labeling and advertisement, adulteration, food safety, food additives, dietary supplements etc.; import and export laws; Code of practices; Guidelines; Specifications; Codex Alimentarius Commission standards; World Trade Organization and other international food standards; National food regulatory systems; Food Advisory Committee of Sri Lanka; Food testing and regulatory mechanisms; Statistical process and quality control process and their applications to various food systems; Food industry inspections and audits; Role of quality controllers; Quality Management Systems: GMP, HACCP, ISO 9001, ISO 22000, ISO 17025; TQM in food industries.

FST 31012 Microbiology for Biosystems Technology

Major groups of microorganisms; Microbial actions on foods; Intrinsic and extrinsic parameters controlling microbial activity; Effects of microbial growth in foods; Microbial food spoilage; Role of microorganisms in foodborne illness; Foodborne infections and intoxications; Indices of food sanitary quality; Microbial standard and criteria; Molecular biology of microorganisms in food; Metabolic pathways for fermentation; Microbial activity and food safety; Method to enumerate, identify and characterize microorganisms in foods.

FST 31022 Postharvest Technology for Fruits and Vegetables

Present status of fruits and vegetables production and distribution in Sri Lanka; Importance of fruit and vegetables for human nutrition; Classification of fruits and vegetables; Factors affecting quality of fruits and vegetables; Post-harvest physiological and biochemical changes in fruits and vegetables; Management of field heat; Ripening of climacteric and

non-climacteric fruits; Handling and packaging of fruits and vegetables; Effect of pre harvest practices on quantitative and qualitative post-harvest losses; Methods for quality evaluation; Maturity indices; Temporary storage; Handling and transportation; Testing of physical quality parameters; Controlled ripening; Pack house operations; Minimal processing; Modified Atmosphere Packaging (MAP); Controlled Atmosphere Storage (CAS); Science based postharvest quality management systems of fruits and vegetables.

FST 31032 Postharvest Technology for Cereals

Introduction to paddy and other cereal crop production; Present situation and distribution of cereals in Sri Lanka; Cereal grains: importance, production, structure, composition, nutrition and postharvest technology; Grain grades and grading systems; Storage of cereals: methods, types, role of temperature and moisture, safe storage methods, pests and their control; Effect of pre harvest practices on quantitative and qualitative post-harvest operations of paddy and other cereal crops; Selection of maturity; Primary and secondary processing; Biochemical and nutritive changes during storage; Dry milling and grinding process; Types of grinding machines; Rice: drying, milling, parboiling; malting and brewing; Production of breakfast cereals and snack foods; Feed and industrial uses of cereals.

FST 31042 Food Chemistry and Food Analysis

Major food components: water, carbohydrates, dietary fiber, lipids, proteins, mineral elements, vitamins, colors and pigments; Reactive groups of food components; Proximate chemical analysis food materials: moisture, ash, fat and protein contents; Selected standard methods for assay of food components; Principles and methodology of both classical and instrumental techniques in food analysis; Sampling; Physical and chemical properties and analysis of foods; Chromatography: paper, thin layer; Spectroscopy: atomic emission, atomic absorption; Food additives, preservatives and toxic compounds.

FST 32012 Hygiene in Food Industry

Cleaning and sanitation; Fundamentals of cleaning and sanitizing; Detergents, disinfectants and sanitizers and their properties; Plant cleaning: soil types, methods, detergents, water conditioners; Sanitizing: chemical, heat, irradiation; Cleaning methods: CIP, dismantling cleaning; Pests: types, inspection, control; Waste management: fluid and solid wastes; Food sanitation; Spoilage and Pathogenic microorganisms; Food plant environment and sanitation; Good Hygienic Practices (GHP); Personnel hygiene; Hygienic design of food plant and environment; Hygienic design principles; Plant construction and layout for different food products.

FST 32022 Food Packaging Technology

Functions and requirements of food packaging; Food packaging systems; Different forms of packaging materials; Types and systems of closures; Metal containers; Flexible packaging materials; Interactions of packaging materials and foods; Edible and biodegradable packaging; Design of packages; Properties of food packaging; Packaging guidelines; Retail containers; Shipping containers; Factors influencing design and selection of packaging materials; Packaging equipment and machinery; Controlled Atmosphere Packaging (CAP) and Controlled Modified Packaging (CMP). Legal aspects of packaging.

FST 32032 Food Product Technology

Food resources for production; Raw materials and ingredients; Raw materials and final products specifications; Raw materials suppliers; Mutual agreements with suppliers; Fruit and vegetable product technology; Dairy product technology; Cereals product technology; Fish and meat product technology; Yam and tuber product technology; Spices product technology; Egg product technology; Process flow diagram of different products; Process condition and process control; National product standards; In-house testing parameters; Food additives and preservatives.

FST 32042 Sensory Evaluation and Food Product Innovations

Application of sensory science principles and practices to food systems; Sensory attributes; Sensory test methods and procedures; Relationships between sensory and instrumental measurements; Acceptance and preference testing; Planning, management and assessment of a product from conceptualization to launch; Trends and innovation in food markets; Sources of raw materials needed for new food processing; Product design and development; Construction of process flow diagram; Process equipment and process conditions; Thermal processing systems; Commercial sterilization; Heat penetration determination and process calculation; Heat resistant characteristics of MOs and lethality; Processes as series of unit operation; Product quality and management; Food regulatory compliance; Packaging and shelf life.

Common Courses for Technology

CCT 11012 English I

Sentence patterns and grammar structures, importance of vocabulary and subject matter glossary, summarizing, skimming and scanning of texts, listening, understanding, making notesand feedback, Computer aided Language learning, Communication, Presentation.

CCT 11021 Second Language (Tamil)

Introducing Tamil Alphabet, Constructing Simple words using the alphabet, Introducing to Nouns_ Verbs, Tenses, Adjectives and Adverbs, Simple Sentence Structures, Simple Reading and Writing Exercises, Further into Sinhala Grammar and usage, Practical Language Training, Practical Listening and Comprehension.

CCT 11031 Second Language (Sinhala)

Introducing Sinhala Alphabet, Constructing Simple words using the alphabet, Introducing to Nouns. Verbs, Tenses, Adjectives and Adverbs, Simple Sentence Structures, Simple Reading and Writing Exercises, Further into Sinhala Grammar and usage, Practical Language Training, Practical Listening and Comprehension.

CCT 12012 Occupational Health and Safety

Fundamentals of OSH; Construction safety; Safety practices related to the construction industry; Prevention of fatalities and serious injury common to this industry sector; Legal Aspects of Safety and Health; Occupational Safety and Health Administration (OSHA); Employer's legal responsibilities and proactive measures to ensure compliance with the OSH legal and regulatory framework in Sri Lanka; A systematic analysis of hazardous materials; Examination of the basic fundamental concepts common to hazardous chemicals; Developing an effective safety management system; OSH Management Systems: ISO 18001; Management of hazardous materials and wastes in the workplace; Requirements regarding labeling, handling, and transportation of hazardous materials as well as hazard communication and training in the workplace.

CCT 22012 Introduction to Conflict Resolution and Sustainable Peace

Define concepts, Historical development of the field of conflict and peace, understanding conflict, conflict sensitivity in development approaches, non-violent social movements, peace education and sustainable peace.

CCT 22022 Psychology for Life

Introduction to psychology and psychological theories, Physiological base of human behavior: Brain; Nervous system; Genes and Organs, General psychological concepts: Perception; sensation and cognition; Learning; Motivation and

emotion; intelligence; memory and forgetting, Social groups, Interpersonal relationships, Socialization, Attitudes and attitude change, Aggression and violence, Leadership, Social issues

CCT 22032 English II

Formal and informal writing, answering questions, report writing, group discussions, communication and feedback, error free sentences, short descriptions, reading and reporting on editorials, technical writing/model reports, summarizing/abstracting, social etiquette, CV writing and filling applications, facing interviews, presentation and short speeches, guided writing, communication, addressing at different fora.

CCT 31012 ICT Applications in Biosystems

Concept of programing: flow charts, program control, input and output; advanced spredsheet analysis; computer interfacing; I/O control, computer based automatic data acquisition and control; other applications in biosystems.

CCT 32012 Project Proposal Formulation and Scientific Writing

Proposal formulation and scientific writing, organization, problem identification, justification, literature review, hypothesis formulation, identification of research methods, budget, work schedule, data analysis and interpretation, presentation" Oral and Poster, effective presentation skills, handling questions, preparation of manuscripts and popular science articles.

CCT 32022 Professional Skills

Introduction to the Soft Skill Development, Communication /Interaction Skills and Interpersonal Effectiveness, Influencing Skills, Building Collaboration, Handling Conflict, Facilitating Group Interaction, Stimulating Creative Thinking in Communications, Working at Multicultural Environment, Introduction to Professional Career Development,

Introduction to Career Planning: Self-Assessment, Identifying Your Professional Talents, Introduction to Career Planning: Career Exploration, Developing Your Professional Resume, Enhancing Your Professional Resume, Preparing Your Career and Internship Cover Letters, Professional Communications, Preparing for Your Employment an Internship Interviews, Conducting Your Employment and Internship Interviews, Introduction to the Career Fair Search Process, Exploring Internship Options within Your Profession, Networking Search Strategies, Developing Your Professional Career Portfolio, Influencing Your Networking Partners.

Orientation Program- 2018

3.9 Curriculum of Bachelor of Information and Communication Technology

The curriculum of the degree program has been developed under the following seven (07) major divisions of study as given in the Table 3.9.1.

Table 3.9.1: Major divisions of study in Bachelor of Information and Communication Technology

Division	Code
Network and Security Technologies	NST
Software Technologies	SWT
Ubiquitous Computing Technologies	UCT
Multimedia and Gaming Technologies	MGT
Computing and Information Systems	CIS
Complementary Studies	CMS
CISCO Network Academy	CNA

3.9.1 Structure of Academic Program

Table 3.9.2: Overall mapping of the degree program

<table>
<tr><td rowspan="3">Common Program</td><td>Year 1</td><td colspan="2">Semester 1 (17 credits) and Semester 2 (18 credits)
Compulsory (35 credits in total)</td></tr>
<tr><td colspan="3">Industrial Exposure program (Nation Development Activities) – 04 Weeks.</td></tr>
<tr><td>Year 2</td><td colspan="2">Semester 1 (18 credits) and Semester 2 (17 credits)
Compulsory (35 credits in total)</td></tr>
<tr><td rowspan="4">Specialization Program</td><td>Year 3</td><td colspan="2">Semester 1 (14 credits) and Semester 2 (17 credits)
Compulsory (31 credits in total) in Specialization</td></tr>
<tr><td colspan="3">Industrial Exposure program – 04 Weeks.</td></tr>
<tr><td rowspan="2">Year 4</td><td>Semester 1</td><td>Specialization Courses and Final Research and Development Project
(17 credits)</td></tr>
<tr><td>Semester 2</td><td>Continuation of Final Research and Development Project and Industrial Placement
(12 credits)</td></tr>
</table>

3.9.2 Core, Auxiliary and Elective Course Units

The Semester courses are either Compulsory (C) or Elective (E). The students are required to complete all the course units that are compulsory (core and auxiliary) for the BICT degree program and select courses from elective course baskets given for the specific specialization in each semester, and some of the elective courses must be selected together with relevant practical courses. The elective courses will be offered by the department of ICT based on the availability of resources.

3.9.3 Industrial Training

Six (06) months of industrial training has been included for BICT degree program in fourth year second semester. Each student should successfully complete the training programs for the award of the degree. Sitting all the previous examinations of all the semesters is a pre-requisite to be eligible to register for the course unit "industrial training".

3.9.4 Industrial Exposure Program (Nation Development Activities)

Students can gain practical experience in their field/industry through national development activities. These programs will be conducted at the end of the 1st year and end of the 3rd year. After a period of 04 weeks of exposure program, they should submit a report.

3.9.5 Industrial Exposure Visit

As a component of the BICT academic program, students shall be visiting numerous industries in their first year to enhance his/her industrial exposure and acquire latest state of the art technologies. The industrial exposure visit shall be continuous (up to 1 week) and the participation of the student is mandatory within the stipulated semester. The places of visit shall be decided by DICT upon the approval of Faculty board.

3.9.6 Common Program

The courses in the first two academic years are common for all students of the Bachelor of Information and Communication Technology.

Notations

Lec. Hrs / week	**:**	Lecture Hours per Week
Pra. Hrs / week	**:**	Practical Hours per Week
CA	**:**	Continuous assessment
ESE	**:**	End Semester Evaluation

Table 3.9.3: The courses offered in First Year

Code	Course Title	GPA Credits	NGPA Credits	Lec. Hrs / week	Pra. Hrs /week	CA %	ESE %
	Semester 1						
CIS11011	Essentials of ICT and PC Applications	1 C		1	-	40	60
SWT11012	Fundamentals of Programming	2 C		2	-	40	60
CIS11022	Database Design	2 C		2	-	40	60
CIS11032	Logic designing and Computer Organization	2 C		2	-	40	60
CMS11012	Mathematics for ICT	2 C		2	-	40	60
CMS11022	English I		2 C	1	2	50	50
CMS11031	Tamil Language (For Sinhala Speaking Students)		1 E	-	2	50	50
CMS11041	Sinhala Language (For Tamil Speaking Students)						
CIS11042	Practical for Essentials of ICT and PC Applications	2 C		-	6	50	50
SWT11022	Practical for Fundamental of Programming	2 C		-	4	50	50
CIS11051	Practical for Database Design	1 C		-	3	50	50
	Total	**16 C + 1E**					

	Semester 2						
SWT12012	Object Oriented Programming	2 C		2	-	40	60
SWT12022	Web systems and Technologies	2 C		2	-	40	60
NST12012	Computer Networks	2 C		2	-	40	60
MGT12012	Multimedia and Graphic Design	2 C		2	-	40	60
CIS12012	Social Computing	2 C		2	-	40	60
CMS12012	Statistics	2 C		2		40	60
CMS12022	English II		2 C	1	2	50	50
SWT12031	Practical for Object Oriented Programming	1 C		-	3	50	50
SWT12041	Practical for Web systems and Technologies	1 C		-	3	50	50
MGT12021	Practical for Multimedia and Graphic Design	1 C		-	3	50	50
CMS12031	Practical for Statistics	1 C		-	3	50	50
	Total	**18 C**					

Table 3.9.4: The courses offered in Second Year

Code	Course Title	GPA Credits	NGPA Credits	Lec. Hrs / week	Pra. Hrs /week	CA %	ESE %
	Semester 1						
SWT21012	Data Structures and Algorithms	2 C		2	-	40	60
CIS21012	Platform Technologies	2 C		2	-	40	60
NST21012	Network Switching and Routing	2 C		2	-	40	60
UCT21011	Digital Electronic Systems	1 C		1	-	40	60
SWT21022	Object Oriented Analysis and Design	2 C		2	-	40	60
CIS21022	Social and Professional Issues in ICT	2 C		2	-	40	60
SWT21032	Practical for Data Structures and Algorithms	2 C		-	4	50	50
CIS21031	Practical for Platform Technologies	1 C		-	3	50	50
NST21022	Practical for Network Switching and Routing	2 C		-	6	50	50
UCT21022	Practical for Digital Electronic Systems	2 C		-	4	50	50
	Total	**18 C**					

	Semester 2						
SWT22012	Internet Application Development	2 C		2	-	40	60
CIS22012	Distributed and Cloud computing	2 C		2	-	40	60
CIS22022	Information assurance and forensics	2 C		2	-	40	60
CIS22032	E-commerce - Strategies and architecture	2 C		2	-	40	60
UCT22011	Microcontroller system Programing	1 C		1	-	40	60
CMS22012	Leadership & Communication Skills	2 C		2	-	40	60
SWT22022	Practical for Internet Application Development	2 C		-	6	50	50
CIS22042	Practical for Distributed and Cloud computing	2 C		-	4	50	50
UCT22022	Practical for Microcontroller system Programing	2 C		-	4	50	50
	Total	**17 C**					

3.9.7 Specialization Program

3.9.7.1 Fields of Specialization

Students may specialize in a field with strong commitment to a particular division of study in ICT from third year onwards and it allows a student to peruse an in-depth study. The Department of ICT offers the following two fields of specialization as Network and Security Technologies (NST) and Software Technologies (SWT).

3.9.7.2 Selection of the Field of Specialization

Students may apply for any one of the special degree programs offered by the Department of ICT, if he/she has met the departments selection criteria given below.

- A student who has not successfully completed the first three semesters in the common program will not be permitted to register for the fifth semester (majoring program) until the SGPA and grade in each of the first three semesters are improved as required.
- Grades C-, D+, D or E which can be improved to grade C are considered for calculating semester grade point Average (SGPA).
- Student is considered to have completed a semester successfully only if he/she has achieved a SGPA of 2.00 or above, and has, in that semester no E grade and no more than three grades at the level of C-, D+ or D.(Note: E grade will be included in calculating SGPA)
- Admission to each field is limited and determined by the department on the recommendation of the particular division of study based on the availability of facilities to commensurate with quality standards.

- While a place in at least one of the fields of specialization is assured for every student who successfully followed the Common Program on first two academic years, it may not be possible to accommodate every student's first choice of field.

- Streaming of a student into a field of specialization is based on available positions under different fields, and his/her preference and performance in the Common Program (1st year and 2nd year). In addition, selection of specialization program shall be based on the performance on the courses relavant to the field of specialization, as determined by the department.

- In situations where the number of applicants for a field of specialization exceeds the number of places available in the specialization Program concerned, the places would be allocated based on the GPA obtained at his/her first attempt in the Common Program (1st year and 2nd year) of the division of his/her interest.

- Transfer from a field of specialization would be permitted only in case: when a student may be offered a placement in the field of a preferred choice due to a vacancy available therein. Such a transfer would only be permitted within two weeks from the commencement of first semester of third academic year. The final decision will be taken by the department.

3.9.8 Course Structure of Specialization Program

Tables below illustrate the compulsory and elective subjects during the specialization program. The courses of the specialization program are subjected to change by the department with the recommendation of faculty board and the approval of the Senate.

3.9.8.1 SPECIALIZATION IN SOFTWARE TECHNOLOGIES

Table 3.9.5: The courses offered in Third Year

Code	Course Title	GPA Credits	NGPA Credits	Lec. Hrs / week	Pra. Hrs /week	CA %	ESE %
	Semester 1						
SWT31012	Software Engineering	2 C		2	-	40	60
CIS31012	ICT Project management	2 C		2	-	40	60
UCT31012	Artificial Intelligence	2 C		2	-	40	60
SWT31022	Software Verification and Quality Assurance	2 C		2	-	40	60
CMS31022	Research Methodologies for ICT	2 C		2	-	60	40
UCT31021	Practical for Artificial Intelligence	1 C		-	3	50	50
	Elective (Theory) * Refer Elective (Theory)	2 E		2			
	Practical for Elected Subject ** Refer Elective (Practical)	1 E		-	3		
	Total	**11 C + 3E**					
	* **Elective (Theory)**						
NST31022	Cryptography	2 E		2	-	40	60

CIS31022	Data Mining	2 E		2	-	40	60
CIS31032	Human Computer Interaction	2 E		2	-	40	60
	** **Elective (Practical)**						
NST31051	Practical for Cryptography	1 E		-	3	50	50
CIS31041	Practical for Data Mining	1 E		-	3	50	50
CIS31051	Practical for Human Computer Interaction	1 E		-	3	50	50
	Semester 2						
CIS32012	Enterprise Architecture and Leadership	2 C		2	-	40	60
SWT32011	Mobile Application Development	1 C		1	-	40	60
UCT32011	Embedded System	1 C		1	-	40	60
NST32012	Wireless Network	2 C		2	-	40	60
SWT32022	Service Oriented Web Application	2 C		2	-	40	60
NST32042	Information System Security	2 C		2	-	40	60
SWT32031	Literature Survey	1 C		1	-	60	40
SWT32042	Practical for Mobile Application Development	2 C		-	4	50	50
UCT32022	Practical for Embedded System	2 C		-	4	50	50
NST32031	Practical for Wireless Network	1 C		-	3	50	50

SWT32051	Practical for Service Oriented Web Application	1 C		-	3	50	50
		17 C					

Table 9.7.6: The courses offered in Fourth Year

Code	Course Title	GPA Credit	NGPA Credit	Lec. Hrs / week	Pra. Hrs /week	CA %	ESE %
	Semester 1						
SWT40016	Final Research and Development Project	*	-	-	-		
SWT41021	Cloud Application Development	1 C		1	-	40	60
SWT41032	Advance Software Engineering	2 C		2	-	40	60
CIS41022	Advance Database Management System	2 C		2	-	40	60
CMS41012	Professional Practice	2 C		2	-	40	60
SWT41042	Practical for Cloud Application Development	2 C		-	4	50	50
CIS41032	Practical for Advance Database Management System	2 C		-	4	50	50
SWT41051	Practical for Advance Software Engineering	1 C		-	3	50	50
	Elective 1 ♦ Refer Elective 1	2 E		2	-		
	Elective 2 (Theory) ♦♦ Refer Elective 2 (Theory)	1 E		1	-		

	Practical for Elective 2 ♦♦♦ Refer Elective 2 (Practical)	2 E		-	4		
	Total	**12 C + 5E**					
	♦ Elective 1						
NST41032	Risk, Crisis and Security Management	2 E		2	-	40	60
CIS41012	Data Analytics and Business Intelligence	2 E		2	-	40	60
	♦♦ Elective 2 (Theory)						
UCT41011	Industrial Automation and Ladder Programming	1 E		1	-	40	60
UCT41031	Introduction to Smart Systems	1 E		1	-	40	60
	♦♦♦ Elective 2 (Practical)						
UCT41022	Practical for Industrial Automation and Ladder Programming	2 E		-	4	50	50
UCT41042	Practical for Introduction to Smart Systems	2 E		-	4	50	50
	Semester 2						
SWT40016	Final Research and Development Project	6 C				100	
SWT42016	Industrial Placement		6 C			100	
	Total	**12 C**					

* The credits will be brought into the 4th year 2nd semester

3.9.8.2 SPECIALIZATION IN NETWORK AND SECURITY TECHNOLOGIES

Table 3.9.7: The courses offered in Third Year

Code	Course Title	GPA Credit	NGPA Credits	Lec. Hrs / week	Pra. Hrs /week	CA %	ESE %
	Semester 1						
NST31011	Scaling and Connecting Network	1 C		1	-	40	60
NST31022	Cryptography	2 C		2	-	40	60
NST31032	Vulnerability assessments and penetration testing-I	2 C		2	-	40	60
CMS31022	Research Methodologies for ICT	2 C		2	-	60	40
CIS31012	ICT Project management	2 C		2	-	40	60
NST31042	Practical for Scaling and Connecting Network	2 C		-	4	50	50
NST31051	Practical for Cryptography	1 C		-	3	50	50
NST31062	Practical for vulnerability assessments and penetration testing-I	2 C		-	4	50	50
	Total	**14 C**					

	Semester 2						
UCT32011	Embedded system	1 C		1	-	40	60
SWT32011	Mobile application Development	1 C		1	-	40	60
NST32012	Wireless Network	2 C		2	-	40	60
CIS32012	Enterprise Architecture and Leadership	2 C		2	-	40	60
NST32021	Literature survey	1 C		1	-	60	40
UCT32022	Practical for Embedded system	2 C		-	4	50	50
SWT32022	Practical for Mobile application Development	2 C		-	4	50	50
NST32031	Practical for Wireless Network	1 C		-	3	50	50
	Elective 1 ▲ Refer Elective 1	2 E		2	-		
	Elective 2 (Theory) ▲▲ Refer Elective 2 (Theory)	1 E		1	-		
	Practical for Elective 2 ▲▲▲ Refer Elective 2 (Practical)	2 E		-	4		
	Total	**12 C +5E**					
	▲ **Elective 1**						
NST32042	Information Systems security	2 E		2	-	40	60
NST32052	Information Security Auditing	2 E		2	-	40	60

	▲▲ **Elective 2 (Theory)**						
UCT32031	Cognitive neural networks	1 E		1	-	40	60
NST32061	Network Planning and Simulation	1 E		1	-	40	60
	▲▲▲ **Elective 2 (Practical)**						
UCT32042	Practical for Cognitive neural networks	2 E		-	4	50	50
NST32072	Practical for Network Planning and Simulation	2 E		-	4	50	50

Table 3.9.8: The courses offered in Fourth Year

Code	Course Title	GPA Credits	NGPA Credits	Lec. Hrs / week	Pra. Hrs /week	CA %	ESE %
	Semester 1						
UCT41011	Industrial Automation and ladder Programming	1 C		1	-	40	60
NST41011	Computer security and forensics	1 C		1	-	40	60
NST41021	vulnerability assessments and penetration testing-II	1 C		1	-	40	60
NST41032	Risk, Crisis and Security Management	2 C		2	-	40	60
NST40046	Final Research and Development Project	*	-	-	-		
CIS41012	Data Analytics and Business Intelligence	2 C		2	-	40	60
CMS41012	Professional Practice	2 C		2	-	40	60
UCT41022	Practical for Industrial Automation and ladder Programming	2 C		-	4	50	50
NST41062	Practical for Computer security and forensics	2 C		-	4	50	50
NST41071	Practical for vulnerability assessments and penetration testing-II	1 C		-	3	50	50
	Elective (Theory) ▪ Refer Elective (Theory)	1 E		1	-		

	Practical for Elective ▪▪ Refer Elective (Practical)	2 E		-	4		
	Total	**14 C + 3E**					
	▪ Elective (Theory)						
UCT41031	Itroduction to smart systems	1 E		1	-	40	60
NST41081	Secure Network Infrastructure	1 E		1	-	40	60
	▪▪ Elective (Practical)						
UCT41042	Practical for Introduction to smart systems	2 E		-	4	50	50
NST41092	Practical for Secure Network Infrastructure	2 E		-	4	50	50
	Semester 2						
NST40046	Final Research and Development Project	6 C				100	
NST42016	Industrial Placement		6 C			100	
	Total	**12 C**					

ICT Computer Laboratories

3.9.9 Course Modules

CIS11011 Essentials of ICT and PC Applications

The digital era: Role of ICT in society, Distinguish between data and information. Properties of Information Systems and application of ICT (such as e-learning, e-commerce, e-government, e-governance, etc...), Introduction: Early history of computing, The computer generation, Revolution in Computers and communications, Characterization, Classification of computers, Concept of programming and programming languages, Language translation., Peripherals: Input devices and its functions, output devices and its functions, processing and memory hardware, Secondary storage and communication devices. ,System Software: Operating system and its functions, The need for an operating system, The types of operating systems, The features of operating system (MS Windows, Linux, OSX, iOS, Android, etc.) Utility programs, Utility packages. , Application software: Basic features of application software, tools for work and study, Desktop Accessories, word processing, spread sheets, presentation, Introduction to Database Management system, Graphics and Communications software suites, etc.

SWT11012 Fundamentals of Programming

Techniques of Problem solving: Algorithm, Flow chart and Pseudo codes. ,Introduction of Programming, Fundamental of Programming, Paradigms in programming , Structured programming: Input/Output, Variable declaration, Arithmetic Operations, Relational Operations, Logical Operations, Control Structures: Sequence, Selection (If/Else, Switch-multiple selection), Repetition (For repetition, while repetition, Do/while), Break and Continue, Functions, scope of variable and Parameters, Recursion, Arrays, Records.

CIS11022 Database Design

Introduction: Definition as a centralized storage of database; prevention of redundancy and inconsistency, data independence, data abstraction, data models, data definition and data manipulation language (DDL and DML), database manager, administrator, users, overall system structure , Entity Relationship Model: Entities, relationships, entity-sets, relationship-sets, attributes, Mapping constraints, keys, E-R diagrams, reduction of E-R diagrams to tables, design of an E-R database scheme. , Relational Model: Structure of relational database, relational algebra and calculus, Normalization and Relational Database Design: Relational database design and its pitfalls, normalization (First, second and third) using functional dependencies and multivalued functional dependencies. ,Query Processing

CIS11032 Logic Designing and Computer Organization

Representation of information in a computer (Numerical and character Data), Boolean logic gates and Truth table, Simplify logical functions using Boolean Algebra, Karnaugh map , Basic components and organization of a computer, Inner workings of the CPU and Memory Components, Bus structures, Memory – location, addresses and operations, Organization and implementation of different architectures, Instruction, Instruction sequences, Reduced instruction set computer (RISC), Complex instruction set computer (CISC).

CMS11012 Mathematics for ICT

Introduction to Numbers and Arithmetic, Introduction to Basic Algebra Solving Equations, Fundamentals of Measurements , Introduction to Ratios and Proportions, Introduction to Sets, Relations and Functions, Techniques of Counting, Introduction to Probability, Introduction to Differentiation and Introduction to Integration.

CMS11022 English I

Sentence patterns and grammar structures, importance of vocabulary and subject matter glossary, summarizing, skimming and scanning of texts, listening, understanding, making notesand feedback, Computer aided Language learning, Communication, Presentation.

CMS11031 Tamil Language (For Sinhala Speaking Students)

Introducing Tamil Alphabet, Constructing Simple words using the alphabet, Introducing to Nouns_ Verbs, Tenses, Adjectives and Adverbs, Simple Sentence Structures, Simple Reading and Writing Exercises, Further into Sinhala Grammar and usage, Practical Language Training, Practical Listening and Comprehension.

CMST11041 Sinhala Language (For Tamil Speaking Students)

Introducing Sinhala Alphabet, Constructing Simple words using the alphabet, Introducing to Nouns. Verbs, Tenses, Adjectives and Adverbs, Simple Sentence Structures, Simple Reading and Writing Exercises, Further into Sinhala Grammar and usage, Practical Language Training, Practical Listening and Comprehension.

SWT12012 Object Oriented Programming

Object oriented concepts, Object oriented programming: classes & objects, methods & messages, classification, generalization & specification, inheritance, interfaces & inner classes, static binding and dynamic binding, polymorphism, modularity, GUI programming: event handling, applets, Exception handling, overloading and overriding, streams and files, advanced features, Class hierarchies, Collection classes and iteration protocols

SWT12022 Web Systems and Technologies

Web Technologies: HTTP Protocol, Client and Server-Side Programming, Web Services, Web Servers, Standards and Standardization Bodies. Information Architecture: Hypertext, Hyper Media, Web Design Process. Digital Media: Digital Libraries, Media Formats, Capture and Authoring, Web Development: Web Interfaces using HTML and scripting languages, Basics of Website Implementation and Integration, Accessibility Issues., Client Security, Server Security

NST12012 Computer Networks

Introduction to communication and Networking, History of networks, Data and Data transmission, Multiple access channels in communication, Network Types, Network topologies, Network Architectures, Data Communication media, Network Cabling, Network Hardware, Network Protocols, OSI reference model, TCP/IP Protocol suite, Network Standards, Network servers (ADS, IIS, WDS, DHCP, DNS, Proxy etc.), IP Addressing (IPv4, IPv6), Circuit-switching and packet-switching.

Quality of Service, Internet and Email, Network firewall and security, Basics of Cryptography, Virtual LANs, VoIP, Wireless networks, New Trends and applications of Computer networks, Introduction to Packet Tracer.

MGT12012 Multimedia and Graphic Design

Design computer applications incorporating multiple forms of media such as text, graphics, audio, video, and animation, Explain the different types of interactivity in multimedia based environments, Discuss Audio Editing and MIDI Equipment, Video Editing, Multimedia on the Internet, Describe the different types of hardware and software available for multimedia production, Develop criteria for the evaluation of multimedia applications and apply these criteria.

CIS12012 Social Computing

Overview of social computing and it evolving impacts on society and business processes and practice: Usage of computing resources by various people (ordinary people, anthropologists and others), how to access and deploy these resources themselves, and how to leverage their participation to better understand social and cultural processes that are underway in social computing contexts, Ways in which social computing technologies can be applied by individuals, communities and organizations: Usage and adaptation of new technologies by people to form and navigate cultural and social contexts, create and spread knowledge and undertake action emerging from computer-enhanced capabilities. Capabilities include the internet (including so call Web 2.0), clouds, augmented reality, robotics and virtual devices, wearable computers and sensors and artificial intelligence, Social computing encompassed phenomena : social networking, Enterprise 2.0, internet activism/advocacy, crowdsourcing, e-Government/Government 2.0, social/viral marketing, social information processing, social network analysis and the use of blogging, podcasts, wikis and other collaboration tools, case studies of social computing based on different capabilities, using a tool-kit that supports the creation and analysis of social computing capabilities.

CMS12012 Statistics

Descriptive statistics: Compilation, classification, tabulation and diagrammatic and graphical representation of various types of statistical data, skewness and kurtosis, frequency distributions, and measures of location and dispersion. Elements of Probability Theory: Set theory, concepts of probability, sample space, field of events and generalized addition theorem, conditional probability, independence, random variables, distribution theory, expectation, variance, normal, exponential, Binomial and Poisson Distributions. Sampling Distribution: Population parameters and statistics, type of samples, probability distribution of sample means, distribution of linear combination of random variables and the Central Limit Theorem.

CMS12022 English II

Listening skills: Listening to audio texts and retrieving information, Understanding and responding to native speakers, Paraphrasing audio texts, Oral skills: Telephone skills, Public speeches, Interpersonal communications, presentation and short speeches, group discussions, Reading skills: Retrieving information from IT related texts, Scanning and Skimming Skills, Reading for specific information, Paraphrasing and summarizing, Writing Skills: Formal and informal writing, answering questions, technical writing/model reports

SWT21012 Data Structures and Algorithms

Arrays, Recursion, Sorting: Bubble Sort, Insertion Sort, Tree Sort, Quick Sort, Selection Sort, Heap Sort, Merge Sort, External Sorting Techniques, Linked lists, Stacks, Queues, Trees: Binary Trees, Balanced & Unbalanced Trees, Balancing Trees, Tree Traversal, Heaps, B-trees, Graphs: Depth first search, Breadth first search, Topological numbering, connected graphs, Computational Complexity and Time Complexity, Divide & Conquer Algorithms, Greedy Algorithms, Heuristics Searching Algorithms.

CIS21012 Platform Technologies

Operating Systems as a virtual machine and as resource as a manager, Processes, Inter process communication and synchronization, Process transition using UNIX/Linux as an example , Memory allocation, Segmentation , Paging Loading , Linking and libraries, Resource allocation, Scheduling and deadlock, File systems, Consistency, Redundancy, Distributed systems principles, Amoeba and Mach, Current Operating Systems: Introduction to latest version of windows/ Linux architecture and file system. System programming in the UNIX environment: Review of C Programming, Bourne/ C shell command language, System calls for process management, File access, Network system calls, RPC, Threading, Program development, System Administration: Installation of Windows Server, NTFS file system and folder permissions, Domain Name System, Active Directory, local and domain Group Policy, Windows Terminal

Services, Internet Security and Acceleration Server, Internet Information Services. An introduction to Linux, installing Linux server, advanced usage and managing Linux server, terminal, working with Windows, system administration, configuration of server: WWW, DHCP, DNS, Samba, NFS, emails and printers.

NST21012 Network Switching and Routing

Exploring the Network, Configuring a Network Operating System, Network Protocols and Communications, Network Access, Ethernet, Network Layer, IP Addressing, Subnetting IP Networks, Transport Layer, Application Layer, Build a Small Network, Routing Concepts, Static Routing, Dynamic Routing, Switched Networks, Switch Configuration, VLANs, Access Control Lists, DHCP, NAT for IPv4, Device Management and Maintenance.

UCT21011 Digital Electronic Systems

Realizing Logic Function with Gates, Combinational Design Examples, Logic Function Realization with Circuits: Combinational Logic with Multiplexers and Decoders, Standard Logic Functions with Circuits, Design Problem Using Circuits, Flip Flops, Counters and Registers - Its Applications, Design and build digital circuits using the main building blocks, Construct and test digital electronic circuits, digital and analog devices with circuits, Introduction to State Machines, The Need for State Machines, The State Machine, Basic Concepts in State Machine Analysis, Synchronous and Asynchronous State Machine,

System architecture, microarchitecture and interfacing concepts, The future of digital electronics technology.

SWT21022 Object Oriented Analysis and Design

Introduction: An Overview of Object Oriented Systems Development – Object Basics – Object Oriented Systems Development Life Cycle, Object Oriented Methodologies: Rumbaugh Methodology – Booch Methodology – Jacobson

Methodology – Patterns – Frameworks – Unified Approach – Unified Modeling Language – Use case – class diagram – Interactive Diagram – Package Diagram – Collaboration Diagram – State Diagram – Activity Diagram, Object Oriented Analysis: Identifying use cases – Object Analysis – Classification – Identifying Object relationships – Attributes and Methods, Object Oriented Design: Design axioms – Designing Classes – Access Layer – Object Storage – Object Interoperability, Software Quality and Usability: Designing Interface Objects – Software Quality Assurance – System Usability – Measuring User Satisfaction, UML , Requirements Modelling.

CIS21022 Social and Professional Issues in ICT

Introduction: motivation and issues, Technological determinism. Cause and Effect, Inseparability of the Technical, the Social, and the Ethical, Values and Ethics, Social Theories of Science and Technology, History and Philosophy of Science, The Net, the Web and Economics, Computer Science Motivation Social Science Motivation, Natural Ethics of Information Artifacts, Sociology of Technology and Science, Algebraic Semiotics, Requirements Engineering, Privacy and use of personal information - gathering, data mining, anonymizing, legal, ethical and security issues regarding the gathering of personal Information,

Ethical theories applicable to computing - Deontological and utilitarian Approaches related to computing, Professional ethics - Professional and student ethical codes, Ethics in Practice, Ethics in programming, Role of computers and information in society - Automation; Digital society, Intellectual property, fair use of information and copyright. Computer law in Sri Lanka.

SWT22012 Internet Application Development

Web servers and Web Application Servers, Design Methodologies with concentration on Object-Oriented concepts, Client-Side Programming and Server-Side Programming, Active Server Pages, Database Connectivity to web applications,

Adding Dynamic content to web applications, Programming Common Gateway Interfaces, Programming the User Interface for the web applications, Utilization of recent platforms used in developing web applications.

CIS22012 Distributed and Cloud Computing

Overview of Distributed System Architecture: motivation, system structures, architectures, ODP Reference model and distribution transparencies, design issues. Interaction primitives: message passing, remote procedure call and Interface definition language, objects and remote object invocation (RMI). Interaction and Implementation: message passing, RPC, concurrency and threads, heterogeneity of systems and languages. Time Synchronization, Distributed systems management: SNMP management model & MIBs, management and security policy. Ubiquitous computing: grand challenges, engineering issues. Cloud Computing: concept of virtualized resources, build applications in Grid and Cloud environments, business models in Cloud Computing

CIS22022 Information Assurance and Forensics

Fundamental aspects: history & terminology, security mindset, design principles, system/security life cycle, Security Implementation Mechanisms (Guards, Gates, Cryptography), Information Assurance Analysis Models (Threats, Vulnerabilities, Attacks, Countermeasures), Disaster Recovery, Forensics, Security Mechanisms: Basics of Cryptography, Authentication, Redundancy, Intrusion Detection. Operational Issues: Trends, Auditing, Cost-Benefit Analysis, Asset Management, Standards, Enforcements, Legal Issues, Policy: Creation and Maintenance of Policies, Prevention, Avoidance, Domain Integration. Attacks: Social Engineering, Denial of Service, Protocol Attacks, Active & Passive Attacks, Buffer Overflow Attacks, Malware, Forensics: Legal Systems, Digital Forensics, Rules of Evidence, Search and Seizure, Digital Evidence, Media Analysis.

CIS22032 E- Commerce - Strategies and Architecture

Setting the context to EC, Related terminologies- E markets, E Business, Web - Commerce, The ever-widening impact of EC, Types of EC - B2B, B2C, C2B, Government participation in EC, The EC bandwagon, Work-flow management, Customization of products and services, Supply chain management, Inter- organizational applications of EC, An Electronic Commerce Framework, EC requirements and services, Policy and regulatory issues in EC, Components of EC, EDI, Intranets and Extranets, Digital Currency and Electronic Catalogues, Telecommunications infrastructure, Decision support systems, Interoperability, Storage and retrieval of information/ linking databases to the web, Work-flow management, Markup languages EC business models, Developing an EC business case, EC implementation strategies, Key lessons to remember in EC implementation, Change Management and EC implementation, Information based Marketing, Advertising on the net, Approach to Interactive Marketing on the net, Security Issues and solutions.

CMS22012 Leadership and Communication Skills

Introduction to Leadership, Understanding Leadership, Teamwork, Teambuilding & Conflict Resolution, Self-Awareness & Values, A Personal Vision & goal achievement, Leadership Styles, Communication Skills for leading, process and dynamics of communication, communication at work, communication barriers presentation skills and negotiation, Public speaking, learning to lead & efficient Functioning of Teams, Leadership (Outbound Training), Interview facing and Interviewing.

UCT22011 Microcontroller System Programing

History and features of PIC microcontrollers ,Typical architecture and internal units of a microcontroller, different types of memory, Interfacing of analogue and digital, Serial communications, Low level programming, drivers, interrupts service routines, PIC Development System (Compilers, Simulator and Programmer), Instruction and register sets and

addressing modes for a given microcontroller family, Efficiency aspects on different data types and code snippets in programming language, Development tools. Planning and realization of a microcontroller-based project

SWT31012 Software Engineering

Software Design and Development (Approaches to design, Attributes of good design, Implementation issues, Planning and Development Processes), Design Tools, Software Testing, CASE Tools, Software Verification and Validation (Functional Testing, Structural Testing, Debugging and Tuning tools, Walkthroughs and Inspections), Quality Assurance.

CIS31012 ICT Project Management

Introduction to Project Management, ICT Context and Process Groups in Project Management, Project Integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Human Resource Management, Project Communications Management, Project Risk Management, Project Procurement Management.

UCT31012 Artificial Intelligence

Fundamental issues, search and constraint satisfaction, Knowledge representation and reasoning, Advanced searching, agents, Natural language processing, Machine learning and neural networks, AI planning systems, robotics, Practical: LISP/PROLOG programming.

SWT31022 Software Verification and Quality Assurance

Role and importance of software quality assurance in software verification, Role and importance of software inspection in software verification, Concepts and theory related to software testing, Different testing techniques used in designing

test plans, developing test suites, and evaluating test suite coverage, Relationship between black-box and white-box testing and application of it as required, Automated testing tools used to measure code coverage, Test Cases, V&V processes and Related Concepts.

CMS31022 Research Methodologies for ICT

Introduction and Basic Research Concepts in ICT, Qualitative Research Methods, Quantitative Research Methods and Statistics, Mixed Methods Research, Reporting Results of Data Analysis, Completing the Research Project by writing thesis/ report (depends on the project).

NST31022 Cryptography

Basic encryption and decryption / Classical cyphers: Cryptanalysis of classical ciphers, Probability theory, Perfect security, Symmetric encryption: Symmetric key systems, DES, AES, Block cipher, Stream ciphers, Asymmetric key encryption: Hard problems, Euclidean Algorithm, Modular Arithmetic, Fermat's theorem, Asymmetric key systems, RSA, El Gamal method, Digital signature algorithm, Message authentication codes, Hash functions, Key distribution: Secure web systems, Secure payment systems, Authentication, Operating systems and program security, Database security: File security, Data protection, Access control, Digital Signatures: RSA signatures, RSA-FDH and RSA-PSS signatures, DSA signatures, X.509 certificates, Certification paths.

CIS31022 Data Mining

Fundamentals of data warehousing, Architecture and the issues involved in planning, designing, building, populating and maintaining a successful data warehouse, Introduction to data mining and how it relates to data warehousing, Logical design of a data warehouse, the data staging area and extract-transform-load processing, the use of multi-dimensional

analysis using OLAP techniques, and coverage of the knowledge discovery process including common data mining modeling techniques.

CIS31032 Human Computer Interaction

Introduction to Human-Computer Interaction (HCI): History of interfaces, and an overview of the role of HCI in the software process, Cognitive Issues for Human-Computer Interaction: A major and important facet of Interface Design is the cognitive aspect, Interaction styles and general design Interaction strategies: How do humans use and interact with their technology, Interface and usability evaluation: Various techniques for evaluation of interfaces including task Analysis, heuristic interface evaluation, and other techniques for capturing the usability of the interface, Interface Implementation: User Requirements Analysis. Implementation techniques (Prototyping), User-centred design and accessibility. Mobile and Multi Modal HCI: An overview of current (and future) trends and directions in HCI. Mobile computing (such as smartphones) and multiModal interfaces.

NST31011 Scaling and Connecting Network

LAN Design, Scaling VLANs, Spanning Tree Protocols, Ether channel and HSRP, Dynamic Routing, EIGRP, EIGRP Tuning and Troubleshooting, Single-Area OSPF, Multiarea OSPF, OSPF Tuning and Troubleshooting, WAN Concepts, Point-to-Point Connections, Branch Connections, Access Control Lists ,Network Security and Monitoring, Quality of Service, Network Evolution, Network Troubleshooting.

NST31032 Vulnerability Assessment and Penetration Testing –I

Information Gathering: Introduction, Open-source Intelligence: Social Networks, Public Sites Information Gathering, and Browsing Client's Sites; The Importance of Information Gathering, Foot printing and Scanning: Disclaimer, Mapping a Network (Nmap, Ping Sweeping), Port Scanning (SYN, Three Way Hand shaking), Vulnerability Assessment:

Vulnerability Scanners, Manual Testing, Nessus Tools, Web Attacks: Introduction, Web Server Fingerprinting with NetCat, OpenSSL and Httprint, HTTP Verbs: GET, POST, Exploiting Misconfigured HTTP Verbs, Directories and File Enumeration, Google Hacking, Cross Site Scripting, SQL Injections, System Attacks: Malware, Password Attacks, Buffer Overflow Attacks, Network Attacks: Authentication Cracking, Windows Shares, Null Sessions, ARP Poisoning, Metasploit, Meterpreter.

CIS32012 Enterprise Architecture and Leadership

Overview of enterprise architecture (EA), EA from the top-down: taxonomies, ontologies, guides, and other techniques for unifying departmental and larger scale content from a strategic business perspective, EA from the bottom-up: content models and metadata to enable contextual navigation from page to page, EA and search: indexing cross-departmental content, presenting results consistently, EA and the organization: models for rolling out enterprise information architecture, staffing it, and finance for and managing it in a distributed corporate environment, The Enterprise architect as leader and leadership theory and practice.

SWT32011 Mobile Application Development

Characteristics of mobile applications, History of mobile application frameworks, Overview of the Android framework , Application models of mobile application frameworks, User-interface design for mobile applications, Managing application data, Integrating with cloud services, Integrating networking, the OS and hardware into mobile-applications, Addressing enterprise requirements in mobile applications: performance, scalability, modifiability, availability and security, Testing methodologies for mobile applications, Publishing, deployment, maintenance, and management.

UCT32011 Embedded System

Introduction to Embedded Systems :The build process for embedded systems- Structural units in Embedded processor , selection of processor & memory devices- DMA – Memory management methods- Timer and Counting devices, Watchdog Timer, Real Time Clock, In circuit emulator, Target Hardware Debugging, Embedded Networking: Introduction, I/O Device Ports & Buses– Serial Bus communication protocols – RS232 standard – RS422 – RS485 – CAN Bus -Serial Peripheral Interface (SPI) – Inter Integrated Circuits (I2C) –need for device drivers, Embedded Firmware development environment: Embedded Product Development Life Cycle- objectives, different phases of EDLC, Modelling of EDLC; issues in Hardware-software Co-design, Data Flow Graph, state machine model, Sequential Program Model, concurrent Model, object oriented Model, RTOS based embedded system design: Introduction to basic concepts of RTOS, Task, process & threads, interrupt routines in RTOS, Multiprocessing and Multitasking, Preemptive and non-preemptive scheduling, Task communication shared memory, message passing-, Inter process Communication – synchronization between processes-semaphores, Mailbox, pipes, priority inversion, priority inheritance, comparison of Real time Operating systems: Vx Works, ɥC/OS-II, RT Linux, Embedded system application development

NST32012 Wireless Network

Elements and Evolution of Wireless Networks, Characteristics of the Wireless Medium, Introduction to Wireless LAN standards, (802.11 (a, b, g and n)) the operation of the Network Interface Cards, Concept of Network Traffic / Queuing theory, Application, Design and Site Survey Preparation, Wireless Media Access, Wireless Network Deployment, Small Cell Networks, 5G and LTE, Wireless Network Operation, Distributed IP-based, Telecommunications System, Cellular Systems, Network Virtualization, Smart Grid Communications, Wireless LAN Deployment, Device 2 Device Networks, Mobile Ad Hoc Networks, Wireless LAN Operation, Space-based Wi-Fi, WiUAV, Super Dense Wireless Networks, Wireless Sensor Networks, Internet of Things, Remote Sensing WiNets, Gigabit Networks, UWB Networks.

SWT32022 Service Oriented Web Application

XML technologies for developing web services, Technologies for building service oriented web applications, Design, engineering, legal, social, ethical and professional issues and considerations involved in enterprise web application development, Web service development tools: EditPlus, Visual Studio, Netbeans and Eclipse, Web services and web service clients including SOAP, REST, WSDL, UDDI.

NST32042 Information Systems Security

Security in Networks: Threats in Networks, Network Security Controls, Firewalls, Intrusion Detection System, Secure E-mail, Program Security: Secure Programs, Non-malicious program errors, Viruses and other Malicious code, Targeted Malicious codes, Computer Security: Computer Security Concepts; Threats, Attacks and Assets; Security Functional Requirements; Security Architecture for Open Systems; Computer Security Trends and Computer Security Strategy, Information Security Policy and Practice, Database Security: Introduction to Databases, Security Requirements, Reliability and Integrity, Sensitive Data, Database Access Control, Database Encryption, Legality of Information Security: Intellectual Property Laws, Privacy, Compliance, Liability and Its Ramifications, Ethics.

SWT32031 Literature Survey

Introduction, Roles and responsibilities, Choosing a subject and supervisor, Making a good plan, Selecting and studying literature, Extracting information from the selected literature, Terminology, Writing: outline, summery, draft, final, Examples, The text, References, Presenting the work, Evaluation criteria.

NST32021 Literature Survey

Introduction, Roles and responsibilities, Choosing a subject and supervisor, Making a good plan, Selecting and studying literature, Extracting information from the selected literature, Terminology, Writing: outline, summery, draft, final, Examples, The text, References, Presenting the work, Evaluation criteria.

NST32052 Information Security Auditing

Purpose and value of IS audit and IT governance, Organizational Responsibilities: Executive management, Auditors, IT and Information security, General users, Information security: Three primary goals (confidentiality, integrity, availability), Principles: Accountability, Awareness, Ethics, Multidisciplinary, Proportionality, Integration, Timeliness, Assessment, and Equity, Ethics and legal issues, Audits and Assessments, Major Guidance, Risk: Business risk, audit risk, security risk, continuity risk; SEI risk statement (two things needed to express risk clearly); Components of risk: threat, vulnerability, exposure, impact, And consequence; Risk response options: manage, reduce, transfer, ignore, monitor; Threat classes: natural, accidental and unintentional, intentional, political unrest, acts of war; Threat agents, threat agent motives; Four basic steps to a risk assessment, Information security programs, Information Security Management, Policy, process, and procedure, Organization: Basic job responsibilities of various IT functions, various ways of organizing an IT department, and advantages and disadvantages, how size impacts ability to segregate duties, Software / System Development Life Cycle: Differences between pre- and post- implementation audits; Pre-implementation: approaches, role of auditor, advantages, disadvantages; Post-implementation: approaches, role of auditor, advantages, disadvantages, Application development: Architectures and placement of controls; Role of databases in control design; Database issues; Input, output, transaction controls; Virus, trap door, Trojan horse, logic bomb, worm; Time of check / time of use, Audit planning: Scope, objectives, Audits vs. assessments, Facilities security and environmental controls: Human safety factors; Media and asset control; Physical access controls; Surveillance Monitoring; Administrative response; Power; Fire detection and suppression.

UCT32031 Cognitive Neural Networks

Introduction to Neural Networks and their History, Biological Neurons and Neural Networks, Artificial Neurons, Networks of Artificial Neurons, Single Layer Perceptrons, Learning and Generalization in Single Layer Perceptrons, Hebbian Learning, Gradient Descent Learning, The Generalized Delta Rule, Practical Considerations, Learning in Multi-Layer Perceptrons - Back-Propagation, Learning with Momentum, Conjugate Gradient Learning, Bias and Variance - Under-Fitting and Over-Fitting, Improving Generalization, Applications of Multi-Layer Perceptrons, Recurrent Neural Networks, Radial Basis Function Networks: Introduction, Radial Basis Function Networks: Algorithms, Radial Basis Function Networks: Applications, Self Organizing Maps: Fundamentals, Self Organizing Maps: Algorithms and Applications, Learning Vector Quantization, Committee Machines, Model Selection and Evolutionary Optimization.

NST32061 Network Planning and Simulation

Introduction to the network design principles for planning, Evaluation and ranking of network designs with different criteria such Performance, Reliability, Cost and etc, Theories for network design such graph theory and queuing theory, WAN design principles and algorithms, Systems methodology for network design, system and services, service characteristics, performance characteristics, Requirements analysis for network design such user, application, device and network, Flow analysis for network (individual and composite flows, critical flows), data sources and sinks, flow models and flow specification algorithm, Logical network design (technology choices, interconnection mechanisms), Network management architecture (OSI network management principles, SNMP-based network management architecture), Use of Management Information Base (MIB), network monitoring tools, network documentation, Physical network design, WAN design and Simulation tools for computer network, Benefits and limitations of simulations, validation and verification aspects, Simulation of functions and performance of protocols and data traffic on the data link, network, transport, and application levels in data communications.

SWT40016/ NST40046 Final Research and Development Project

Define a research problem, Critically analyze a problem domain and the significance of desired study, Outline a scope of a research study, Conduct a critical review of relevant literature and state-of-art techniques, Define a research approach or methodology, Perform empirical design and experimentations, Analyze data and results, Perform benchmarking, Compose research thesis with findings, Research presentations.

SWT41021 Cloud Application Development

Introduction to Cloud Application: Why need cloud, Benefits of cloud application, Cloud computing services, best practices in the design and development, Cloud Application Architectures: Cloud reference model, type of clouds, Open challenges, Critically analyses advantages, disadvantages and the underlying architectures of application frameworks, Enterprise Cloud vendors & cloud service providers: IBM, Amazon AWS, laaS Providers, Paas Providers, SaaS provider, Evaluate and assess how application frameworks facilitate the implementation of various design patterns and architectures for cloud-based applications, Cloud Application development: Create, implement and deploy a cloud based application, Construct and present a complex dynamic cloud based application through selecting an application framework taking into account the evaluation and assessment of application design, development, and testing methodologies, Virtualization: introduction, characteristic of virtual environment, virtualization and clouding, case study.

SWT41032 Advance Software Engineering

Software Requirements Modeling and Specifications, Object-Oriented and Function Oriented Analysis Modeling and Design, Advanced specification and design in UML, Component-based software engineering Rapid development processes and techniques, Advanced validation and verification methods, Configuration management, Software Testing

and Quality Assurance, Software Measurement and Metrics Formal Specifications, Empirical Software Engineering and other advanced topics, such as Capability Maturity Model.

CIS41022 Advance Database Management System

Concepts, principles, and techniques obligatory to carry functions such as database object engenderment, storage management and capacity orchestrating, performance tuning, backup and recuperation, and security management, Standard relational database management system (RDBMS) as a platform for class injuctive authorization and assignments, Advantages and disadvantages of using a database management system and professional design tools, Formal language of data definition and data manipulation to accomplish various administrative tasks, Components of alternative database models and appreciate how implementations as systems may vary from the relational model, : Indexing and hashing, Transforming a complex conceptual design into a logical data base design and to a physical database design, Database administration function, Classic data structuring technique.

CMS41012 Professional Practice

Introduction to decision making, Professionalism, Professional judgment, Using standards, Codes of ethic, Social intelligence, Professional associations, Communication, Ethics, Differentiation between law, morals and ethics, Communication and professionalism, Professionalism and ethics, Ethics and professional judgment, professional judgment and social intelligence.

NST41032 Risk, Crisis and Security Management

Introduction and background to technology, crime and security, Information assets and the issues with information security, Security measures designed to protect information assets, Identification of security threats and the design of risk control measures, Security risk assessment and implementation of risk control strategies, Information security standards

and policies, for example; BS 7799 and BS ISO/IEC 17799:2000, Protection mechanisms, Legal, ethical, and professional issues, Information security maintenance.

CIS41012 Data Analytics and Business Intelligence

Concepts and fundamentals of data mining and business intelligence, Data mining process: cross Industry standard processing (CRISP) for data mining, Data preparation and graphical exploration: visualising large data sets, data cleaning, outlier detection, variable transformation, Prediction and classification methods for business Intelligence: decision trees, logistic regression and neural network models, Mining relationships among records: cluster analysis, association analysis ('market basket analysis'), Forecasting time series for business intelligence, Model evaluation and predictive performance.

UCT41011 Industrial Automation and Ladder programming

Introduction to Automation system, Automation in Production System, Principles and Strategies of Automation, Basic Elements of an Automated System, Advanced Automation Functions, Levels of Automations. Flow lines & Transfer Mechanisms, Fundamentals of Transfer Lines, Industrial Control Applications, Material handling and Identification Technologies Automated Manufacturing Systems, Quality Control Systems, Control Technologies in Automation, Computer Based Industrial Control, Building Blocks of Automation Systems, Modeling and Simulation for Plant Automation: Introduction, need for system Modeling, Building Mathematical Model of a Plant, Modern Tools & Future Perspective, Introduction to Ladder Programming, PLC and Control System Components, Relay Logic Diagrams, PLC Programming, Programming Logic Gate Functions in PLCs, PLC Functions, Interrupts, Process Control, PLC Networks, Applications.

UCT41031 Introduction to Smart Systems

Review of microprocessor and microcontroller based embedded systems, Development tools, in-circuit emulators, Closed loop control systems, control theory, feedback, hysteresis, oscillation, damping, stability, PID, fuzzy logic, control theory case study (Inverted pendulum), Embedded operating systems, Analogue and digital Input/output systems, sampling, Motors, power control, PWM, H-bridge, optical encoders, Mechatronics, robotics, cybernetics, robot kinematics, inverse kinematics, Wired and wireless communications (ZigBee), Home automation, ubiquitous computing, security, Introduction to concepts of Autonomic and self-adaptive systems, Environmental concerns, operating conditions, rugged systems, RFID, system-on-chip, smart dust, Nano scale systems.

NST41011 Computer Security and Forensics

Planning: evidence gathering techniques; involvement of legal authority; involvement of corporate personnel management; record keeping; time constraint; diligence, Network forensics: traffic monitoring, traffic signatures, Simple Mail Transfer Protocol (SMTP) logging, span ports, traffic redirection, traffic reassembly, intrusion detection systems, email trails, firewall logs, anomaly identification and management, scanning tools, Address Resolution Protocol (ARP) poisoning, Workstation or server forensics: analysis of file systems, different operating system profiles, malware detection and removal, working on images of systems, application MD5 fingerprint, registry (system database) change analysis, Data Forensics: storage device data recovery, analysis of data change, database rollback and audit, Device specific behavior: server, desktop computer, mobile device, file system, communication medium, protocol, application used, power status, Presentation of the fact: impartial information; absence of supposition; detailed delivery; independent analysis, Reporting: legal proceedings (civil, criminal, disciplinary, technical review, security audit, procedural audit).

NST41021 Vulnerability Assessment and Penetration Testing –II

Threats: management of threats (awareness, current threats, patches, updates, access policies, maintenance of systems, expertise management), Security policy: review and management (access to systems, establishment and review of Personal, corporate and technical trust; vetting of staff; forensic analysis of systems), Border systems: Intrusion Detection Systems (IDS) e.g. Firewalls filters and rules, email Monitoring, application and packet monitoring, signature management, trust, network behavioral norms; access control e.g. Traffic filters, route redirection, User access: user group e.g. Group membership, user group allocation, attribution of rights; User e.g. personal attribution of rights, continual review of rights allocation; rights e.g. file, server, service, data, hardware, printer, email, Physical security: power resilience and supply; physical access control e.g. lock and key, electronic access control, personnel based security, biometrics; hardware and systems redundancy; backup e.g. data, configuration, imaging; recovery, policies Intrusion detection: precautions e.g. establishment of signatures, establish network behavioral norms, Intrusion prevention: tools e.g. firewalls, access control, traffic filters, Malware: policy levels e.g. desktop, server, router; virus definition deployments, Rights: access e.g. user, group, network, device, VLAN, address range, file, database, time based, Testing: systematic; type e.g. port, address, protocol, load, access, known exploits, Policy review: access policy review; periodic review of user access (physical and system level), System monitoring: monitoring e.g. load, traffic types, peak flow, trend analysis, user access patterns, device behavior, logging servers.

NST40046 Final Research and Development Project

Define a research problem, Critically analyze a problem domain and the significance of desired study, Outline a scope of a research study, Conduct a critical review of relevant literature and state-of-art techniques, Define a research approach or methodology, Perform empirical design and experimentations, Analyze data and results, Perform benchmarking, Compose research thesis with findings, Research presentations.

NST41081 Secure Network Infrastructure

Modern Network Security Threats and attacks, Securing Network Devices, Authentication, Authorization and Accounting , Implementing Firewall Technologies, Implementing Intrusion Prevention, Securing the Local Area Network Cryptographic Systems, Implementing Virtual Private Networks, Implementing the Cisco Adaptive Security Appliance, Managing a Secure Network.

SWT42016 Industrial Placement

Preparing Curriculum Vitae, Apply for companies, maintain the training book, Report writing, Viva and presentation.

NST42016 Industrial Placement

Preparing Curriculum Vitae, Apply for companies, Maintain the training book, Report writing, Viva and presentation.

NB: Course contents of practical course modules are based on relavent Theory course modules.

Thai Pongal Festival at Faculty of Technology

4 Examination Procedure

4.1 Conducting Examination

The end semester Examination (ESE) of a course will be held at the end of the particular semester. Continuous Assessments (CA) are conducted throughout the course in the semester.

The ESE shall be conducted by the Examination unit of SEUSL. The date and time of examination shall be decided at the beginning of each semester by the Dean in consultation with the Heads of Departments and with the approval of the Faculty Board.

4.2 Eligibility for Sitting Examinations

4.2.1 Registration for a Degree and Courses

A student who has registered in the university as an internal student for a particular degree can sit for relevant examinations. At the beginning of each semester, a student should register for the courses he/she is offering in the semester within two week from the commencement of the semester. Those who are not registered for a course will not be eligible to follow the course and sit the examination. Students who fail to complete their intended degree at the end of the specified period should renew their registration to be eligible to re-sit for failed course(s) at the next available opportunity. A student can sit for the examination of a course, only if he/she has registered for the course in the particular semester of the academic year. If a student has not registered for the examination at the next available opportunity, that opportunity is also considered as an attempt of sitting the examination.

4.2.2 Examination Entry Form

A student should submit an application in the prescribed form within the stipulated period to sit for an examination. The eligible students will be issued an admission card to sit for the particular examination.

4.2.3 Attendance for Lectures

Atleast **Eighty percent (80%)** attendance is compulsory for both theory and practical sessions. A student, who has less than 80% attendance for a particular course, will not be allowed to sit for the ESE of that course. Such candidates will have to sit for that particular examination at the next available opportunity.

4.2.4 Sick during Academic Session

If a student falls sick during the academic session, he/she or his/her guardian should inform it to the Assistant Registrar of the Faculty within a period of 48 hours in a written format. This information should be confirmed within a period of two weeks with a valid medical supporting document.

However, in a semester, if a student is unable to attend continuously for 08 academic weeks, the student is deemed to be withdrawn from the particular academic year and need to commence his/her studies from the next academic year in which semester he/she stopped in the previous year.

4.2.5 Signature Forgery on theory and practical attendance Sheet

If a student is found guilty of signature forgery for another student(s) during the lecture / practical session, he/she will be given a written warning and assigned maximum of C+ grade for the particular course.

4.2.6 Signature Forgery on Record book, Examination entry form and Admission card

If a student is found to be guilty of any form of signature forgery on record book and/or examination entry form and/or admission card, he/she shall be a given written warning and withdrawn from entire examination of the particular semester and will be considered as a repeat candidate at the next available examination. In addition, any other punishments recommended by the senate will be imposed.

4.3 Repeat Candidates

4.3.1 The Candidate Missed the First Attempt

A student who does not appear for an ESE of a particular course at the first opportunity available without a valid medical certificate and/or the approval of the Faculty Board and the Senate, shall forfeit the chance of sitting as a fresh candidate and will have to sit as a repeat candidate at the next available opportunity.

4.3.2 Sick during the Examination

If a student who falls sick during the examinations, he/she or his/her guardian should inform this to the Assistant Registrar of the Faculty within a period of 48 hours in writing. This information should be confirmed with a valid medical supporting document within a period of two weeks from the last date of the particular semester examination. The Senate with the recommendation of the Faculty Board will take the final decision on the medical submitted. If the Senate approves the medical certificate, the student has the opportunity to sit for the examination of the course in the next available opportunity as a fresh candidate.

4.3.3 Medical Certificate

A medical certificate is considered a valid document if it is issued by a government hospital. Moreover, a medical certificate obtained from anyone of the following medical practitioners; A University Medical Officer (UMO), District Medical Officer (DMO), consultant Specialist in a particular field or an Ayurvedic Physician Registered in the Ayurvedic Medical Council. Under the exceptional circumstances, a medical certificate issued by a private hospital or a Sri Lanka Medical Council (SLMC) registered private practitioner must be endorsed by the University medical officer.

4.3.4 Maximum Repeating Time

A candidate cannot repeat an examination more than **two (02) times**. During the period of repeating the examination, the student's registration should be valid.

4.4 Re-sitting for Examinations

Any examination conducted by the faculty will not be repeated. Therefore, a student may re-sit for the examination of a particular course only at the next available opportunity. A student can re-sit for an examination, if he/she could not appear for the ESE of a particular course at the first available opportunity.

4.5 Special Needs Students

The special needs students will be given 30 minutes extra time on top of the total hour of the examination, if prior approval is obtained from the Faculty Board and Senate based on the medical justification.

4.6 Releasing of Examination Results

When the results of the ESE of all the courses of a particular semester are received by the Examination Branch, the Examination Branch will summon a Board of Examiners chaired by the Vice-Chancellor. Dean of the Faculty, All Heads

of Departments of the Faculty, all the Professors in the Faculty and Examiners of all the examinations conducted in that particular semester shall be the members of the Board of Examiners. The Board will release the overall performance of the students in that semester giving the Grade Point Average (GPA) obtained by the students in that semester.

5 Evaluation Criteria

A course is normally evaluated by two components; Continuous Assessments (CA) and End Semester Examination (ESE). The weightages of ESE and the CA may vary. The CA are in the form of take away assignments, quizzes, mid examination, case studies, presentations, practical reports, field visit reports etc. In the case of practical courses the method of assessment could be different depending on the nature of the subject. The CAs are held throughout the course . The student failing in CA, ESA or both must repeat respective components. A student must obtain at least 30% of each of CA and ESE components to pass a course unit.

5.1 Theory course units

Duration of a question paper for ESE shall be 1-3 hours depending on the credit value of the course unit. The number of questions shall be **02 per credit** in general.

5.2 Practical course units

Duration of a practical examination at the ESE shall be three (03) hours.

5.3 Assessment method of Industrial training

Students who follow the degree program on BBST and BICT shall carry out continuous industrial training. During this, monitoring and evaluation is carried out by the internal supervisors appointed by the faculty board to evaluate the students' performance. The assessment comprises the following criterias:

Table 5.3.1: Assessment Criteria for Industrial Training

Evaluation Criteria	Marks allocation
On-site Evaluation/Progress report (a record book/daily diary must be maintained by the students to enter daily work done and signed by the employer)	20%
Feedback from industrial training supervisor/monitoring and evaluation report	30%
Oral presentation and viva voce	20%
Final report	30%

5.4 Research project / Innovation project/ Business project / Systems development /Products development

5.4.1 Bachelor of Biosystems Technology

Students who follow the degree program on BBST shall carry out a research component (Research project/Innovation project/Business project/Systems development /Products development) at their Fourth year Second semester of study. The evaluation criteria for research component comprises the following; Project proposal presentation (10%), Progress (Mid-term) presentation (20%), Final presentation (30%) and dissertation (40%).

5.4.2 Bachelor of Information and Communication Technology

Students who follow the degree program on BICT should commence their final year Research and Development Project on 7th semester and to be completed by the end of the 8th semester. The research work comprises following main components; proposal presentation, interim presentation, final presentation and thesis/dissertation.

The Proposal presentation shall be done at the beginning of the fourth year first semester and the interim presentation shall be done at the end of the first semester. The project will be evaluated based on the student's performance throughout the project duration by the way of evaluation carried out by the supervisor(s)/examiner(s), the interim presentation, final presentation and thesis/dissertation.

5.5 Scheme of Grading

The marks obtained for each course will be assigned a grade and a grade point on relative basis with the minimum and maximum grades of E and A^+ for all courses excluding certain Non-GPA courses which are considered as **Pass/Fail** basis. The range of marks is partitioned into sequence of suitable sub-ranges and the sub ranges are represented by the Grades. These grades are assigned Grade Points as shown in Table 5.5.1.

Table 5.5.1: Scheme of Grading

Percentage Marks for refernce	Grade	Grade Point	Description
85 and above	A+	4.00	Excellent
80 to 84	A	4.00	
75 to 79	A-	3.70	
70 to 74	B+	3.30	Good
65 to 69	B	3.00	
60 to 64	B-	2.70	
55 to 59	C+	2.30	Pass
50 to 54	C	2.00	
45 to 49	C-	1.70	Weak Pass
40 to 44	D+	1.30	Conditional Pass
35 to 39	D	1.00	
0 to 34	E	0.00	Fail

Table 5.3: Grading for incompleted Continuous Assessment & Semester Examination

Description	References	Grade point
Both CA and ESE Marks are below the prescribed minimum. Incomplete CA and ESA	E(CA & ESA)	0.00
CA marks is below the prescribed minimum. Incomplete CA.	E(CA)	0.00
ESA mark is below the prescribed minimum. Incomplete ESA.	E(ESA)	0.00

Acadamic concession /out of bound / absent / suspended	N	-
Withdrawn (student applying for the exam and not sitting for the exam – repeat in next attempt)	W	-

ICA: Incomplete Continuous Assessment **ISE:** Incomplete Semester Examination

5.6 Semester Grade Point Average (SGPA)

The calculation of semester GPA will be based on the summation of grade point earned for all the GPA module registered (Except those awarded with academic concession or withdrawn) in a semester weighted according to number of credits as per the following formula ;

$$SGPA = \frac{\sum_{i=1}^{n} Ci\ GPi}{\sum_{i=1}^{n} Ci}$$

Where Ci is the number of credit for the i^{th} module in a given semester, GPi is the grade point earned for the module and n is the number of GPA module in the semester.
Grades will satisfy the following criteria.

i. The grade **D** or above is required to earn credit for a module.
ii. The grades **E, D, D+** or **C**$^{-}$ can be upgraded to a maximum of **C** grade and considered for calculating GPA. Students who wish to upgrade are needed to complete their examinations and obtain the upgraded grade before the relevant final board of Examiners.
iii. The grade achieved for each module will be entered on the student's permanent record. Any subsequent upgrade to any grade will override the grade obtained at a previous attempt in the permanent record.

iv. Percentage pass mark for the **CA** is equalent to the minimum mark assigned for Grade **D+**. Percentage pass mark for the **ESA** is equalent to minimum mark assigned for Grde **D**. Proportion of marks allocated for **CA** and **ESA** must be approved by the university. It is recommended to adopt **30**% for **CA** and **70**% for **ESA** for theory oriented modules and **50**% for **CA** and **50**% for **ESA** for practically oriented modules. For theory and practical oriented modules, **40**% for **CA** and **60**% for **ESA**.

v. Student failling in **CA, ESA** or both **CA** and **ESA** must repeat respective components.

vi. Students is considered to have completed a semester successfully only if he/she has achived a **SGPA** of **2.00** or above, and has, in that semester no **E** grade and no more than **three (03)** grades at the levels of **C-, D+ or D.** (Note: **E** grades will be included in calculating **SGPA**).

5.7 Acadamic Progression

A student who has not successfully-completed the first three semester will not be permited to register for the fifth semester until the SGPA and grades in each of the first three semester are improved as required. Grade(s) obtained for English Language will not be barrier, provided SGPA and other criteria are satisfied.

5.8 Calculation of Cumulative Grade Point Average (CGPA)

GPA is the credit-weighted arithmetic mean of all Grade Points obtained by a student for all the course units excluding non-GPA course units he/she has taken for a particular semester.

The calculation of Cumulative Grade Point Average (CGPA) describe the student's current standing in terms of Grade Point earned for all GPA modules registered upto a given point of time (except those awarded with academic concession or withdrawn). Weighted according to number of credits as per the following formula;

$$CGPA = \frac{\sum_{i=1}^{n} Ci\ GPi}{\sum_{i=1}^{n} Ci}$$

Where Ci is the number of credit for the i^{th} module, GPi is the grade point earned for the module and n is the total number of registered GPA module up to the semester where CGPA is being calculated.

5.9 Auxiliary courses

Of the total requirement for graduation, some credits should be earned through modules designated as Non-GPA courses. A student must obtain a minimum of **pass** grade for the auxiliary course units to be eligible for the award of the degree.

6. Degree Awarding Criteria

The Board of Examiners will meet to consider the performance of the candidates for the award of the degree and classes where relevant.

6.1 Minimum Requirements

To be eligible for the BBST degree, a student should have completed a total of 120 credits and fulfilling the following requirements:

a) obtained a minimum GPA of 2.00
b) obtained at least pass grades for all auxiliary course units
c) obtained no E grades in any course units within the minimum of total credit requirement
d) completed the degree program within six (06) academic years

To be eligible for the BICT degree, a student should have completed a total of 130 credits and fulfilling the following requirements:

a) obtained a minimum GPA of 2.00
b) obtained at least pass grades for all auxiliary course units
c) obtained no E grades in any course units within the minimum of total credit requirement
d) completed the degree program within six (06) academic years

6.2 Award of Classes

In addition to the above requirements, award of classes will be decided by the board of examiners using the following criteria as the guideline.

First Class:

a. obtained a minimum GPA of 3.70,
b. completed the relevant requirements within a period of four consecutive academic years.

Second Class (Upper Division):

a. obtained a minimum GPA of 3.30,
b. completed the relevant requirements within a period of four consecutive academic years.

Second Class (Lower Division):

a. obtained a minimum GPA of 3.00,
b. completed the relevant requirements within a period of four consecutive academic years.

6.3 The Effective Date of Degree

The effective date of Degree shall be the following day of the last day of the completion of ***second Semester examination of 4th year*** for BBST/BICT Degree. For the repeat candidates, the effective date of the Degree shall be the following day of the completion date of repeat Examination.

6.4 Name of Degree award

Name of the degree programme	Designator	Abbreviated qualification
Bachelor of Biosystems Technology Honours in Agricultural Technology	BBST	BBST(Hons)
Bachelor of Information and Communication Technology Honours	BICT	BICT(Hons)

7. General Information

7.1 Student Enrolment

All students are required to enrol themselves before commencing their course of studies each academic year. Students are requested to submit duly completed enrolment forms together with all necessary documents to the Academic and Student affirs division of the University on or before the date specified.

7.2 Subject Registration

- Students are requested to register for the course units every semester of each academic year within two weeks from the date of the commencement of the semester. Duly filled subject registration forms should be submitted to the Office of the Dean with the signature of relevant subject teachers and Heads. Those who are not registered for a course will not be eligible to follow the course and sit the examination.

- At the commencement of each Academic Year students are required to complete a registration form and pay any fees as may be required by the University and maintain registration during the period of study.

- At the commencement of the semester, two weeks of Add/Drop period will be given for students to do necessary changes to their initial course registrations in the majoring /specialization program.

- A student repeating End of Semester Examination or Continuous Assessment of a module is required to complete the registration prior to the end of the Add/Drop period of the respective semester, and if necessary register for the academic year.

- Each student is responsible for the completeness and accuracy of his/her course registration and for registering prior to the set deadlines.

7.3 Academic Load

- The maximum credits a student could register for a semester is 22. Minimum requirement is 06 credits for semesters where industrial trainings and research are taken place, however if a student deviates from the above for a semester, it should be done with the consent of the Academic Advisor.

- The credits per course are normally restricted to 1 to 3 credits, other than industrial trainings and Technological/Innovation/Business/System development project assigned 6 credits.

7.4 Leave from Academic Activities

Two categories of leave from academic activities are available to students *viz* Leave for Long Durations and Leave for Short Durations, complying with the conditions below.

7.4.1 Leave for Long Duration

A student may apply for this category of leave, when he/she has to be away from academic work for a long period due to medical reasons or circumstances deserving compassionate consideration. The duration of leave a student could apply under this category is a combination of full academic semesters to the maximum limit of one academic year.

7.4.2 Leave for Short Duration

A student may apply for this category of leave, when he/she has to be away from academic work for a short period for compelling reasons including but not limited to competitions, sports, demise of close relatives (mother, father, own brother or sister, wife or husband) and medical grounds. Maximum duration of leave a student could obtain under this category is 15 working days per normal semester. It is the student's responsibility to consult the respective examiners in order to make sure that the leave obtained does not affect any of his/her CA or other mandatory evaluation requirements.

7.4.3 In case of a student travelling abroad, the Vice Chancellor upon the recommendation of the Senate may grant leave. Any approved Leave of Long Duration will be a part of the course period for the completion of the Degree.

7.4.4 Only Leave for Long Duration granted under medical grounds will add-on to the maximum period for the purpose of awarding class honours and the maximum period for the completion of the Degree.

7.4.5 Under exceptional circumstances, the Vice Chancellor upon the recommendation of the Senate may grant Leave for Long Duration for circumstances beyond the provisions of Sections 7.4.1 and 7.4.2.

7.4.6 The Senate may also recommend the period of leave granted be added-on to the maximum period for the completion of the Degree.

7.4.7 All leave which fall during ESE will be granted according to by-law governing the conduct of examinations and the student shall apply separately for the same following the guidelines therein.

7.5 Issue of Student Record Book and Identity Card

On completion of the registration, the University will issue every student a Student's Record Book and an Identity Card bearing his her photograph duly embossed with the seal of the University. Every student shall carry the Record Book or Identity Card whilst in the University premises, and shall produce such Record Book or Identity Card when called upon to do so by any member of the academic, administrative or security staff of the University.

7.6 Renewal of Registration

All Students who continue their course of studies during their second and subsequent years are required to renew their registration at the commencement of each academic year on or before the date notified. Forms for renewal of registration are made available at Academic or Examination Branch or the Office of the Dean. The duly completed form for renewal together with Paying in Voucher bearing the bank seal as proof for the payment of renewal fees prescribed by the University, should be submitted to the office of the Dean on or before the closing date specified.

7.7 Payment for enrolment

Details of fee are given below and the payments should be credited to the South Eastern University of Sri Lanka, Account **No. 228- 100190001704,** People's Bank, Addalaichenai through any branch of the People's Bank.

Admission fee (new intake) for All Students

Registration Fee:	Rs. 300.00
Medical Fee:	Rs. 250.00
Library Fee:	Rs. 250.00
Handbook Fee:	Rs. 300.00
Laboratory Deposit Fee:	Rs. 500.00
Sports facilities Fee:	Rs. 200.00
Student Identity card Fee:	Rs 100.00
Student Charter Fee:	Rs. 100.00
Convocation Fee:	Rs 2000.00

Those seeking Hostel Accommodation

Hostel Fee (per year):	Rs. 900.00

Payments for Renewal of Registration for All Students

Renewal Fee:	Rs. 110.00
Medical Fee:	Rs. 50.00
Identity card Fee:	Rs. 100.00
Fees for repeat courses (per course):	Rs. 25.00
Loss of Identity card Fee:	Rs. 300.00
Loss of Record Book Fee:	Rs. 300.00

7.8 Other Services

7.8.1 University Libraries and Museum

The pivotal role of the Main Library is to serve the students and Faculty members of this University to achieve the standard of excellence in their academic programs. The collections and services of the library are designed to match the needs that range from basic support of the curriculum to the advanced research requirements of clienteles. The Library delivers customer focused quality information products, services and programs, creatively adjusts to changing information needs and innovatively responds to new challenges at national and international level.

Digital Knowledge Center, and an American Corner are unique facilities of the Main Library and the Library has a special feature of having a Centre for Physically Challenged to facilitate the users with special needs.

The Cultural Museum is an integral part of the Library, established in 1997. It is a kind of "General Museum", depicting the heritage of Sri Lankan community viz Sinhalese, Tamils and Muslims. It stands to serve the public with the exhibition

of artifacts and manuscripts to glorify the monumental heritage of the communities in Sri Lanka. This Museum foster cultural awareness and cross cultural understanding among the different communities of Sri Lanka.

7.8.2 Student Support Service and Welfare System

The Student Support Service and Welfare System (SSSW) is a central entity to which the students and others could bring their grievances and issues and seek solutions and reliefs. Similarly, it oversees the coordination and cohesion among several service divisions and units to ensure smooth functioning of the system, to remedy shortcomings and deficiencies, and to extend assistance for the students in need.

SSSW encompasses six broader areas, namely Student services, Student accommodation and cafeteria services, Common amenities and services such as recreational and sports facilities, curative and preventive health care services and facilities for social, cultural, creative and aesthetic pursuits, Student welfare, grievance redress and counseling system that will coordinate with university authorities and faculty level student counseling system, Career Guidance Services, and Marshal and Security services.

Further, SSSW will entertain any complaints/problems/grievances from students as regard to food and lodging and financial, education and health matters etc., and provides assistance to needy students in liaison with relevant divisions/units.

7.8.3 Facilities and Services

The students have facilities in the campus such as Library, Computer unit, Student Counselor's office, Proctor's office, Career Guidance Centre, Health Centre, Study room, Reading room, Places of worship, Multi shop, Co-op City, Sporting facilities, Canteen, Bank, Students' Unions, Societies, Hostels, Warden's and Sub Warden's office, Students' Welfare Office, Shroff's Office etc. Officers can be met by prior appointment.

7.8.4 Career Guidance Unit

As part of educational reform proposals, Career Guidance has been identified as a priority since 1998; practically every university has started some activities in this regard.

Career Guidance Unit at SEUSL conducts career related programs in the focal areas such as counseling and advising on careers, employability skills enhancement, career-related information provision, networking with the industries, availing work experience, graduate placement, entrepreneurship skills development and conducting seminars, conferences, workshops, exhibitions, festivals, industry days, career fairs, out bound training, etc.

8. Examination Rules and Punishments

8.1 By-Law No.2 of 1996 for Conducting Examinations

Prepared under section 135 of the Universities Act No. 16 of 1978 as amended by the Universities Amendment Act No. 7 of 1985 and approved by the University Council on 24.08.1996. This By-Law may be cited as By-Law No. 2 and shall come into force on 15th July, 1996.

8.1.1 Rules Pertaining to the Conduct of Examinations:

i. Candidates shall be present at the Examination Hall at least 15 minutes before the commencement of each paper and shall enter the Hall only when they are requested to do so by the Supervisor.

ii. On the admission to the Examination Hall, the candidates shall occupy the seats allocated to them.

iii. No candidate shall have in his person or in his clothes or on the admission card, time table and record book or on any other object that is permitted to be brought to the examination hall. Any notes, signs, diagrams of formula or any other unauthorized materials, books, notes, parcels, file covers, bags etc. which the candidate has brought with him should be kept at a place indicated by the Supervisor or invigilator.

iv. No candidate shall be admitted to the examination hall after the expiry of half an hour from the commencement of the examination nor shall a candidate be allowed to leave the hall until half an hour has elapsed from the commencement of the examination or during the last 15 minutes of the paper.

v. A candidate shall bring into the examination hall his Student Record Book or his University Identity Card which should bear the candidate's photography and his signature duly certified by the Registrar or the Authorized officer. If there is a discrepancy between the names indicated in the Record book or the Identity Card and the name under which the candidate appears for the examination the candidate shall produce a certificate endorsed by the Registrar to the effect that both names refer to one and the same person. In the absence of the above proof of identity a candidate may produce his or her National Identity Card or a recently taken photography duly certified

by an authorized person.

vi. A candidate may be requested by the Supervisor to declare any items in his or her possession or person.

vii. No candidate can either lend or borrow any material from any other candidate or attempt to communicate in any manner with another candidate or copy from the script of any other candidate. No candidate shall attempt to help another candidate or conduct him/her negligently so that another candidate has the opportunity of copying.

viii. Candidates shall write only on the writing paper issued during the current paper on that particular date and session.

ix. Examination stationary (i.e. writing paper, graph paper, drawing paper, ledger paper, precise paper etc.) will be supplied as and when necessary. No sheet of paper or answer book supplied to a candidate may be torn, crumpled, folded or otherwise mutilated. No papers other than those supplied to him / her by the Supervisor/invigilator shall be used by candidates. Log tables or any other material provided shall be used with care and left behind on the desk. All materials supplied, whether used or unused, shall be left behind on the desk and not removed from the examination halls.

x. Every candidate shall enter his/her Index Number on the answer book and every continuation sheet, before using such answer book or continuation sheet. No candidate shall write his/her name or any identifying mark on the answer script. Any candidate who inserts on his script an Index Number other than his/her own is liable to be regarded as having attempted to cheat.

xi. All calculations and rough work shall be done only on paper supplied for the examination and shall be cancelled and attached to the answer script. Such work should not be done on admission cards, time table, question papers, record books or on any other paper. Any candidate who disregards these instructions runs the risk of being considered as having written notes or outline of answers with intention of copying.

xii. Every candidate shall conduct himself/herself in the examination hall and its precincts so as not to cause disturbance or inconvenience to the Supervisor or his staff or to other candidates. In entering and leaving the hall,

he/she shall conduct himself/herself as quietly as possible. A candidate is liable to be excluded from the examination hall for disorderly conduct.

xiii. No candidate shall submit a practical or field book dissertation or project study or answer script which has been done wholly or partly by anyone other than the candidate himself / herself.

xiv. Candidates shall bring their own pens, ink, mathematical instruments, drawing instruments, erasers, pencils and calculator. No candidate shall bring a programmable calculator into the examination.

xv. No person shall impersonate a candidate at the examination nor shall any candidate allow himself/ herself to be so impersonated by another person.

xvi. The supervisor/invigilator is empowered to require any candidate to make a statement in writing on any matter which may have arisen during the course of the examination and such statement shall be signed by the candidate. No candidate shall refuse to make such a statement or to sign it.

xvii. The foregoing examination offences may be broadly classified as follows:

- Possession of unauthorized documents and removal of examination stationary.
- Disorderly conduct of a grave nature.
- Copying.
- Attempting to obtain or obtaining improper assistance or cheating.
- Impersonation.
- Aiding and abetting in the commission of these offences.

8.1.2 Procedure for inquiry and determination of punishment due to those found guilty of examination offences:

Examination offences shall be reported by the supervisor of the examination to senior assistant registrar of the examinations. This will be inquired by the Examination Offences Committee appointed by the Vice Chancellor. The findings of this Committee will be reported to the Senate. The Senate shall after consideration of the report, determine the punishments due to those found guilty of the examination offences.

8.2 Punishments for Examination Offences

Type of Offences	Recommended Punishments
1. Name written on answer scripts	Written warning
2. Possession of bag etc. on or near desk	Written warning
3. Possession of unauthorized materials **a.** Use any information devices in the Examination hall	Students will not be allowed to bring any electronic devices that can save / possess information or be used to get / transfer information. Cancellation of that particular paper and any other punishments recommended by the Senate
b. Possession of relevant material on	Whenever found while sitting for a particular paper,

<table>
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<td>university stationary and / or on / in the human body and / or any other display material</td>
<td rowspan="4">a. The admission card on which that particular exam paper falls will be cancelled. This implies that the particular paper and all the other exam paper/s mentioned in the given admission with this particular paper will be cancelled.
b. This candidate will not be eligible for class awarding.
c. These all cancelled exam papers will be considered as repeat papers in future.
d. And any other punishments recommended by the Senate

Eg. Let a student sit for Second year First Semester proper subject under an admission card A and few First year First semester repeat subjects under admission card B.
- If this student is found guilty while sitting for a Second year subjects, then all the exam papers come under admission card A will be cancelled.
- If this student is found guilty while sitting for a First year subjects, than all the exam papers come under admission card B will be cancelled.

Note: there may be cases a Second year student may write the First year subjects under two admission cards. (One for repeat subjects and other for the proper due to some reasons). Here also same rules said above be applied considering two different admission cards.</td>
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<td>c. Relevant material to relevant Subject</td>
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<tr>
<td>d. Notes found in bags or near desk relevant to examination paper</td>
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<tr>
<td>e. Possession of unauthorized formulae etc. which are relevant</td>
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f. University lecture notes. Subjects based but not relevant to specific examination paper found on/ beside desk. **g.** Possession of unauthorized formulae etc. which are not relevant	Written warning for first offence. Cancellation of that particular paper and any other punishments recommended by the Senate
4. Copying at examination (Refer conducting examination in together)	Whenever found while sitting for a particular paper, **a.** The admission card on which that particular paper falls will be cancelled. This implies that the particular paper and all the other paper/s mentioned in the given admission with this particular paper will be cancelled. **b.** This candidate will not be eligible for class awarding. **c.** These all cancelled papers will be considered as repeat papers in future. **d.** And any other punishments recommended by the Senate.
5. Disruption of examination (Misconduct)	Written warning. If the candidate repeated any other punishments recommended by the Senate
6. Impersonation	**-** Whenever found while sitting for a particular paper and if it is by a student **a.** Debarment for two years and to be referred to disciplinary action. If the student in final year, debarment period depends on duration on completion of degree program.

	b. The admission card on which that particular paper falls will be cancelled. This implies that the particular paper and all the other paper/s mentioned in the given admission with this particular paper will be cancelled. **c.** This candidate will not be eligible for class awarding. **d.** These all cancelled papers will be considered as repeat papers in future. **e.** And any other punishments recommended by the Senate **-** If by an outsider, prosecution to be initiated and any other punishments recommended by the Senate
7. Coping an assignment, project work	Assign zero marks and written warning; and any other punishments recommended by the Senate.
8. Aiding and abetting	Whenever found while sitting for a particular paper, **a.** The admission card on which that particular paper falls will be cancelled. This implies that the particular paper and all the other paper/s mentioned in the given admission with this particular paper will be cancelled. **b.** This candidate will not be eligible for class awarding. **c.** These all cancelled papers will be considered as repeat papers in future. And **d.** Any other punishments recommended by the Senate

9. Removal of University stationary and materials	Warning by the supervisor. If the candidate persists or any other punishments recommended by the Senate
10. Attempt to obtain improper assistance	Cancellation of paper and any other punishments recommended by the Senate
11. Not carrying out the Instructions of the Supervisor at the examination hall.	Verbal Warning by the supervisor. If the candidate persists written warning by the supervisor and any other punishments recommended by the Senate

The Examination Offence committee has the right to recommend any other punishments to the senate for the reported offences which are not mentioned in the type of offences above.

8.3 How to implement:

- Examination Supervisor has to report to the Senate Sub Committee.
- Senate Sub Committee has to report to the Disciplinary Committee for the action.

9. Code of Discipline for Students

SECTION I General Students' Discipline – Act of Indiscipline and Insubordination

1. The conduct of every student should at all times be exemplary. Throughout his period of studentship he should at all times behave with the decorum to be expected of a graduate.

2. Every student should apply himself to his academic work in such manner as to satisfy the university.

3. No. student should commit any of acts of indiscipline and Insubordination listed below:

(01) Behaving in such manner as to bring into disrepute or endanger the good name of the university; to obstruct the proper functioning of the education, examination, or administrative activities of the university; to prevent or obstruct a member of the academic/ non-academic staff, or an employee of the university from carrying out his duties; to ridicule or humiliate such a person.

(02) Failure or inability to produce the Students Record Book, which will be issued to students, when called up-on to do so by the Vice-Chancellor, Dean of the faculty a member of the academic staff, a member of the administrative staff, or by person authorized by the Vice-Chancellor, or the Registrar, or failure to identify himself/ herself.

(03) Causing damage to university property; removing such property from the university premises, appropriating it to himself/ herself or to another; defacing, dirtying or defiling the buildings, walls or roads of the university by scratching, writing, drawing, or pasting posters upon them.

(04) Causing or aiding, abetting, encouraging or sanctioning others to cause injury or harm to the self-respect or dignity of other students, staff officials, employees or lawful visitors to the university, or causing loss, ridicule, danger, mental or physical pain to such person or persons.

(05) Establishing, organizing, conducting or assisting any activity, organization, or society within the university, apart from those registered in terms of Clauses 112, 114, 115, 116, 117 and 118 of Part II of the Universities Act No.16 of 1978 as amended by the Universities (Amendment) Act No. 7 of 1985.

(06) Behaving in such manner as to disturb or disrupt, or to gain admittance without permission, or to cause discomfort or harm to participants in any meeting, seminar, festival, procession, exhibition, variety entertainment, play, film show or religious, cultural or social event, which may have been organized with prior approval from the Vice Chancellor or the Dean of the Faculty by a society or organization which has been registered under the provisions laid-out in section (5) above.

(07) Behaving in such manner as to disturb or disrupt, or to gain admittance without permission, or to cause discomfort or harm to participants in any meeting, seminar, festival, procession, exhibition, variety entertainment, play, film show or religious, cultural or social event, which may have been organized, with prior approval from the Vice Chancellor of the university by the university administration or by the academic or non-academic staff or by an external organization.

(08) Organizing staging, encouraging, sanctioning, or participating in any meeting, seminar, festival, procession, exhibition, variety entertainment, play or film show held within the university premises or in its environs without the prior approval of the Vice Chancellor.

(09) Holding meetings, picketing, demonstrating participating in processions or sloganizing, performing satyagraha, satyakriya of fetes, publishing, drawing, writing, putting or distributing hand bills notices, or posters or encouraging

sanctioning or assisting others to commit such action, whether in favour of a university teacher or an official or an employee of the university or in favour some cause out side the university.

(10) Ragging in any form (N.B. any person caught ragging is liable to be expelled from the university without any inquiry being held).

(11) Collecting, or encouraging to collect or sanctioning the collection of money or any other items from students of the university, or the retention or disbursement of such funds or items, by any person whether an office bearer of a registered society or not unless it is with the full written consent of the Vice Chancellor.

(12) Writing, printing, publishing, distributing, exhibiting or pasting either within the university, or in its vicinity, posters, notices, pamphlets or other writing slanderous to any individual or detrimental to the reputation of the university to discipline or to peace.

(13) Publishing, pasting, exhibiting, writing or drawing any notice or poster, in any place other than those authorized for such display, even if such action is in connection with the activities of a society registered with the University in terms of Clause 115 of Part III of the Universities Act. No. 16 of 1978, as amended by the Universities (Amendment) Act. No. 7 of 1985, and even if such notice or posters have been approved by the Vice Chancellor, Dean of the faculty or the relevant teacher.

(14) Publishing, broadcasting, telecasting or releasing to the mass media, whether by the student on his own responsibility, or on behalf of another student or group of students on or behalf a society, any statement article or notice, detrimental to the reputation of the University or insulting or humiliating the university or insulting/humiliating the university authorities, or any official or employee of the university, or any other person connected with the university.

(15) Consumption, distribution sale or storage of drugs, liquor, within or bringing such into the university or been under the influence of liquor or drugs within the university or encouraging assisting or sanctioning such action by any other person.

(16) Bringing into or keeping or storing within the university, any weapon, explosive or dangerous article or encouraging or assisting in such action.

(17) Non-provision or the avoidance of provision of information needed by or requested by the university or the provision of false or distorted information.

(18) Abuse or misuse of university buildings, ground equipment or other property belonging to the university or their use for unsuitable, unsanctioned or improper purposes non-observation of the rules for their rules.

(19) Students will not be provided with residential facilities for remaining within the university premises during times when the university is closed for students (such time may be subject to periodic changes).

(20) Any act for which the student could be convicted by a lawfully constituted court of law for an offense against the laws of the republic of Sri Lanka.

SECTION II Punishments

01. Any student/s found guilty of any offense specified as an act of indiscipline or in subordination in Section (I) above, or of attempting to subvert the provision of this section (Section II – Punishment) may receive one or more of the punishments listed below, as deemed sufficient by the Vice Chancellor acting in accordance with the findings and recommendation of the Disciplinary committee.

(1) A caution or severe warning.

(2) A fine (Decided by Disciplinary Committee)

(3) Recovery of any loss sustained by the university.

(4) Suspension from classes, examinations and from the use of all university facilities for a specified period.

(5) Suspension from sitting for examinations of the university for an unspecified period.

(6) Cancellation, postponement or suspension of the release of examination results for an indefinite period.

(7) Regard as having relinquished the course and/ or the university.

(8) Expulsion from the university (The imposition of any one or more of the above punishments may be suspended. Note that the punishment for ragging will be expulsion from the university).

02. The Vice Chancellor may impose one or more of the punishments listed in Section II, No. 01 (1) to 97) above without holding any preliminary inquiry, and without obtaining the sanction of any other person, and so as to take immediate effect, if he has reason to believe that the actions or behavior of any students could lead to a break-down of discipline in the university or render difficulty in the normal running of the University or lead to a breach of the peace.

03. Any student disaffected by the imposition upon him of one or more of the punishments listed in Section II No. 01 (1) to 97) may appeal against the punishments to the Vice Chancellor within 14 days of being notified of the same.

04. The determination that the Vice-Chancellor shall make on such appeal, in consultation with the council shall be final.

05. Apart from the imposition of the punishment listed in Section II No. 01 (1) to (8), if a student has been guilty of any offence referred to in Section I, the university reserves for itself the right to review and reevaluate the conduct of such student/s during his/ their period in the university, before conferring upon him any degree, diploma or certificate.

SECTION III Interpretation

01. "University" means here the South Eastern University of Sri Lanka.

02. "Property" means here university buildings, plantations, library, furniture, and equipment, vehicles and all other moveable and immovable property.

03. "He", "him", "his, etc., indicate both male and female.

04. The interpretation given to any word, phrase or sentence by the Council will be the final interpretation. (Subject to revision by the council)

Note: