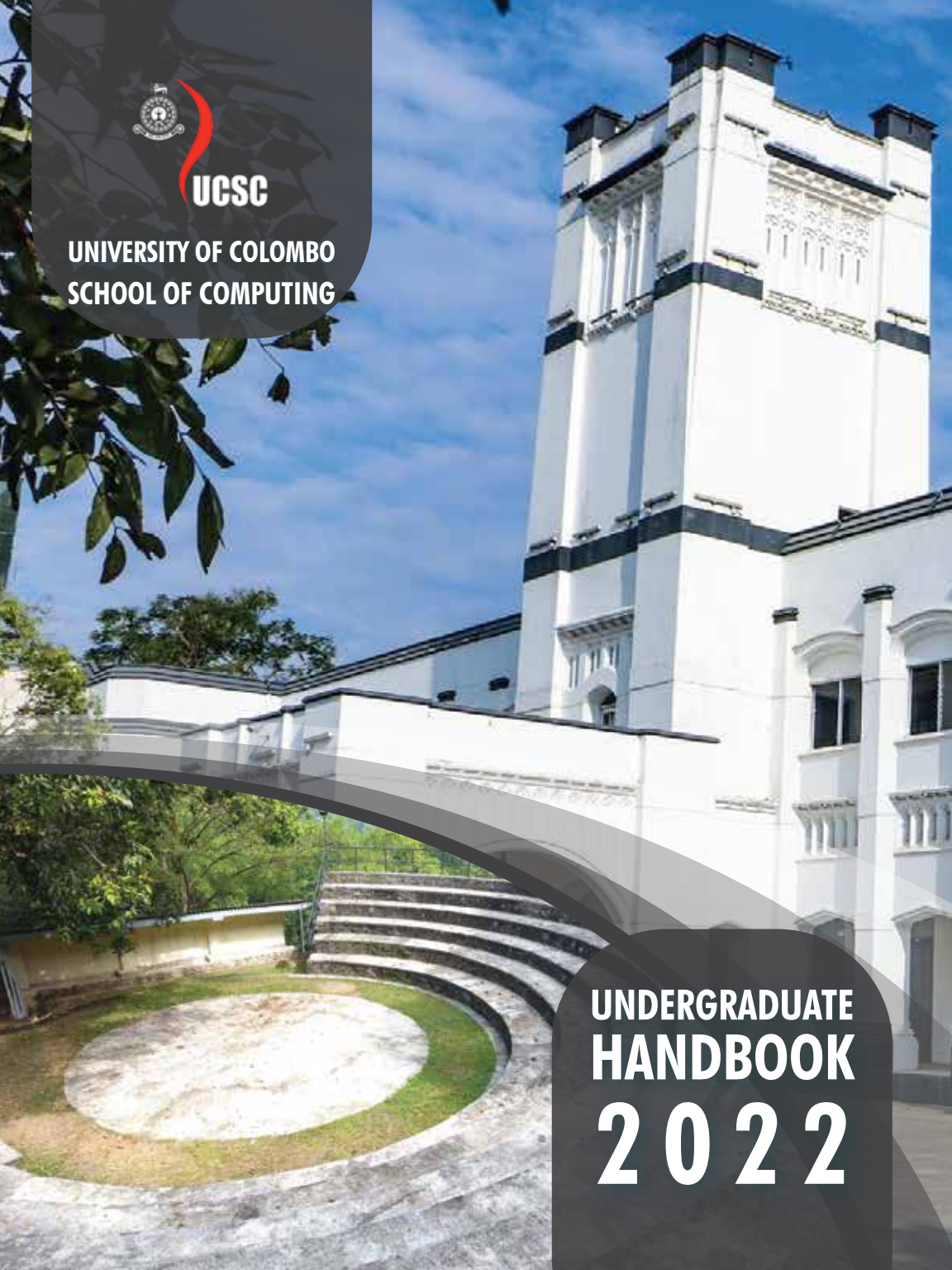

UCSC
UNIVERSITY OF COLOMBO
SCHOOL OF COMPUTING
UNDERGRADUATE
HANDBOOK
2022



University of Colombo School of Computing

UNDERGRADUATE STUDENT HANDBOOK 2022

Bachelor of Science in Computer Science (BSc. in CS)

Bachelor of Science Honours in Computer Science (BSc. (Hons) in CS)

Bachelor of Science Honours in Software Engineering (BSc. (Hons) in SE)

Bachelor of Science in Information Systems (BSc. in IS)

Bachelor of Science Honours in Information Systems (BSc. (Hons) in IS)



Disclaimer

This handbook is compiled with information received up to May 2022, and is applicable to the students of Academic Year 2020/2021
[Based on the G.C.E. (A/L) Examination 2020]

It is hereby informed that this handbook is only for general information and is not for official purposes.

Any information contained herein should be confirmed by reference to the relevant authority.

For the latest version of the handbook please visit our website

http://www.ucsc.cmb.ac.lk/ug



Vision

Be a global leader in computing, advancing the frontiers of new knowledge through learning and research.

Mission

To advance and enhance computing knowledge, fostering global strategic alliances, promoting crossdisciplinary research, producing socially responsible professionals with entrepreneurial skills, leadership qualities and integrity contributing to position the country as a knowledge hub in the region.



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MESSAGE FROM THE VICE CHANCELLOR



I am indeed pleased to issue this brief message on the occasion of publishing the Undergraduate Handbook 2022 compiled by the University of Colombo School of Computing (UCSC).

With the subsequent developments taking place in the area of information and communication technologies as well as the eagerly awaited structural changes in IT education in Sri Lanka, the need of a fully pledged higher educational institute aroused and as a result of that the University of Colombo School of Computing was established in 2002. I will be failing my duty, if I do not mention the name of the late Professor V K Samaranayake who have rendered valuable services and dedicated contribution to the development of UCSC.

I am happy to note that the UCSC at present provides valuable service to the IT education in Sri Lanka. I am happy to mention that under the able guidance of the current Director Professor K P Hewagamage, UCSC could become a valuable and rich place in Sri Lanka.

I am sure that, this handbook will provide the new entrants with up to date information about the place of learning they are about to enter. A handbook is always useful not only to the students but to those who wish to have an in-depth knowledge of the activities of

the school including the operational mechanism of both academic and administrative spheres. I would like to thank the Handbook Committee of the UCSC for embarking on a very useful and constructive exercise.

As students of this University I hope that you will derive maximum benefits from the treasured opportunities that will be bestowed to you and be broadminded responsible citizens in future.

Finally, let me again extend my best wishes to you for a rewarding experience at the University of Colombo.

Senior Professor H D Karunaratne
Vice Chancellor

MESSAGE FROM THE DIRECTOR



I am honoured to welcome all new undergraduates to the University of Colombo School of Computing on behalf of our staff and the students. Simultaneously, I would like to congratulate all of them for being fortunate to get the admissions for the best higher education centre in Computing in Sri Lanka. Since the beginning in 2002, the University of Colombo School of Computing has been holding the number one position in Sri Lanka by having the most advanced training resources and experience in information and communication technology.

You have entered a new era of higher education, and it will be totally different from your school education. In the university education, the role of teaching is just to facilitate the learning. Thus, UCSC is dedicated to a student centered education which encourages the academic excellence through well defined and gradually updated syllabi. Moreover, we have a well qualified academic staff to support all of you, by any means necessary to ensure that the students reach their fullest academic potentials. In that manner, since the beginning, UCSC has been gradually moving towards success by following the vision of the UCSC, "be a global leader in computing, advancing the frontiers of new knowledge through learning and research". Simultaneously, UCSC has been doing a great service to the country by fulfilling the increasing demand for IT professionals. In 1985, UCSC introduced Computer Science as a field of specialization and has produced a significant number of graduates for the IT industry in Sri Lanka.

Another significant fact that you have to keep in your mind is the importance of English for the successful completion of the degree. Since all the courses are conducted in English, you may have to face certain challenges during the period of your university education. Therefore, it is essential to work hard to overcome these barriers. Although it is considered a barrier, with the

English learning background the students will be able to enhance their English language proficiency at the end of the course.

Apart from the best ICT education, life at the University of Colombo School of Computing is also enriched with resources for extracurricular activities. Thus, the students will be able to balance the extracurricular activities with their studies. Therefore, as students you must be able to get the best out of them during your academic years in the university. Within your study period, you will be able to experience a range of events organized by the students throughout the year. With your entrance to the second year you will get the opportunity to organize those events which will improve your innovative and social skills and those will also affect your personal development. In your life, you may never again be able to do certain things that you are going to do here with the same amount of expert advice and inspiring social background. Therefore, please take the fullest benefits of these opportunities.

The beginning of everything is hard. You might face problems trying to adjust to the new environment. At the same time, you may face unpleasant physical, mental and financial difficulties. But try to be strong and go towards your target. I assure you that our staff is always available for you and you can freely discuss your problems with them. They will be happy to help you and guide you throughout your stay at UCSC. Therefore, we expect you to maintain a good relationship with the academic advisors, counselors and the mentors.

Finally, I would like to remind all of you that as the best higher education center in IT in Sri Lanka, we are dedicated to enhance your education and develop skills since we regard that the future and the development of our country depends on you. Providing best professionals, well developed syllabi or the best courses cannot make you an outstanding graduate unless you take the responsibility on your own and become active learners and follow your studies properly and independently. Thus, I hope that all of the new undergraduates will do their best and grow into locally and internationally renowned personalities with innovative and expert minds. Once again, I wish you all the best for the new journey that you are going to commence at the University of Colombo School of Computing.

Dr. D A S Atukorale
Director, University of Colombo School of Computing

MESSAGE FROM THE HEAD OF UNDERGRADUATE PROGRAMMES



It is with great pleasure that I welcome you to UCSC. I entered the faculty of Science at the University of Colombo in 1992 as a student. I immensely enjoyed my undergraduate life at UoC. I am sure you will also enjoy your life at UCSC.

UCSC and the University of Colombo have provided state-of-the-art facilities to enhance your learning experience, extra curricular activities, and social life at UCSC.There are a large number of clubs and societies and sports activities available to UCSC students. Make full use of those facilities. This handbook is a roadmap to navigate your life at UCSC.

I wish you all the best.

Dr. C I Keppitiyagama
Head of Undergraduate Programmes,
University of Colombo School of Computing

AN APPRECIATION OF THE FOUNDER DIRECTOR OF THE UCSC

Vidya Jyothi Professor
V. K. Samaranayake (1939 – 2007)



Vanniarachchige Kithsiri Samaranayake was born on the 22nd of May 1939, and had his early education in Hewavitharana Vidyalaya, Rajagiriya, where his father was the principal and his mother was a teacher. He entered Ananda College in 1948 and then Royal College through a competitive examination in 1950.

Prof. V.K.Samaranayake entered the University of Ceylon to read for a degree in Science in 1956 having completed his secondary education at Ananda and Royal Colleges. He was selected to do a Special degree in Mathematics and obtained a First Class Honours degree in 1961.

Prof. Samaranayake entered the Imperial College, London in 1963 on a state scholarship for his postgraduate studies and then moved on to University College, London to complete his PhD in record time before returning home in 1966. At the age of just 35, in recognition of his great scholarship, the University of Colombo appointed him to its highest Academic position of Professor of Mathematics in 1974. He was subsequently appointed Senior Professor of Mathematics in 1984, invited to be the first Senior Professor of the newly created Chair in Computer Science in 1996 and was appointed Emeritus

Professor of the University of Colombo after his retirement in 2004. In recognition of which the University honoured him with the title Professor Emeritus of Computer Science, and conferred on him the Degree of Doctor of Science, Honoris Causa at its subsequent Convocation.

As it is not possible to confine the appreciation of his enormous service to the nation and his illustrious career as an academic and an administrator to a few pages, some of the significant milestones of his illustrious career are outlined below.

- 1987 - 1999 He held the position of the Chairman of the Computer and Information Technology Council of Sri Lanka (CINTEC). During this period he was also tasked with chairing the Presidential Task Force on Integrated R & D in Science & Technology 1997-2000 and the National Y2K Task Force in Sri Lanka 1998-2000.
- 1992 - He initiated the participation of Sri Lankan school children in Computer Programming, by committing CINTEC funds for sending teams of 4 to the International Olympiad in Informatics (IOI).



- In 1995 he was instrumental in setting up intensive discussions with Sri Lanka Telecom, to commence Internet services in Sri Lanka. These discussions eventually brought LEARN and Internet connectivity to Sri Lanka in 1996.
- He was instrumental in forming the IT for Computer Training Organizations (ACTOS), for the Software Industry (SLASI), and for the Computer Vendors (SLCVA). He also created the umbrella organization for these associations in the form of the Federation of IT Industry Associations (FITIA).
- In 1984 he was successful in building up Academic Faculty in Computer Science at the University of Colombo. Starting with the Statistical Unit, the Statistical Computing and Data Processing Centre within the Mathematics Department, Prof. Samaranayake first convinced the University to set up a Department of Statistics and Computer Science in 1985, the first of its kind in Sri Lanka, and then went onto create the first School in the university system in the form of the University of Colombo School of Computing (UCSC) in 2002.
- Commencing in the year 2000, Prof. Samaranayake initiated another major milestone in ICT HRD in Sri Lanka with the launch of the innovative Bachelor of Information Technology (BIT) External Degree programme. Apart from the prestige of a University of Colombo degree to students, the BIT programme also has the indirect but most desirable effect of standardizing ICT education of an era where commercialism is threatening the quality of education.

- His quest for capacity building in ICT human resources can be seen more clearly by his single-handed contribution to this area at the University of Colombo – making it the showcase among the entire university system in Sri Lanka and beyond. Investing in human resource development in ICT is also a huge risk – that of aiding in the brain drain. This is where Prof. Samaranayake's broadness of vision and almost unswerving trust, especially in the case of training Faculty of the University, is most clearly seen. Commencing with the meagre funding resources extended by donors in 1970s an era when the developed countries themselves were just getting into the area of serious ICT human resource development, Prof. Samaranayake commenced his quest of directing all local and foreign funding to develop ICT Human Resource development at the University of Colombo.
- In recognition of his towering contribution in the field of ICT in the country, he has been bestowed with several national awards in the form of the Lions' Club Gold Medal for the Most Outstanding Citizen of Sri Lanka in 1986, the Vishva Prasadini Award in 1996 on the occasion of the 80th birthday of the then Prime Minister Sirimavo Bandaranaike and the Vidya Jyothi Presidential Award in 1998.
- Prof. Samaranayake inspired the government which declared an Information Technology Week in December 2004. He also continued as the Chairman of the International Information Technology Conference till his untimely demise.

01

Introduction



Sri Palee Campus

UNIVERSITY OF COLOMBO

The University of Ceylon was established by the state council in April 1942. By 1950, the University of Ceylon had gained a reputation as an important centre of excellence in the Commonwealth. The Higher Education Act of 1966 established a National Council of Higher Education (NCHE) and later in 1972, under the University of Sri Lanka Act No. 1 of 1972, all universities were brought under one umbrella and made campuses of a single university and established as the University of Sri Lanka.

The University of Ceylon, Colombo was named the Colombo Campus of the University of Sri Lanka. This system prevailed until 1977. The University autonomy was weakened and as a result, a new Act was introduced in 1978. Under the Universities Act No. 16 of 1978, all campuses of then single university became independent universities. Accordingly, the University of Colombo, Sri Lanka regained its autonomy in 1978. The University of Colombo now consists of five faculties, one school (University of Colombo School of Computing), four institutes and several centers in addition to the Sri Palee Campus.

The University of Colombo is a public state university located primarily in Colombo, Sri Lanka. The University of Colombo is the oldest institute of modern higher education in Sri Lanka, specializing

in the fields of natural, social, and applied sciences as well as mathematics, computer sciences, medicine, education, and law. It has been ranked among the top 10 universities in South Asia.

The University of Colombo with a proud history of over 115 years continues in its endeavor to meet the challenge of maintaining its position as the "Metropolitan University, Modern and International in Outlook and Character". The location of the University affords the student population all the advantages of a "metropolitan university", with easy access to international information/ resource centres, libraries, theatres, sports complexes etc.

Its central location within the City of Colombo provides easy access to a wide range of cultural, entertainment and business facilities. The University of Colombo has a multi-cultural multi-ethnic student and staff population, fostering social harmony, cultural diversity, equal opportunities and unity.

The University of Colombo has nine Faculties with 56 Academic Departments, a Campus, a School, 7 Institutes and 8 centres. The following faculties cater to undergraduates as well as postgraduates of the respective disciplines.

- Faculty of Arts
- Faculty of Education
- Faculty of Law
- Faculty of Management and Finance
- Faculty of Medicine
- Faculty of Science
- Faculty of Nursing
- Faculty of Technology
- Faculty of Graduate Studies

KEY OFFICIALS OF THE UNIVERSITY OF COLOMBO



Chancellor

Sasana Keerthi,
Sri Buddha Sasana Shobana,
Venerable Muruththetuwe Ananda Nayaka Thero
Chief Sanganayake Western Province



Vice Chancellor

Senior Professor (Chair) H.D. Karunaratne

E-mail: profkaru@dbe.cmb.ac.lk
hdkaru@yahoo.com



Registrar

Mr. K A S Edward

Contact No: (+94) 112583810
E-mail: registrar@cmb.ac.lk



Senior Student Counselor

Dr. G R P Silva

Contact No: (+94) 112583108
E-mail: ssc@cmb.ac.lk



Student Counselor

Ms. Nirosha Kulasekera

Contact No: (+94) 702211311



Acting Director Physical Education

Mr. J. M. S. Jayasinghe

Contact No: (+94) 112502405



Chief Medical Officer - Medical Centre

Dr. K D I Wasudeva

Contact No: (+94) 112584985



Deputy Chief Marshal - Marshall Office

Mr. P S P Direcksze

Contact No: (+94) 112583107/ (+94) 112559906

E-mail: dcm@mo.cmb.ac.lk

DIRECTORS



Dr. D A S Atukorale

2022 - Present



Professor K P Hewagamage

2016 - 2022



Late Professor
G N Wikramanayake

2010 - 2016



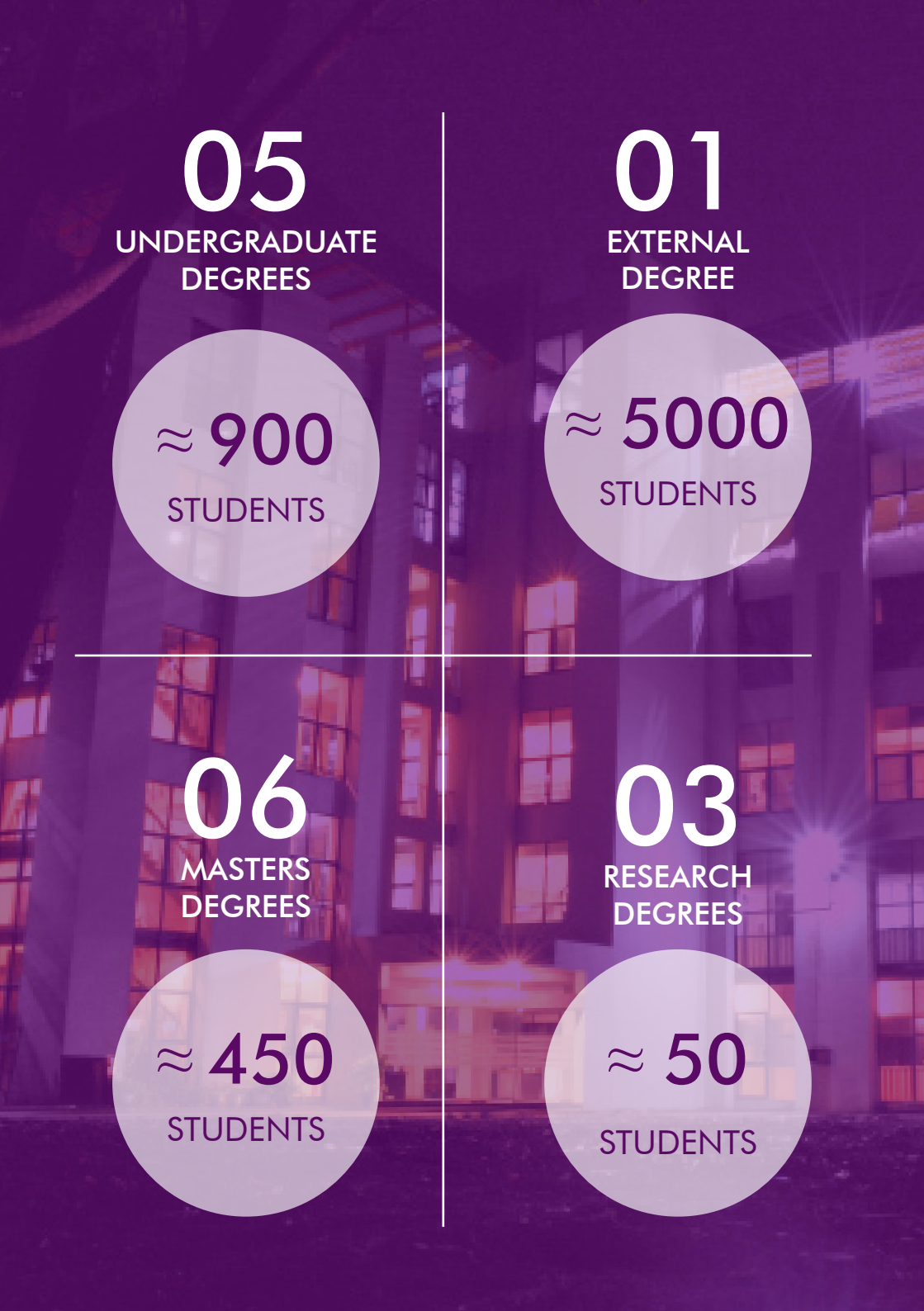
Dr. A R Weerasinghe

2004 - 2010



Late Vidya Jyothi Professor
V K Samaranayake

2002 - 2004


05
UNDERGRADUATE DEGREES
≈ 900
STUDENTS
01
EXTERNAL DEGREE
≈ 5000
STUDENTS
06
MASTERS DEGREES
≈ 450
STUDENTS
03
RESEARCH DEGREES
≈ 50
STUDENTS

OUR DEGREE PROGRAMMES

Internal Undergraduate Degree Programmes

Bachelor of Science in Computer Science (BSc. in CS)

Bachelor of Science Honours in Computer Science (BSc. (Hons) in CS)

Bachelor of Science Honours in Software Engineering (BSc. (Hons) in SE)

Bachelor of Science in Information Systems (BSc. in IS)

Bachelor of Science Honours in Information Systems (BSc. (Hons) in IS)

External Undergraduate Degree Programme

Bachelor of Information Technology (BIT)

Postgraduate Degree Programmes

Master of Computer Science (MCS)

Master of Science in Computer Science (MSc. in CS)

Master of Information Technology (MIT)

Master of Information Security (MIS)

Master of Business Analytics (MBAnalytics)

Master of Cybersecurity (MCyberSec)

Postgraduate Research Degrees

Doctor of Philosophy in Computing (PhD)

Master of Philosophy in Computing (MPhil)

Opening of the Colombo University Computer Museum by Senior Prof. Chandrika Wijeyaratne



COMPUTING LEGACY @ UOC

As part of the centennial celebrations of the Faculties of Science and Arts of the University of Colombo and of the University Library, the University of Colombo School of Computing (UCSC) unveiled the 'University of Colombo Computer Museum' at its premises, the first of its kind in Sri Lanka, along with an online e-museum at http://emuseum.ucsc.cmb.ac.lk. This was inaugurated by the Vice Chancellor, University of Colombo, Professor Chandrika Wijeyaratne on 21st January 2021, at the UCSC.

Colombo University Computer Museum



Visit Interactive eMuseum @ https://emuseum.ucsc.cmb.ac.lk/



1921 - 2021

University of Colombo | Celebrating 100 years of excellence in Science

The emuseum will provide a virtual immersive experience to the public, especially to the younger generation allowing them to embark on a journey of technological discovery of the evolution of computers, which has now become an integral part of the social life of every human.



1970



The Statistical Unit was formally approved by the Senate of the University of Ceylon, Colombo, at its 20th meeting held on 26-06-1970 as a unit for the entire university to undertake statistical and data processing

1972



The Department of Mathematics and the Statistical Unit of the University of Colombo made a ground-breaking attempt to initiate new course units in Mathematics, Statistics and Fortran Programming leading to Statistical Services job stream for the students with the new Special Degree in Development Studies in the Faculty of Arts.

1977



Under the Colombo-Reading Collaboration, the Department was gifted an HP 9825 Mini Computer with a Card Reader

1980



A Data General Eclipse NOVA/4 minicomputer was obtained by a loan in 1980 for one year and housed it in the Department of Mathematics

1981



The first minicomputer Data General Eclipse Model S/140 was purchased with time-sharing OS and 16 VDU for Fortran and Cobol Programming

1981



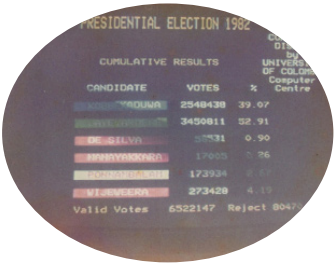
Establishment of the Computer Centre

1981



The Department of Mathematics granted its first local PhD in Computing and Statistics for the first time in the history of the university Education in Sri Lanka

1982



BBC computers were used to process and release the results of the 1982 presidential elections (first ever computerization of a national event) to Rupavahini, the national TV; proliferation of BBC microcomputers over Econet, the first LAN for file sharing, printing and basic programming in a 30 machine PC lab; Introduction of first-generation personal computers-KayPro CP/M.

1982


DAILY NEWS

...tension course

computer programming

The University of Colombo has started an extension course in computer programming according to a spokesman for the University. ... has been organised ... Department of ... of the ...

A large number of potential students of computer science have benefited by this ... tension course which ... cheap compared to ... charges made b... institutions.

An adva...

Three certificate courses in Computer Applications, specially designed for users in Scientific, Technological and Financial & Management were introduced. The three courses are; Certificate Course in Computer Applications in Science and Technology using FORTRAN, Certificate Course in Computer Applications in Financial & Management using Business Basics and Certificate Course in Computer Applications in Finance & Management using COBOL.

1983



Establishment of Micro Computer Laboratory for the Computer Center

1984



Introduction of the International Course on Statistics and Agriculture

1985



Establishment of the Department of Statistics and Computer Science (DSCS)

1986



Local Language Development

1987



Establishment of the Institute of Computer Technology (ICT) (Funded by JICA)

1988



UNICODE Initiative

1996



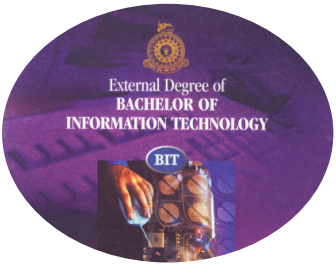
National Website for Sri Lanka

1999



Institute of Computer Technology Presented with JICA President's Award

2000



Introduction of the Bachelor of information Technology (BIT) External Degree Programme

2002



Establishment of the UCSC by the merge of the ICT & DCS University of Colombo School of Computing

KEY STRENGTHS

Highly Qualified Academic Staff



Competency of the academic staff is one of the crucial factors in UCSC's focus on high-quality academic excellence. The UCSC presently has 06 professors, 30 PhD qualified academics graduated from leading universities in UK, Canada, Australia, Japan, Sweden etc., 08 MPhil and Master's qualified staff to assist in the academic activities. Another key strength of the staff is their expertise in diverse domains in Computing. The academic staff publish their research findings in reputed Journals and Conferences each year. The human resource which has been built up over a long period of time with foresight as a long-term investment is now bearing rich dividends.

Strong Research Potential



With the strong research training investment over the past decades, the UCSC now possesses undoubtedly the strongest research potential in computing in Sri Lanka; one which matches that which is available in the best of international universities. UCSC is reputed for its international collaboration with research teams in Europe and Asia through funding agencies such as Japan International Corporation Agency (JICA), Swedish International Development Agency (SIDA), and International Development Research Centre (IDRC). Several recent research outcomes at UCSC have received local and

Healthy Industry-University Relationship



The Professional Development Centre (PDC) of the UCSC develops and promotes strategic relationships with key organizations in the Information Technology industry. PDC places over 300 students each year on an internship as a part of their undergraduate degrees in the software industry for a period of six months. The Computing Services Centre (CSC) of the UCSC undertakes consultancy work for state and private sector organizations. The CSC also conducts short term training courses in diverse areas of emerging technologies.

Funding and Facilities



One of the cornerstones of the success of the UCSC and its predecessors has been the international level facilities available for the faculty and students. It has been one of the key factors through which staff retention has been possible. This resource has been strengthened over the years through the support of international donor agencies which has been readily forthcoming owing to our past track record. In addition to this, the UCSC's earning through consultancy and research has made it self-sufficient with respect to operational expenses and the acquisition of state-of-the-art infrastructure.

OUR ORGANIZATION

The primary activity of the University of Colombo School of Computing is to deliver quality undergraduate and postgraduate degree programmes in Computing. The UCSC has three academic departments, four administration and finance divisions and six centres. The academic staff is allocated to the three academic departments based on their specialization and teaching expertise. The main administrative and operational units of UCSC are shown in Figure 1.

Academic Departments

Academic Departments	Department of Computation and Intelligent Systems (CIS)
	Department of Communication and Media Technologies (CMT)
	Department of Information Systems Engineering (ISE)

Centres

Centres	Advanced Digital Media Technology Centre (ADMTC)
	Centre for Digital Forensics (CDF)
	Computing Service Centre (CSC)
	External Degrees Centre (EDC)
	e-Learning Centre (eLC)
	Professional Development Centre (PDC)

Board of Studies

BoS: Board of Studies, consists of IUD, RHD and EEP	Internal Undergraduate Degrees (IUD)
	Research and Higher Degrees (RHD)
	External and Extension Programmes (EEP)

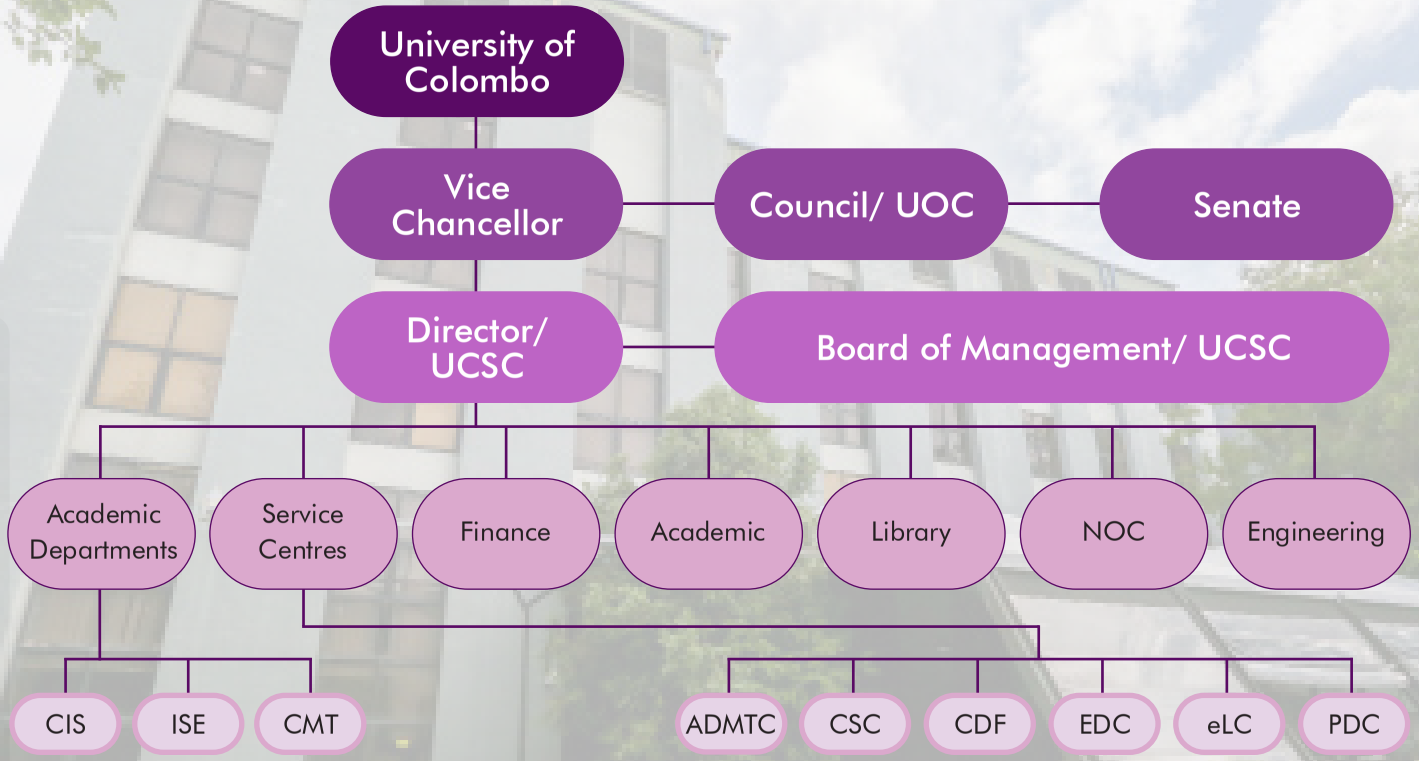


Figure 1: Administration and Operational Units



Vidya Jyothi Prof V. K. Samaranayake Auditorium

CENTRES OF THE UCSC

UCSC performs several secondary activities. These activities are organized under six separate centres. Each centre has a coordinator who manages the day-to-day operations of the centre. The six centres are as follows:

Advanced Digital Media Technology Centre (ADMTC)

Advanced Digital Media Technology Centre (ADMTC) was established under the UCSC in order to implement the "Project for Human Resource Development in Information Technology through capacity building of the UCSC" that was supported by JICA. The centre is equipped with a state of the art digital studio and multimedia laboratories. This centre conducts several training programmes in Multimedia, e-Learning and Digital Media Production. Also, the ADMTC produces many UCSC videos including BIT TV programmes.

Coordinator: Dr. S. S. P. Mathara Arachchi

For more details visit the website: *https://ucsc.cmb.ac.lk/admtc*

Centre for Digital Forensics (CDF)

Centre for Digital Forensics (CDF) of the UCSC was established in 2011. The advisory panel consists of UCSC and foreign academics. UCSC has played a key role in assisting the Sri Lanka Police and the Criminal Investigation Department since 2003. The centre investigates evidence of digital crimes.

Coordinator: Dr. T N K De Zoysa

For more details visit the website: *http://www.ucsc.cmb.ac.lk/cdf*

Computing Services Centre (CSC)

The Computing Services Centre (CSC) of UCSC is the main consultancy arm of the UCSC. It conducts system design and development, system recommendation, software project consulting, recruitment testing, tender evaluation, feasibility study and acceptance tests for computer hardware and software. It also conducts tailor-made training programmes for the organizations in both the private and public sectors. The Computer Service Centre also undertakes some software development projects depending on the availability of the staff and the resources. The CSE conducts specialised, short-term training programmes in the most advanced and up to date topics that are in demand in the industry. These programmes are designed with the aim of enabling the participants to learn about a particular programming language, a design methodology, new technologies or the use of specialized packages in small groups with close supervision. These courses are designed by the staff of UCSC and closely follows the industry needs and standards.

Coordinator: Mr. G P N Boteju

For more details visit the website: *http://www.ucsc.cmb.ac.lk/csc*

External Degrees Centre (EDC)

The main purpose of establishing the External Degrees Centre (EDC) and the three-year external degree programme, Bachelor of Information Technology (BIT) is to widen the higher educational opportunities for the students who have been unsuccessful in meeting the competitive eligibility criteria for admission to the state university system. Another reason has been the massive demand from the ICT industry for high-quality human resources far exceeding the number provided by the state universities. The BIT degree programme commenced in the year 2000 and has produced 2734 graduates so far, and almost all have been absorbed by the ICT industry. Internal students of the University of Colombo have the right to follow BIT degree programme since it is a part-time programme.

Coordinator: Mr. W V Welgma

Academic Coordinator: Dr. (Ms.) K H E L W Hettiarachchi

For more details visit the website: *http://www.bit.lk*

E-Learning Centre (e-LC)

The UCSC was identified by donor agencies such as the Swedish International Development Agency (SIDA), International Center for Higher Education (UNESCO-ICHEI) under the Innovation of UNESCO auspices and the European Union Asia Link Programme as an ideal organization for a centre of excellence in e-Learning. In 2003, the e-Learning Centre (e-LC) was established to provide an online learning environment for all its internal and external students. The centre provides the necessary support to develop and maintain interactive e-Learning content

and environment. Also, the online virtual learning environment of the BIT degree programme (http://vle.bit.lk) is managed by them.

Coordinator: Dr. (Ms.) T A Weerasinghe

For more details visit the website: *http://www.ucsc.cmb.ac.lk/elc*

Professional Development Centre (PDC)

The Professional Development Centre (PDC) of the UCSC was set up to keep a close liaison with the IT industry and to improve the academic programmes through industry partnership. The PDC primarily concentrates on improving the professional skills of the staff and the internal students, industrial placements and visits for internal undergraduates and promoting inter-cultural harmony. The mission of the Professional Development Centre (PDC) of the UCSC is to produce Computing graduates having extra-curricular skills such as professional skills, business skills, communication skills, community service skills, innovative capacity and entrepreneurship to pursue successful careers thereby contributing to the socio-economic development of Sri Lanka.

Coordinator: Dr. P.V.K.G. Gunawardana

For more details visit the website: *http://www.ucsc.cmb.ac.lk/pdc*

UCSC RESEARCH LABORATORY

UCSC opened its State-of-the-art research facility UCSC Research Laboratory in 2021. The Laboratory is a dedicated interactive research space consisting of over 1000 square feet. The initiative aims to strengthen the existing research and development environment of UCSC by providing a conducive research and development. The construction of the new research laboratory began by the end of 2019 and completed by the end of 2021. Space will provide students and faculty access to the new instructional research spaces, study areas, mini- library, seminar room, conference room, printing room, common areas and rest areas for students,faculty and community interaction.



Research Area

02

Undergraduate Student Life

LOCATION AND VICINITY OF THE CAMPUS

The University of Colombo is situated in the heart of the Colombo city called Cinnamon Gardens. It is surrounded by nationally important landmarks such as the Prime Minister's Office, Colombo Town Hall, National Museum, as well as interesting tourist attractions such as Vihara Maha Devi Park, Public Library, Independence Square, Arcade Independence Square, Galle Face Green, Gangaramaya Temple, many other churches and mosques, Floating market, BMICH, Nelum Pokuna Auditorium and Planetarium etc. Therefore, as an undergraduate, you may enjoy life and feel the world while studying. Following is a list of major directions which may guide you when you reach the university.

BUS ROUTES

Refer to the UOC map provided at the back cover for the bus stops given below.

- From Pettah/Town-Hall side: Bus route numbers 138, 120, 122, 125 (Bus Stop B and C)
- From Borella Junction/Kandy Road: Bus route number 154 (Bus Stop F)
- From Galle side: Get down at Bambalapitiya Junction, if you're coming by bus route numbers 02, 32, 100, 101, 400, 401, and 430. Take route number 104, 154 or 155 bus to the university. (Bus Stop A and F)
- From Ratnapura/Highlevel Road: Bus route numbers 138,125,122 (Bus Stop A)
- From Horana road: 120, 162 (Bus Stop A)
- From Mattakkuliya: Bus route number 155 (Bus Stop B and C)

For more details on Colombo bus routes please visit:
http://en.wikipedia.org/wiki/Western_Province_%28Sri_Lanka%29_bus_routes#Colombo_Metropolitan_Routes

RAILWAY ROUTE

Refer to the UOC map provided on the back cover, for the bus stops given below.

- From the Coastal line: Get down at Bambalapitiya Railway Station and take a bus of 104, 154 or 155 route from there to the university.(In order to take these buses, you should come to the Galle road) Or get down at Pettah.
- From Kelani Valley line: Get down at Cotta road and get route number 154 bus from Borella. Otherwise get down at Pettah and take a bus of route numbers 138 or 120

From the other lines: Get down at Pettah and take route number 138, 120, 122 and 125 buses to the university. If you get down at Maradana, take the route number 155 bus or walk down to D.R. Wijewardhana Mawatha and take a bus of route number 120, 125 or 122.

UNDERGRADUATE STUDENT ENROLMENT

Following sub-sections describe the process of undergraduate student enrolment and related details.

ENROLMENT PROCEDURE AND FEES

Students should be enrolled in respective courses by completing the necessary application forms by paying the relevant fees at the enrolment.

Type of Fee	Amount (Rs.)	When to Pay
Student ID Fee	250.00	At the 1st year registration only
Laboratory Fee	1,000.00	At the 1st year registration only
Library Fee	500.00	At the 1st year registration only
Student Charter Fee	100.00	At the registration only
Total	**1850.00**	

Table 2.1: Fee Structure

Type of Fee	Amount (Rs.)	When to Pay
Annual Registration Fee	600.00	At the beginning of each academic year
Annual Medical Fee	500.00	At the beginning of each academic year
Annual Student Union Fee	200.00	At the beginning of each academic year
Annual Amalgamated Club Fee	200.00	At the beginning of each academic year
Total	**1500.00**	

Table 2.1: Fee Structure

It is important to note that the students are required to be re-registered at the beginning of each academic year by paying the annual registration fee, annual medical fee, annual student union fee and annual amalgamated club fee on or before the date specified by the Exams division. Failure to do so may result in cancellation of the studentship, the rights to claim Bursary or Mahapola payments and the right to vote at the election of the student union.

ORIENTATION PROGRAMME

The main objective of the orientation programme is to prepare the students for the university life and guide them to improve their communication skills and ICT literacy required for the respective study programmes. Generally, the orientation programme will be conducted for about two weeks prior to the beginning of the academic year. It starts with an inauguration ceremony where the academic staff welcomes the new students and their parents. The Vice Chancellor of the University of Colombo, the Director of UCSC, the student counsellors and the heads of academic study programmes will address the audience introducing the University of Colombo School of Computing. The students will also be able to talk to their advisors after this ceremony.

There is a separate coordinator for the orientation programme and he/she will be supported by the academic programme coordinators and the head of undergraduate studies. All senior and junior academic staff including some selected senior students from the final year will collaborate to conduct the orientation programme. All students should participate in the laboratory sessions for communication skills and ICT in the morning or afternoon depending on their group which may contain around 40 students per group. The syllabus of these courses and learning materials are published in the Virtual Learning Environment (VLE) of undergraduate students at http://ugvle.ucsc.cmb.ac.lk

STUDENT INDEX, REGISTRATION NUMBER SYSTEM AND ID CARD

Student Registration numbers and Index numbers are prepared by the Examinations & Registration Division. When a student is registered at UCSC, he/she is given a temporary student number. After the vacancies of the UCSC are filled by the UGC, registration numbers will be allocated to students. Once the registration number is issued, students will not be able to use the temporary student number to obtain university services. The registration number is prepared according to the ascending order of the student's name with their initials. The Index number has eight digits and it is prepared according to the registration number.

Eg: Registration Number: 2018/CS/052

Eg: Index Number: 18000526

Student ID cards are issued by the University of Colombo. The students have to submit an application form with four photographs when enrolling at the UCSC. When students want to use the university facilities, they should provide their university ID card for identification. If a student loses the student ID card, he/she must inform it to the Marshal Office along with a police report, a request letter and a payment receipt of Rs. 250.00 for a new student ID card.

SCHOLARSHIPS

The University Grants Commission and the Ministry of Trade and Consumer Affairs select the eligible students for the Mahapola Scholarships. The UCSC notifies the students who are qualified to receive Mahapola Scholarships thereafter.
The UCSC selects the eligible students for the bursary payments according to the UGC Commission Circular No: 856, 900 and others. Selected students are informed through a public notice.

Bursary assistance scholarships are also available for eligible UCSC students. Application forms for bursary scholarship are available at the Academic and Publications Division (W 314, third floor). Details of Mahapola and bursary scholarships are given in Table 2.2.

Mahapola Scholarships (Rs.)		Bursary Scholarships (Rs.)
Merit Scholarship	5050.00	4000.00
Ordinary Scholarship	5000.00	

Table 2.2: Details of Mahapola & Bursary Scholarships

The Mahapola Scholarship will be revoked by the Mahapola Trust Fund if three consecutive instalments are not collected by a student.

There are several private scholarships for the students and information about them will be announced once the academic programme starts. The students who face critical financial problems are also assisted using the UCSC student welfare fund which has been established using a portion of income generated out of postgraduate and external degree programmes. Those other UCSC scholarships are as follows.

- Scholarship from Student Distress and Welfare Fund
- Scholarship from other organizations and donors
- Shorea Robusta Scholarship (only for the 4th year students)

Students may obtain more details from the Academic and Publication Division or relevant student counsellors of UCSC.

HOSTEL FACILITIES

Limited hostel facilities are provided by the UCSC for the first year students based on the government regulation as well as availability. Presently, the boys' hostel is situated at 218/8 Kaduwela Road, Battaramulla. The girls' hostel is situated at No. 76/16A Sunethradevi Mawatha, Kohuwala, Nugegoda. The students who score more than 40 marks according to the selection criteria are eligible to receive hostel facilities. However, due to the inadequate hostel capacities the UCSC is unable to provide hostel facilities to all such eligible students. Currently, UCSC uses two rented houses, one as a boys' hostel and the other as a girls' hostel with the capacities of 36 and 35, respectively. The students who fail to obtain hostel accommodation, are advised to find their own accommodation. Senior students and academic staff could be consulted to obtain assistance or advice. All the students who will receive hostel facilities should sign the relevant agreement and must obey the rules and regulations during their stay at the hostel.

The Academic and Publication Branch is the responsible office to be contacted in the matters regarding hostel facilities.

RAILWAY SEASON TICKETS

The students are eligible to obtain the Government railway season tickets at the concessionary rates. The application forms for railway season tickets can be collected from the Academic & Publications Branch of UCSC.

GUIDANCE AND COUNSELLING

Student counselling is a free of charge service provided by the UCSC to all undergraduate students. Our experience over the past decade has shown that the level of stress resulting from various incidents of life such as family matters, relationships, learning and career decisions keep increasing.

The UCSC counselling service is focused on providing an environment conducive for students to get help at an early stage of their particular psychosocial problem. Our counsellors are qualified to give students a listening ear and to assist them to help themselves in dealing with issues that they are facing. However, the counsellors are also trained to make a decision; whether a particular problem requires further help, and guide such a student towards a professional Counsellor who visits the UCSC for 2 hours each day.

It is important to note that all the information that you communicate with the student counsellors will be kept confidential and will only be communicated to the professional Counsellor if the student agrees. Similarly, the professional Counsellor will only communicate back to the UCSC if there is any action required from the UCSC with respect to any impact on the issue of the study program that the

student is engaged in. If the professional Counsellor determines that further help is needed he/she will refer the student, with his/her consent, to a Clinical Psychologist or Psychiatrist.

The Student Counsellors, also expect each student who enters the UCSC to form the front-line of the counselling process, by being sensitive and alert to any unusual behaviour of a colleague, so that they may help them by bringing them to the counsellors at the early stage of a problem which might cause unbearable stress.

Dear Students,

During the period you are in the university, you are supposed to engage in lots of challenging activities and often have to work under stress which might sometimes exceed your emotional vulnerabilities. Also, most of you have to stay away from your parents and loved ones with whom you used to share your sorrows. In such instances, do not think that you are alone. We, the student counsellors are there to help you, listen to your worries and help you overcome your difficulties. Therefore, do not hesitate. Come and communicate with us by sending us an email to make an appointment.

Student Counsellors, UCSC

Student Counsellors



Dr. Kasun Karunanayaka
Contact No: (+94) 71 548 4864

E-mail: ktk@ucsc.cmb.ac.lk



Dr. L. N. C. De Silva
Contact No: (+94) 77 388 9156

E-mail: lnc@ucsc.cmb.ac.lk

UCSC Professional Counsellor



Ms. Nilani Thushanthika
Contact No: (+94) 702005550

UNDERGRADUATE VIRTUAL LEARNING ENVIRONMENT

http://ugvle.ucsc.cmb.ac.lk is the Virtual Learning Environment (VLE) established for the undergraduate students (UG). The students can access lecture materials, assignments and notices of their courses to actively participate in the academic activities. At the same time, they can also collaborate with teachers and students through this Virtual Learning Environment, known as UGVLE.

When new students are registered to the undergraduate programme, they will receive a temporary student number which will be the username to access the UGVLE. The password and how to login to the UGVLE will be described during a special session in the orientation. Your formal registration number will be issued during the first semester of the academic year and the username will be changed to this number. Note that you must have an email address to access the service of UGVLE.

If there is any issue to access the UGVLE, students should contact the UGVLE administrator at the e-Learning centre.

Directions to the e-Learning Centre: Go through the passage accessed by the door next to the ADMTC. Turn left.

LIBRARY

The main role of the UCSC library is to facilitate a variety of quality and reliable resources that support learning, teaching, and research purposes for both the students and the staff of the UCSC. The Library possesses a rich collection of books, magazines, conference proceedings, theses, and dissertations covering a vast

area of disciplines related to Computer Science. Users of the library can fulfill their need for timely access to information relevant to the resources through the online public access catalog of the UCSC library (http://pusthaka.ucsc.cmb.ac.lk/). And also UCSC digital library provides free access to undergraduate and postgraduate dissertations not only for all the students and the staff of the UCSC but also the whole community (http://dl.ucsc.cmb.ac.lk/jspui/).

LABORATORY FACILITIES

There are 8 undergraduate laboratories with more than 260 computers, and the computers are connected to a local area network to access common resources as well as the Internet. Linux and/ or Microsoft operating systems are available in these computers depending on the requirements to be selected at the start-up of a computer. The students require a username and a password to access these computers which will be issued by the Network Operating Centre (NOC) of UCSC based on student registration number. All these labs are open during the semester from 8.00 am to 5.00 pm. However, based on the need, some laboratories may continue to operate until 7.00 pm. Laboratory facilities are usually not provided during study leave and vacation. The Network Operating Centre of UCSC should be contacted regarding matters related to laboratory facilities.

BASIC RULES OF COMPUTING LABORATORIES

It is extremely important that students must follow the general rules of conduct to maintain a positive user experience in UCSC computer laboratories. Laptops and bags are not allowed in labs. All the food items including water bottles are strictly prohibited inside the computer lab. Computers and other technical items in

the lab must not be moved or configured without the approval of teaching staff or NOC. Moreover, the students must not install any software without the approval of the teaching staff. Students are strictly prohibited to download non-educational files (e.g. torrent files). It is to be noted that the violation of any of these rules may result in disciplinary actions.

UCSC RESEARCH LABORATORY

The research students of UCSC will be provided with access to state-of-the-art research facilities in the newly established Research Laboratory in 2021. The Laboratory is a dedicated interactive research space consisting of over 1000 square feet and aims to strengthen the existing research and development environment of UCSC by providing conducive research and development. The space will provide students and faculty access to the new instructional research spaces, study areas, mini- library, seminar room, conference room, printing room, common areas and rest areas for students, faculty and community interaction.

OBTAINING WI-FI CONNECTIVITY

The students are required to submit a completed Wi-Fi connection request form to the NOC during office hours. The request forms can be downloaded from the UCSC web site (ucsc.lk/noc). One device per student is registered and the service will be bound to the physical address of the device. The service will be activated by one week of the submission of the request.

The UCSC monitors all user activities according to UGC's policy and guidelines. Students are strongly advised not to engage in unethical or illegal activities using internet connection and

computing resources. There is a limited bandwidth allocation for each user. For further information visit http://ucsc.cmb.ac.lk/noc/

NETWORK SERVICES

With the view of centralizing the operations of the computer network of the University of Colombo, the Network Operating Centre (NOC) was established in 2002. NOC is located at UCSC and it is the central position which provides the network connections to all the other faculties and centres in the university. The internet facility to the university through the LEARN network is also channelled via the NOC. The centre is well equipped with modern networking equipment including servers, switches, routers and test equipment received under the financial assistance of SIDA and ADB. The entire backbone cable system of the campus, a wide network is centered at the NOC providing the connectivity to over 2000 users.

EMAIL POLICY

University of Colombo School of Computing will provide each student with an email address (Gmail Account). UCSC provides these email addresses to enhance the educational standards and administrative efficiency. Once these accounts are created, the student has the sole responsibility to protect its resources in an efficient, ethical and lawful manner. Further rules and regulations apply for account creation, ownership, privacy, expiration, inappropriate activity, data and information.

HEALTH FACILITIES

The Health Centre is located in a close proximity to the UCSC and these facilities are available for all UCSC students. It provides outpatient treatment and medical consultation for all health issues. A Dental Unit is also attached to this centre and it is open on Monday, Wednesday and Friday. The health service is organized to assist students to have an active and healthy life during their academic life.

PHYSICAL EDUCATION & SPORTS

There are several sports facilities, such as Gymnasium, Playground and Tennis Courts which are made available by the Department of Physical Education of the University of Colombo. The Physical Education Department is located on the first floor of the gymnasium which is situated on the other side of Reid Avenue from the UCSC and near the Faculty of Education. Those facilities can be used by the UCSC students and they can also participate in the events organized by the University. In the past, UCSC students have excelled in sports and have represented the university at the local and international levels.

STUDENT SOCIETIES

COMPUTER SCIENCE SOCIETY OF UNIVERSITY OF COLOMBO

Vision: Serving the Nation's Tomorrow.

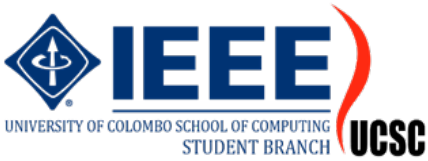
Mission: Provide guidance and support to enhance the technical competency of the University of Colombo and society at large and ensure ways to develop ICT skills of the less fortunate community in society.

Computer Science Society of the University of Colombo alias "CompSoc", is run by the students of the university with the involvement and the guidance of the staff. It was established to provide Computer Science-related services to the university and its students.

However, at present CompSoc is also involved in social activities like conducting workshops to enhance the computer literacy of school students and teachers. Apart from this, it also delivers lectures in the fields of Science and Mathematics to school children.

Among the projects carried out by CompSoc last year, the sessions conducted at the Hanwella Vidyalaya and the exhibition held at the Visaka Vidyalaya take priority. We do believe that it is our responsibility towards society to impart knowledge to the general public for the betterment of society.

IEEE STUDENT BRANCH OF UCSC



Vision: IEEE will be essential to the global technical community and to technical professionals everywhere and be universally recognized for the contributions of technology and of technical professionals in improving global conditions.

Mission: IEEE's core purpose is to foster technological innovation and excellence for the benefit of humanity.

IEEE Student Branch of University of Colombo School of Computing (UCSC) was established in 2011 and has achieved great success within the past few years. It has been formed with the participation and contribution of all four batches of UCSC and it has been organizing many activities to enhance the professional development of the students. Other than gaining technological experience and knowledge, personality development skills such as organization, leadership, interaction can also be gained by engaging in the activities organized by the IEEE student branch of UCSC.

The core purpose of the IEEE student branch of UCSC is to serve humanity through technological innovations. The society organizes a number of workshops and conferences for both UCSC students and members of the IEEE student branches in Sri Lanka with the purpose of enriching them with the most modern technological knowledge in order to survive in the industry and encouraging them to be innovative in the field of technology.

Various Tech Talk sessions on topics such as Linux, C++ programming, OOP and Computer Hardware sessions and competitions such as "IEEExtreme" are being held in order to improve the knowledge of the undergraduates. The student branch also participates in school exhibitions such as Evoke-2015, InforV to give technological knowledge to school students. Among the events held, the IEEE day is one that is held each year definitely in the month of October. It not only celebrates what the society stands for but also celebrates the members of the society. From tech talks to personality development sessions, participants are exposed to what the industry requires of them. Each year, hundreds of undergraduates from across the country meet at this event and this gives them a platform to interact and network. IEEExtreme is a global competition held annually where the UCSC student branch provides a platform for more than 200 undergraduates each year to participate in this programming competition.

UCSC ISACA STUDENT GROUP

The ISG is a student group, the purpose of which is, through student empowerment, to expand recognition of the IT audit and assurance, security and IT governance disciplines, by extending education beyond the classroom on standards, practices and certification. Specially, the objectives of the ISG are the same as listed in the professional chapter and the association's by-laws.

- To promote the education and to help expand the knowledge and skills of its members in the interrelated field of IT governance, IS audit, security, control and assurance.

- To encourage a free exchange of IT governance, IS audit, security, control and assurance techniques, approaches, and problem solving by its members.
- To promote adequate communication to keep members abreast of current events in IT governance, IS audit, security, control and assurance that can be beneficial to them and their employers.
- To showcase the importance of establishing controls necessary to ensure proper IT governance and the effective organization and utilization of IT resources to the management, auditors, universities and to IS professionals; and

MECHATRONIC SOCIETY OF UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

"Deep Dive to the Mechatronic Technological World"

Enhancing the knowledge and skills on mechatronic technologies while facilitating necessary requirements of the UCSC undergraduates is the main concern of the Mechatronic Society. The objectives of Mechatronic Society are to,

- Improve students' knowledge on Embedded Systems, IoT, Robotics and Electronics.
- Improve students' skills on programming languages and algorithms.
- Encourage the students to engage in Research and Development projects.

- Improve students' innovative, creative and Do It Yourself (DIY) skills.
- Provide facilities on Embedded Systems, Robotics, IoT and Electronic fields to students.
- Encourage the students to represent the UCSC in local and overseas competitions.
- Develop the competence of students and encourage integrity among students who are engaged in the practice of computing.
- Communicate and exchange ideas with other societies, clubs and universities in the relevant fields.

UCSC MOZILLA CLUB

UCSC Mozilla Club is an open-source community under the Mozilla Organization and one of the Mozilla Campus Clubs in Sri Lanka. The mission of the UCSC Mozilla Club is to grow the Mozilla community at the university level. The club will make undergraduates aware of the products of Mozilla, host events, participate in campaigns and enable undergraduates and the community to gain more experience and knowledge with regard to open-source technology.

Members joining the club would gain leadership experience along with the recognition at the university level. This would be the initial step for the path of being a Mozilla Rep. Moreover, members will get many opportunities and experiences in the open-source community that will help the students' career.

EXPLORATION CLUB

Mission: "To explore the depths of Humanity"

The Exploration Club of UCSC seeks to enhance the quality of education of the country, especially through reaching out to underprivileged schools, other educational institutes and organizations.

IEEE CS STUDENT BRANCH CHAPTER OF UCSC

The IEEE Computer Society Student Branch Chapter of UCSC is a technical and student chapter from IEEE. It dedicates itself to make progress on the areas related to computing. Its main aim is to be a community that provides technical information, resources and personal development opportunities to its members. Since the day of establishment, it has been organizing many activities and sessions to enhance professional development and technological knowledge of students.

It has played a major role in promoting leadership, organization and interaction skills in addition to improving technical and computing skills among the students of UCSC. The society conducted several successful sessions which were helpful for the students to learn new technologies, interact with professionals in the industry, and discover new trends in the field of computing.TechLinked'18 and IntelliHack'19, organized by IEEE Computer Society Student Branch Chapter of UCSC won the Best Technical Chapter Activity Award for two consecutive years at the IEEE Sri Lanka Section Awards Night. IntelliHack'19 was the first ever Machine Learning Hackathon in Sri Lanka. IntelliHack'21 was also successfully conducted in 2021.

OTHER SOCIETIES

There are a number of diverse societies from diverse educational backgrounds of the University of Colombo. These societies have been established to enhance the welfare activities for students and to develop the leadership skills of the students.

These societies can be divided as subject specific societies and general societies. However, any student can become a member of any subject specific society. Following is a list of such societies.

AIESEC Student Society	IEEE CS Student branch chapter of UCSC
Association of Wild Life & Photography Stu. Society	Mechatronic Society of University of Colombo School of Computing
Astronomical Society	Medical Student Welfare Society
Base for Enthusiasts of Environmental Science and Zoology Society	Medical Students' Buddhist Society
Botanical Society	Medical Students' Hindu Society
Buddhist Society	Muslim Majlis
Catholic Student Society	Oriental Music Society
Chemical Society	Physics Society
Computer Science Society	Physiotheraphy Student Society
Core Group for Disaster Relief	Rotaract Club
Economic Student Society	Science Society
Eksath Bikku Sangamaya	Sinhala Sangamaya
Epsilon-Delta Society	Sociology Student Society
Exploration Club	Student Association of Industrial & Finance Analysis (SALFA)
Gavel Club	Tamil Society
Gaveshakayo	The Moor Court & Debating Society
Geography Students' Society	UCSC Mozilla Club
Hindu Society	University of Colombo Christian Fellowship

General Operations of Student Societies

All student societies are governed in accordance with their respective constitutions. When new office bearers are elected at the Annual General Meeting (AGM) or subsequent meetings, their names have to be notified to the Senior Student Counsellor's Office and to the Senior Assistant Registrar, Welfare within one week of the meeting. It is expected that these societies will work according to an annual activity plan. These societies have the power to raise funds for their activities. It is expected that all the money raised will be deposited to the relevant bank accounts. All financial transactions must be documented and presented at the AGM and these must be ratified. A copy of this document has to be sent to the Senior Student Counsellor's Office and to the Deputy Registrar, Welfare. To ensure the honesty and transparency in financial transactions, these accounts will be audited from time to time by the Accounts Division.

CANTEEN FACILITY

The UCSC Canteen which is located inside the UCSC building complex is open for the students during the academic semesters from 7.00 a.m. to 6.00 p.m. Canteens of the other faculties are also available for the use of UCSC students.

PHOTOCOPY FACILITY

Photocopy facility is available at the photocopy unit located at the ground floor of the canteen area (East Wing entrance of the UCSC building).

MARSHAL OFFICE

The Marshal Office is located near the UCSC, on one side of the Medical Centre. Marshals have been appointed to assist the authorities to maintain discipline within the university premises.

Marshal office contact details are included in page 20

OTHER SERVICES

AUDIO VISUAL RECORDING

An advanced digital studio is equipped with state-of-the- art digital equipment such as digital video cameras, video switcher, editing control unit, audio mixer, lighting system and non-linear editing system. It is one of the best studios in Sri Lanka and is playing a central role in providing distance-learning material.

VIDEO CONFERENCING FACILITIES

UCSC possesses the state-of-the-art video conferencing equipment.

AUDITORIUM

A new state-of-the-art multipurpose auditorium is available with over 400 seating capacity.



03

Undergraduate Degree Programmes

STRUCTURE OF PROGRAMMES

The medium of conducting Lectures, Tutorials, Practicals and Examinations is English. Computing degree programmes are classified under five broad areas, namely: Computer Science, Computer Engineering, Software Engineering, Information Technology and Information Systems as identified in IEEE ACM curriculum guidelines. UCSC offers Computer Science and Software Engineering under the Bachelor of Science in Computer Science intake through the UGC as internal students, Information Systems under the Bachelor of Science in Information Systems intake through the UGC as internal students and Information Technology under Bachelor of Information Technology intake as external candidates learning online with optional assistance from private training institutions.

Following sub sections will describe an overview of the methodology used to conduct the degree programme.

Graduate Profile

A graduate of the University of Colombo School of Computing should be able to:

- Demonstrate the knowledge of theories and concepts in Computing together with the applications in the area of specialization.
- Apply creativity and problem-solving skills to solve real-world problems using the knowledge of Computing.
- Visualize different levels of a system from a higher level of abstraction to a detail level in the context of user interaction and other systems in the world.
- Contribute as a member or a leader in a team to achieve a common set of goals.
- Recognize professional responsibilities to make informed judgments in Computing practice based on legal and ethical principles.
- Engage in independent lifelong learning for continual development as a Computing professional.

SEMESTER BASED ACADEMIC PROGRAMMES

Academic programmes of the UCSC are based on a semester system with two semesters per academic year and operate on a course module basis. Lectures, practicals, tutorials, continuous assessments and laboratory work spread over a period of 15 weeks. Each semester may have one week mid-semester break in the middle of the semester and one or two weeks' study leave at the end of the semester before the examinations. The semester examination will be conducted within subsequent period of 2-4 weeks followed by a vacation.

HOURS AND CREDITS SYSTEM

The UCSC offers two types of courses namely Academic courses and Enhancement courses. Academic courses provide subject knowledge and enhancement courses provide knowledge on a wide range of disciplines that are required for a holistic education.

Each course is assigned a credit value. The credit value would depend on several factors among which the duration of the course and its nature are included. A credit is equal to 15 hours of lectures or 30 hours of practical or an equivalent combination of lectures and practical. 80% attendance will be a requirement for a course to be satisfied before taking the corresponding exam. Students should complete minimum of 30 credits in each year.

COURSE CODE SYSTEM

Each course code consists of four digits along with the prefix SCS, IS, ENH or EN to indicate whether it is a Computer Science subject, Information Systems subject or Enhancement course. SCS and IS are academic subjects while ENH (Computer Science) and EN (Information Systems) represent the Enhancement subjects. The first digit of each course code is the corresponding year (e.g: For a course in the second year, it will be like 2xxx). The second digit represents the revision of the subject and it will be an increment if the subject is revised.

CALCULATION OF GRADE POINT VALUE (GPV) AND GRADE POINT AVERAGE (GPA)

In the evaluation process, mark obtained by a student for each course is converted into a grade according to the scheme given in Table 3.1.

Grade	Grade Point Value	Attainment
A+	4.00	Superior
A	4.00	
A-	3.70	
B+	3.30	Meritorious
B	3.00	
B-	2.70	
C+	2.30	Adequate
C	2.00	
C-	1.70	
D+	1.30	Minimal
D	1.00	
E	0.00	Failure
F	0.00	NC

Table 3.1: Ranks and Their Respective Grades

Grade Point Values associated with each grade are as shown in the Table 3.1. These GPV values are used to compute the Grade Point Average of a student by using the following equation.

$$\text{GPA} = \frac{\sum \text{GPV for the Course} \times \text{Credit Value of the Course}}{\text{Total number of Credit Values completed by the student*}}$$

ENHANCEMENT COURSES

Credits for some of the enhancement courses could also be obtained by participating in sports conducted by Department of Physical Education or by participating in competitions accepted by the course. Further information could be obtained from the enhancement course coordinator.

INTERNSHIP PROGRAMME

Industrial Training is an integral part of the 2 degree programmes conducted by the University of Colombo School of Computing (UCSC). This enables to provide much needed industrial exposure for the students, which is an essential part of the education to produce quality graduates in the fields of Computer Science (CS) and Information Systems (IS) to meet industrial standards.

The Industrial Training is scheduled for a period of 5-6 months (approximately) during the second semester of the third year of the students. This is managed through Professional Development Centre (PDC) in UCSC.

AWARD OF HONOURS AND CLASSES

A Student who is qualified for the award of a degree—both general (3 year) and honours (4 year)—by completing all the relevant requirements will also be qualified for the award of a class as follows.

a. First Class - for obtaining a minimum overall GPA of 3.70
b. Second Class (Upper Division) - for obtaining a minimum overall GPA of 3.30

c. Second Class (Lower Division) - for obtaining a minimum overall GPA of 3.00

ACADEMIC PROGRAMMES (INTERNAL UNDERGRADUATE)

The students who are admitted to the UCSC may read for a degree in Computer Science (CS) or Information Systems (IS). The UCSC offers a three year degree programme and a four year degree programme/s in each of these disciplines.

The eligibility criteria that have to be fulfilled for a successful completion of these degree programmes are described under Rules and Regulations chapter.

OPEN AWARDS

There are a number of academic awards which could be obtained by high performance in undergraduate work, detailed in page 96. Further, there is the award for "directors list" awarded on the basis of achieving academic excellence and extra-curricular activities.

LECTURES

Lecture is the main method of delivering course material to the students. The semester lecture time table with the details of the allocations of venues and time periods is published online (UGVLE) and on relevant notice boards.

It is usual for the lectures to take place in the same venue at the

same time during the semester. But in exceptional situations or for some courses, the venue and the time might be changed. Most of the lectures will be held inside the UCSC building complex. The students must be present in time for lectures and are expected to bring writing materials to take notes. Some lecturers will provide handouts but such handouts may not contain the entire record of the content covered in the lecture. Attendance of each student for the lectures will be recorded.

TUTORIAL SESSIONS

Tutorial is a comprehensive way of developing a great understanding on course materials in a way to correct misunderstandings one may have. On average, a student can expect to have two tutorial sessions per week. The tutor who conducts the session may have his/her own way of organising the tutorial. Most of the tutorial sessions will be based on a particular problem sheet which will be distributed before the commencement of the session. The tutor is the first person the student should consult when a problem arises while studying a particular course. It is found that many students who have attended all tutorial sessions and attempted all problem sheets tend to do well at the final exam. Attendance for the tutorial sessions will be recorded.

PRACTICAL SESSIONS

The purpose of practical sessions is to give a better understanding on the application of the theories that were taught in the lecture in a practical viewpoint. Instructors will be present during practical sessions to help achieving the most out of the practical sessions. It is

found that many students who have attended all practical sessions, tend to do well at the final exam. The attendance for the practical sessions will be recorded. The outcome of the practical sessions may affect the final grade of the course. If a student is unable to attend to a practical session, he/she should inform the instructor(s) if possible before the session. The organisation of the practical session will depend on the relevant lecturer/instructor.

PERSONAL STUDY

Unlike the works carried out in secondary school, at the university, students are expected to do much more personal (self) studies and have a "do it myself" attitude. Apart from lectures, tutorials, and practical classes, students will find that it is necessary to read other materials and solve additional problems to fully master the course. Hence, reference books which are recommended for each course will be a good starting point. The relevant lecturer/tutor/instructor will suggest such materials.

PROJECTS

Certain courses mandate completion of project(s) as a way of evaluation. Such projects could be done as a group project or as an individual project. Students will get a supervisor/mentor under whose guidance the project should be carried out. In such cases, during the project you are expected to meet the supervisor regularly. The organisation of the evaluation criteria of the project depends on the course itself. Therefore, it is beneficial for the students to have a clear idea about the criteria at the beginning of the course. The students should be proactive in arranging meetings with the

supervisors. It is important to consider the supervisor's comments to carry out a successful project. It is better to choose appropriate technology to make programming easier so that the student will be able to concentrate on solving the problem. The students are strongly advised to manage the project properly in terms of time, distribution of workload and documentation.

PRESENTATION (DEFENSE / ORAL-EXAMINATION/ VIVA VOCE)

The students should do presentations as a part of evaluation or a learning activity of a course. Normally there will be an evaluation panel at the presentation. The presentations may be concluded with a question and answer (Q&A) session by the evaluation panel/ audience. It is common for presentations to be used as the means of evaluating a project. The presentations can be done individually or as a group. It is expected that a presentation will help to improve the communication and presentation skills of the students. Usually a presentation will be guided by a set of presentation-slides. It is strongly advised to dress properly for the presentations.

ASSIGNMENTS

Assignments are a method of evaluation which contributes to the final grade of a course. Assignments could be in various forms such as in-class, written, quiz, UGVLE based quiz, online assignments, coding, report writing, and oral (viva voce). Moreover, assignments could be individual or group and some assignments may be take-home. The number of assignments and the organisation of the assignments for a course depend on the lecturer.

END SEMESTER EXAMINATIONS

There is a final examination at the end of each semester (except for 3rd year second semester students.). All final examinations are paper-based exams which could be in the forms of multiple choice questions (MCQ), structured, or essay. The end semester examination process is managed by the Examination and Registration Division. The Examination and Registration Division will issue the admission cards for the examination at the end of the semester, and the admission card should be collected by students. Further, the timetable of the examination is published on UGVLE. Consider that some courses may not have paper-based exam at the end semester examination.

FINAL GRADES

Final marks obtained by the student for each course is converted into a grade according to the scheme stated in the ByLaws/ Regulations of the corresponding undergraduate programme approved by the senate of the UOC. Thus, GPA is calculated using the final grade of each course that the student has followed. The final mark of a course is calculated using a rubric provided by the lecturer for each course associating a portion of assignment marks and a portion of written paper marks. The final grade of a course directly affects the GPA of a student.

HOLIDAYS

Both undergraduate programmes are considered as full time degrees. Therefore, full commitment for the degree is highly

expected from the students. However, in case of exceptional requirements, students must contact student counsellors and send a request to the Board of Studies for Internal Undergraduate Degrees (IUD) through student representatives.

Saturdays, Sundays, Poya-days and public holidays are considered as holidays for students. In addition, there are several types of vacations: Mid-semester break, Study leave, End-semester break, New year vacation and Christmas vacation. There will not be any lectures or any course work during the study leave and the exam

Vacation Type	Average Duration (weeks)	
Mid-semester break	1	At the middle of the semester
Study leave	1	Before an end semester exam
End-semester break	4	After the end semester exam
New Year vacation	1	Around April 13th
Christmas vacation	1	Around December 25th

INTERNAL QUALITY ASSURANCE CELL

The primary purpose of establishing the Quality Assurance Cell (QAC) is to create a culture that seeks to continually improve the quality of all academic and other activities in the Institute in line with the Quality Assurance and Accreditation Council of the University Grants Commission and Internal Quality Assurance Unit of the University of Colombo.

For more details visit the website:
https://ucsc.cmb.ac.lk/quality-assurance-cell/

EMPLOYABILITY

Programme	Number Graduated	Number Responded	Employed	Self Employed	Waiting for Jobs/ Not Interested
Bachelor of Computer Science	159	144 (91%)	136	6	2
Bachelor of Information Systems	91	84 (92%)	79	2	3
Total	**250**	**228 (91%)**	**215**	**8**	**5**

Table 3.1: Ranks and their Respective Grades

3.1

Computer Science Degree Programme

Computing for undergraduates was first introduced way back in 1967 as a part of Applied Mathematics of the Department of Mathematics, Faculty of Science. With the establishment of the Department of Statistics and Computer Science at the Faculty of Science in 1985, special degree programmes in Computer Science were introduced. The direct intake for Computer Science was introduced in 1998 along with industrial placement and accreditation of the degree program. With the establishment of the UCSC in 2002, the direct intake was moved to the UCSC.

This four (04) year Computer Science special degree programme (2+2) was commenced in 1990 by selecting students who were enrolled for the Faculty of Science from batches onwards 1985/86. It was offered by then Department of Statistics and Computer Science of the Faculty of Science. The students were selected based on their performance in the first two years of the degree programme. The number of selected students for the programme gradually increased from 25 to 40. This programme continued for 18 batches until the Faculty of Science 2002/03 intake. This was replaced by 3 and 4 years Computer Science degrees from the 2002/03A intake of the UCSC.

Currently, Based on students' performance and preference of first two years, a selected number of students will be able to follow a four year degree course leading to either the degree in Bachelor of Science Honours in Computer Science [B.Sc.(Hons) in Computer Science] or the degree in Bachelor of Science Honours in Software Engineering [B.Sc. (Hons) in Software Engineering].

Please refer to the page 177 for the degree awarding criteria.

COMPUTER SCIENCE DEGREE STREAM

The meaning of digits and symbols used in the course tables:

Lecture 1/2	One or Two hours lecture per week during the semester
Practical 1/2	One or Two hour practical session per week during the semester
X	Compulsory Course
O	Optional Course (Student has to register)
*	Offered throughout the year

YEAR 1 *(All Compulsory)*				
Semester	Course Code	Course Name	Credits	
			Lecture	Practical
1	SCS 1201	Data Structures and Algorithms I	2	1
1	SCS 1202	Programming Using C	2	1
1	SCS 1203	Database I	2	1
1	SCS 1204	Discrete Mathematics I	2	-
1	SCS 1205	Computer Systems	2	-
1	SCS 1206	Laboratory I	1	1
1	SCS 1207	Software Engineering I	2	
1	ENH 1201	Enhancement I (Communication Skills)	1	-
2	SCS 1208	Data Structures and Algorithms II	2	1
2	SCS 1209	Object Oriented Programming	2	1
2	SCS 1210	Software Engineering II	2	-
2	SCS 1211	Mathematical Methods I	2	-

2	SCS 1212	Foundation of Computer Science	2	-
2	SCS 1213	Probability and Statistics	2	-
2	SCS 1214	Operating Systems I	2	1
2	ENH 1202	Enhancement II	1	-

***YEAR 2** (All Compulsory)*				
Semester	Course Code	Course Name	Credits	
			Lecture	Practical
1	SCS 2201	Data Structures and Algorithms III	2	1
1/2	SCS 2202	Group Project I* (2 credits/ 2 semester)	-	4
1	SCS 2203	Software Engineering III	2	-
1	SCS 2204	Functional Programming	2	1
1	SCS 2205	Computer Networks I	2	1
1	SCS 2206	Mathematical Methods II	2	-
1	SCS 2207	Programming Language Concepts	2	-
1	SCS 2208	Rapid Application Development	2	1
2	SCS 2209	Database II	2	1
2	SCS 2210	Discrete Mathematics II	2	-
2	SCS 2211	Laboratory II	2	1
2	SCS 2212	Automata Theory	2	-
2	SCS 2213	Electronics and Physical Computing	2	1
2	SCS 2214	Information System Security	2	-
2	ENH 2201	Enhancement III (Entrepreneurship)	1	-

YEAR 3							
Semester	Course Code	Course Name	BSc Honours in CS	BSc Honours in SE	BSc in CS	Credits	
						Lecture	Practical
1	SCS 3201	Machine Learning and Neural Computing	X	O	O	2	-
1	SCS 3202	Advanced Computer Architecture	O	O	O	1	-
1	SCS 3203	Middleware Architecture	O	X	O	2	1
1	SCS 3204	Management	O	O	X	2	-
1	SCS 3205	Computer Graphics I	O	O	O	2	-
1	SCS 3206	Graph Theory	X	O	O	1	-
1	SCS 3207	Software Quality Assurance	O	X	X	1	1
1	SCS 3208	Software Project Management	O	X	X	2	-
1	SCS 3209	Human Computer Interaction	O	X	O	2	1
1	SCS 3210	Systems and Network Administration	O	O	O	2	1
1	SCS 3211	Compiler Theory	X	O	O	2	-

1	SCS 3212	Mobile Application Development	O	O	O	2	1
1	SCS 3213	Game Development	O	O	O	1	2
1	SCS 3214	Group Project II	X	X	X	1	2
1	SCS 3215	Professional Practice	X	X	X	2	-
1	SCS 3216	Research Methods	X	O	-	0	2
2	ENH 3201	Industry Placement/ Industry Project	X	X	X	0	8

YEAR 4						
Semester	**Course Code**	**Course Name**	**CS**	**SE**	**Credits**	
					Lecture	**Practical**
1	SCS 4201	Ethical Issues and Legal Aspects in IT			1	-
1	SCS 4202	Cognitive Robotics			1	1
1	SCS 4203	Database III		X	2	1
1	SCS 4204	Data Analytics			2	1
1	SCS 4205	Computer Networks II			2	-
1	SCS 4206	Computer Graphics II			2	1
1	SCS 4207	Image Processing and Computer Vision			2	
1	SCS 4208	Theory of Computation	X		2	
1	SCS 4209	Natural Language Processing			2	1

1	SCS 4210	Parallel Computing			2	1
1	SCS 4211	Research Seminar	X		-	2
1	SCS 4212	Formal methods and Software Verification	X	X	2	-
2	SCS 4213	Digital Forensics			2	-
2	SCS 4214	Natural Algorithms			2	-
2	SCS 4215	Computational Biology			2	1
2	SCS 4216	Advanced Topics in Mathematics			1	-
2	SCS 4217	Embedded Systems			2	1
2	SCS 4218	Operating Systems II	X		2	-
2	SCS 4219	Distributed Systems II			2	-
2	SCS 4220	Data Structures and Algorithms IV			2	-
2	SCS 4221	Software Engineering IV		X	2	1
2	SCS 4222	Logic Programming			2	-
2	SCS 4225	Philosophy of Science	X	X	1	-
2	SCS 4226	Intelligent Systems			2	-
1/2	SCS 4223	Final Year Project in Software Engineering*		X	0	8
1/2	SCS 4224	Final Year Project in Computer Science*	X		0	8

MEDALS AND AWARDS FOR COMPUTER SCIENCE

These are some awards at the Annual Convocation for graduates with respect to degree programmes.

	Candidates	Name of the Award
Best performance (Highest GPA)	3rd Year Graduates	*Virtusa Academic Excellence Award*
	4th Year Graduates	*Prof. Mohan Munasinghe Award*
Best Industrial Training (Awarded for Best Results at Industrial Training in 3rd Year)	3rd/ 4th Year Graduates	*David Pieris Group Gold Medal*
Best Final Year Project/ Research	4th Year Graduates	*ICTA Award*
Most Outstanding Graduate of the UCSC (Combined award for CS and IS)	4th Year Graduates	*Prof. V K Samaranayake Award*
Best Performance in BSc. (Hons) in Software Engineering	4th Year Graduates	*IFS Award*
Best Final Year Project in BSc. (Hons) in Software Engineering	4th Year Graduates	*Soma Goonetillake Memorial Award*
Best Performance in Software Engineering in BSc. (Hons) in Software Engineering	4th Year Graduates	*Wimala Jayaratne Memorial Award*

COMPUTER SCIENCE COURSE DESCRIPTIONS

Year 1 Courses

SCS 1201 - Data Structures & Algorithms I

This subject introduces different data structures used in programming such as lists, stacks, and queues, trees, several types of linked lists and their applications and implementation. It enables the students to identify the important properties and uses of such data structures , usefulness of stacks, queues and trees (general trees, Binary trees, BST,AVL trees) for solving common problems, to write pseudo code and python code to implement and use these data structures.Algorithms such as Bubble sort, Linear insertion, Selection sort, Merge, Shell, Heap, Quick, Straight Radix, and Radix Exchange sort are explained and facilitates writingpseudo code and python code to implement the above sorting algorithms. Further, it discusses the running time of the above written codes.

SCS 1202 - Programming Using C

The following objectives are covered in this course. Analyze and explain the behavior of simple programs involving the fundamental programming constructs using a functional paradigm such as Scheme/Scala, Identify and describe uses of primitive data types, Write programs that use each of the primitive data types, Modify and expand short programs that use standard conditional and iterative control structures and functions, Design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, standard conditional and iterative structures, the definition of functions, and parameter passing,

Choose appropriate conditional and iteration constructs for a given programming task, Describe the concept of recursion and give examples of its use, Identify the base case and the general case of a recursively-defined problem.

SCS 1203 - Database I

Database I, introduces the components of a database system and major DBMS functions. Data modelling, Relational database design, Structured Query Languages (SQL) are covered in the course module.

SCS 1204 - Discrete Mathematics I

This course module includes sets, relations and functions such as Union and Intersection. Also basic logic is introduced here with truth tables, predicate logic and propositional logic. It also discusses proofs, equivalence, contradiction and the other techniques of proofs.

SCS 1205 - Computer Systems

The aim of this course is to give an overview of the evolution of the computer system, its elements and organization, and operational behaviors. The major topics that are covered in this course can be presented as Data Representation, Combinational and Sequential Logic Circuits, CPU and its Components, the Operational Behavior of a CPU, Memory Organization, and Caching.

SCS 1206 - Laboratory I

Laboratory I gives the laboratory exposure to use the GNU/Linux operating system (Ubuntu GNU/Linux). The students will gain practical experience in handling the operating system through the graphical user interface as well as the command line interface. You will also be introduced to the free and open source versions of word processing, spreadsheet and presentation tools/software. Additionally, the installation of packages, understanding the directory structure and file permissions of GNU/Linux will be discussed. Further, you will get an introduction into LaTeX, a documentation tool commonly used for academic writing that is useful for your documentation needs of the degree program. The Git is also introduced as a version management system to be used for software development.

SCS 1207 - Software Engineering I

Software Engineering I is the introductory course of Software Engineering. Along with the definitions and the need for Software engineering, the process will be explained in stages: requirements engineering, design and implementation, testing, quality management and project management. Object oriented design concepts such as Inheritance, Classes, Objects also will be discussed.

ENH 1201 - Enhancement I (Communication Skills)

The aim of this course module is to enhance the student's communication skills in general. Attention will be given to accurate the pronunciation, active listening and responding.

The correct use of English grammar including nouns, verbs, conjunctions and writing skills are also focused on. The students can learn how to write applications, bio-data, resumes and professional letters.

SCS 1208 - Data Structures & Algorithms II

Data Structures and Algorithms II will be built upon the first part of the module, discussing variants of the Tree data structure such as General Trees, Binary Trees, Binary search trees, AVL trees and Red Black Trees. The sorting algorithms will also be discussed further including Merge sort, Shell sort, Heap sort, etc. Further algorithms such as Hashing and Chaining and the run time complexity of algorithms also will be discussed.

SCS 1209 - Object Oriented Programming

This course introduces the concepts of programming, coding algorithms in C language and the use of data structures in a C program. In addition, we will look at some other concepts which were not introduced so far, such as functions, arrays, pointers, advanced input/output functions and C pre-processor. Also we will see the standard libraries and how to move from C to C++. A strong emphasis is placed on the development of practical programming skills, for building software applications. The course is designed to give a sound understanding of the programming techniques, and how to get your application programs from the design phase to its implementation. The module consists of practical exercises in programming.

SCS 1210 - Software Engineering II

This is an advanced course in Software Engineering which is based on Software Engineering I module and provides an understanding of Object Oriented Analysis and Design (OOAD) concepts. After completion of this course students should be able to apply OOAD to solve problems. The main topics are Conceptual Modelling, User Stories, Software Processes, Advanced Use Case Modelling, UML Diagrams, OOAD, Automated Tools and Technology, Model Driven Engineering and xUML, Reused-based Software Engineering, Component Based Software Engineering, Distributed Software Engineering, Cloud Computing and Aspect Oriented Software Engineering.

SCS 1211 - Mathematical Methods I

Mathematical Methods I is the introduction to the concepts of calculus including differential equations. Real Numbers, Real Functions, Algebra of Limits and Algebra of Derivatives, Mean Value Theorem, Solution of Laplace's Equation and related theories are discussed further.

SCS 1212 - Foundation of Computer Science

This course module introduces the historic origins of computational models, mathematical theory that has led the establishment of Computer Science. It will discuss the theory on Algorithmic Problem Solving, Types of Problems, Models of Computing such as Instruction Driven, Data Driven, Basic Automata Theory and Logic and AI.

SCS 1213 - Probability and Statistics

This course offers the theory and background on random variables, probability, several discrete and continuous distributions and to apply the knowledge of the distributions and the tools of probability to solve real world problems. The course is offered from the Department of Statistics, Faculty of Science, University of Colombo.

SCS 1214 - Operating Systems I

This course provides an understanding of the entire process within Operating Systems. It covers overview of Operating Systems, Operating System Principles, Concurrency, Scheduling and Dispatch, Memory Management, Security and Protection, Virtual Machines, Device Management and File Systems.

ENH 1202 - Enhancement II

Humanities is offered as a student enhancement course module, focusing on the non-technical and aesthetic subjects such as performing arts, Music, Painting, Philosophy, Literature, History etc. It will introduce various fields to the student as well as develop cross domain interests and links.

Year 2 Courses

SCS 2201 - Data Structures and Algorithms III

This is an advanced course in data structures and algorithms which is built on the fundamentals introduced in SCS 1201 and SCS 1208 to provide profound knowledge to design, use, analyze and to prove the correctness of algorithms using different techniques. The major areas covered include string matching, solving recurrences, dynamic programming, greedy algorithms and linear programming.

SCS 2202 - Group Project I

This course is designed to enable students to apply the knowledge acquired through system analysis, design, development, verification and validation, maintenance and project management while working on a project to develop a real-world application. The course will be conducted throughout the academic year. Though it is designed as a group project, individual participation is also evaluated to ensure that each and every student has attempted to gather knowledge and skill in planning and developing a software solution and technical documentation.

SCS 2203 - Software Engineering III

This course complements the material already covered in Software Engineering I and II courses and discusses Object-Oriented Modelling and Unified Process Models in more detail. The course also introduces advanced topics such as Software Architecture, Software Design Patterns, Agile Engineering practices and Enterprise Architecture.

SCS 2204 - Functional Programming

Functional Programming is becoming increasingly widespread in industry. This trend is driven by the adoption of Scala as the main programming language for many applications. In this course students will learn the elements of the functional programming style and apply them in their daily programming tasks. The course units introduce short programs that serve as illustrations of important concepts and invite you to play with them, modifying and improving them.

SCS 2205 - Computer Networks I

The course is designed to provide knowledge in the conceptual and technological aspects of Computer Networking. The major areas include data communication, computer networks, LAN architectures, the structure of the Internet, Routing, IP (Internet Protocol) multicasting, IP support protocols, application layer protocols, and wireless LANs (Local Area Networks).

SCS 2206 - Mathematical Methods II

Mathematical Methods II introduces topics such as Vectors, Matrices, Matrix Algebra, Determinants, Eigenvalues and Eigenvectors and Euclidean Spaces etc.

SCS 2207 - Programming Language Concepts

This course provides the key features of programming languages. It covers the areas such as programming domains, language evaluation criteria, influences on language design, implementation methods, syntax and semantics of programming languages, properties of variables, control structures, data types, sub-programs and object- oriented programming.

SCS 2208 - Rapid Application Development

This course is designed to ensure the fact that the students have been provided a suitable knowledge of the core concepts of Agile practices, the Agile values and the principles, across a breadth of Agile methodologies. Hands-on exercises are included in order to enable the students to apply Agile concepts such as Scrum, Extreme Programming and Lean and Kanban. The major areas include Agile software development process, RAD (Rapid Application Development) concepts, web architectures and applications development and software process maturity models and standards.

SCS 2209 - Database II

This course aims to provide introductory knowledge in advanced database concepts such as access control for secure databases, transaction management and serializability, indexing methods, writing constraints, stored procedures and triggers in SQL , object relational mapping and NoSQL databases.

SCS 2210 - Discrete Mathematics II

This course is to acquaint students with basic number theory and basic combinatorial methods that provide a foundation for further studies in the field as well as for applications in related areas, in particular, Computer Science. This course covers Divisibility and Modular Arithmetic, Linear Congruence, Fundamental Principles of Counting, Inclusion–Exclusion, Recurrence Relations and Generating Functions.

SCS 2211 - Laboratory II

This course is designed to provide an understanding of how to explore and describe various real-life data sets, using R. After the completion of this course the student will be able to understand the data and use an appropriate data analysis method to meet an objective under consideration, and perform the analysis using R software. The major areas covered in the course are Descriptive Statistics, Estimation Theory and Testing, Simple Linear Regression and Correlation and Multivariate Data Display and Cluster Analysis. The course also introduces Octave, an open-source alternative to Matlab, in order to be able to perform Basic Mathematics and Numerical Computing (e.g. Linear Algebra, Matrix Manipulations, Basic Statistics, Polynomial Curve Fitting,

Differentiation, Integration, and Differential Equations), simple manipulations using complex data structures and basic plotting using similar software.

SCS 2212 - Automata Theory

This course mainly focus on determining a language's place in the Chomsky Hierarchy and to convert among equivalently powerful notations for a language. The areas covered are Chomsky Hierarchy, Sets and Languages, Context-free Languages and the Halting Problem.

SCS 2213 - Electronics and Physical Computing

This course is organized around a series of practical hands-on exercises which introduce the fundamentals of circuits, embedded programming, signal processing, simple mechanisms, actuation, and time-based behavior. The key objective is gaining an intuitive understanding of how information and energy move between the physical, electronic, and computational domains to create a desired behavior. The exercises provide building blocks for collaborative projects which utilize the essential skills and challenge students to not only consider how to make things, but also for whom we design, and why the making is worthwhile.

SCS 2214 - Information System Security

This course provides students an understanding of the fundamentals of information security in both information storage and information traveling in computer networks. This course also focuses on modern cryptographic principles in solving real world security problems.

ENH 2201 - Enhancement III (Entrepreneurship)

The course is taught through a real-life customer development context where students acquire the skills and know-how to develop their business idea all the way from the conceptual stage to the marketplace. The knowledge is gained by learning success stories of local and global businesses that have been set up by entrepreneurs.

Year 3 Courses

SCS 3201 - Machine Learning and Neural Computing

This course unit consists of the following: Introduction to Machine Learning and Pattern Recognition, Learning Paradigms: Supervised Learning (generative/ discriminative Learning, Parametric/Non-Parametric Learning, Neural Networks, support vector machines); Unsupervised Learning (clustering, dimensionality reduction, kernel methods); Learning Theory (bias/variance trade offs); Reinforcement Learning and Adaptive Control. Boltzmann Machine, Bayesian Statistics, Fuzzy Logic vs Machine Learning, Recent Applications of Machine Learning, such as Robotic Control, Data Mining, Autonomous Navigation, Bioinformatics, Speech Recognition, and Text and Web Data Processing.

SCS 3202 - Advanced Computer Architecture

Processor architectures range from processors on mobile phones to smart card based ones like raspberry pi, to multi-core based personal computers and servers to massive clusters hosting Google/Amazon virtualized services. Each processor is optimised to the environment in which it works: both from an OS point and application point of view. This course examines the architectural features that are desirable to support such a range of domains, operating systems and applications.

CS 3203 - Middleware Architecture

This course provides students fundamental concepts behind middleware and the role played by middleware in distributed systems. The course covers the basic principles of middleware and introduces the different types and uses of middleware. The functionality of middleware is taught through the practical examples and hands on design and implementation. The course also focuses on how the software industry uses middleware by having industry experts as guest lecturers during the course. It introduces different categories of middleware and how it is used in software industry.

SCS 3204 - Management

After successful completion of this course students will be able to describe fundamental concepts and principles of management, including the basic roles, skills, and functions of management; discuss historical development and theoretical aspects of management; apply appropriate concepts, analytical techniques and theories used by managers when analyzing factual situations, such as case studies, involving management problems; develop solutions for management problems using appropriate concepts, analytical techniques, and theories used in the study of management; apply marketing principles, develop marketing strategies and analyze and interpret the financial statements.

SCS 3205 - Computer Graphics I

This course provides an introduction to Image Processing and Computer Graphics programming. It discusses the fundamentals of computer graphics with a mathematical perspective and the basics of image processing that enables the analysis and the understanding of images by computers.

SCS 3206 - Graph Theory

Under this course the following topics will be discussed. Introduction to graphs, Multigraphs, Directed Graphs and Weighted Graphs,Trees and Distance, Network Models, Planar Graphs, Graph Coloring, Isomorphic and Homomorphic Graphs, k-Connected Graphs, Representing Graphs in Computer Memory.

SCS 3207 - Software Quality Assurance

The course delivery is a two-hour lecture session done by course coordinators and industry experts. Industry experts invited for this course provide knowledge regarding software testing and quality control approaches that are currently used in the software development industry. Thus, students will gain both theoretical and practical knowledge about software quality assurance. This course introduces quality assurance practices applied in various stages of software projects to depict the importance of quality in relation to software systems. The teaching practices mainly introduce software testing strategies and software quality standards. Moreover, the course delivers knowledge on subject matters such as Test Automation Frameworks, Mobile Application Automated Testing, Load Testing and Performance Testing. After the completion of the course, students will be able to explain the current trends in SQA and use these practices efficiently and effectively for their software development projects.

SCS 3208 - Software Project Management

This course unit covers the following topics: Introduction to Project Management, Project Selection, Approach Selection, Project Planning, Risk Management, Resource Allocation, Effort Estimation, Optimizing the Network, Financial Management, Project Monitoring and Control, Project Termination, Communication Skills Quality Management , Configuration Management, Contract Management and Human Resource Management

SCS 3209 - Human-Computer Interaction

This course will discuss the humans, machines and how humans interact with machines in their day-to-day lives. Theoretical aspects of human computer interaction will be discussed and students will also get hands-on- experience in designing interfaces and systems using the theoretical knowledge that they gained. Some of the topics that will be covered in the course are Understanding Human, Evolving Technologies for Rich Interaction, Interaction Modeling and Design, User Centered Design and Developing Effective Prototype Interfaces.

SCS 3210 - Systems and Network Administration

This course introduces the technical operational tasks of a system and network administrator through both lectures and practical sessions. The course covers topics such as Linux/Unix Systems, Apache Configuration, DNS Configuration, Web Caching, Shell Scripting, and Systems Administration Automation.

SCS 3211 - Compiler Theory

This course discusses contemporary techniques in implementation of programming language translators and provides profound knowledge on different methods in depth and techniques used to translate a programme written in a high-level language into a programme in low-level language which is more suited for machines. Lexical and syntax analysis are demonstrated using Flex and Bison as tools. The course further expands into describing topics such as Symbol Tables, Memory Organization, Type Checking, and Optimization.

SCS 3212 - Mobile Application Development

This course covers topics such as Introduction, Operating Systems for Wireless Mobile Devices, Android Overview and Android Development Environment, Anatomy of an Android App and the App Lifecycle, Applications Development for Android Devices with Android Studio, Android User Interface, Android Intents & Android Persistence, Android Web View & Web Services, Android Animation and Graphics, Location-Based Apps, Sensing and Sensors, Hybrid Mobile App Development, Native Mobile App Development, Mobile Security.

SCS 3213 - Game Development

This course introduces fundamental concepts of game development industry and its development process. The course expands into more details on game design principles by explaining theories in game design. The course further discusses various technologies that involve in game and game engine development. Practical sessions will enable the students to get hands-on experience in designing, prototyping, and implementing video games as a game team.

SCS 3214 - Group project II

Third year group project is a mandatory course for all degree programs. The objectives of the course are to improve the students' knowledge and to develop skills required for the software development by carrying out activities in the stages of software development lifecycle (SDLC), develop the relevant system documentation and user documentation of the software project assigned in all stages of SDLC, present, demonstrate and defend the working software system of the project as a group as well as an individual contributor and demonstrate it as a completed software product ready for the deployment.

SCS 3215 - Professional Practice

After completion of the course, students will be able to identify the ethical issues in the development and application of computing technology, explain ethical issues in the development and application of computing technology using ethical theories, and explain means to address ethical issues in the development and application of computing technology using ethical theories and the relevant code of conduct. Further, the course debates on ways to design, develop, and apply computing technology minimizing ethical issues.

SCS 3216 - Research Methods

This course discusses different approaches, methods and techniques used in scientific research in general and provides an introduction to research in Computer Science and Information Systems. The course covers three main research approaches: quantitative, qualitative and mixed method, and introduces different sampling methods and data analysis techniques. During the course the participants will engage in different types of activities such as reviewing literature, presenting research ideas and designing research studies.

ENH 3201 - Industry Placement/Industry Project

The Industry Placement provides the much needed industrial exposure for the students, which is an essential part of education in order to meet industrial standards. The Industrial Training programme is scheduled for a period of 5-6 months which improves their professionalism to make them ready for the industry. Students are placed in various sectors of the industry where they will be working as interns. The students are allowed to choose a list of interesting fields at the beginning of the programme, allowing them to work in their preferred area. The Internship programme produces quality graduates in the fields of Computer Science (CS) and Information Systems (IS).

Year 4 Courses

SCS 4201 - Ethical Issues and Legal Aspects in IT

During this course students will gain the ability to describe what the term "information technology ethics" means, identify various advantages and disadvantages related to the code of ethics in IT, explain the term called "intellectual property" and explain the protection provided by copyright, patent, and trademark and the challenges brough from IT ethics.

SCS 4202 - Cognitive Robotics

This course discusses two different approaches for developing robots: conventional Artificial Intelligence (AI) based approaches and new AI based approaches. The topics include an Introduction to Basic Concepts (a short history, the concept of autonomy, dynamics and kinematics, sensors and actuators, etc.), the three Robotic Paradigms for Organizing Intelligence in Robots (hierarchical, reactive/behavior-based, and hybrid deliberative/reactive), Robot Navigation (topological path planning, metric path planning, localization and map making, etc.), as well as the topics in new AI inspired by Cognitive Science such as Visual Routines, Dual Coding Theory, Affordances, and Enactive Cognition. During this course, students will not only learn about how to build a cognitive robot, but also use the robotic system as a platform to test various theories and methods from Cognitive Science and Artificial Intelligence.

SCS 4203 - Database III

This is an advanced course in databases to provide in-depth knowledge on Data Storage and Querying, Query Processing and Optimization, Transaction Management, Concurrency Control Techniques, Database Recovery Techniques, Distributed Databases and some Database security aspects, SQL Collections and Records, Dynamic SQL, Input Injection, Database Encryption and Data Masking, Physical Database Design and Tuning. And also topics related to current trends in databases are discussed.

SCS 4204 - Data Analytics

This course constitutes two parts. Part I covers an introduction to Data Mining. It describes the Knowledge Discovery Process and Data Mining Techniques. Part II consists of Pattern Recognition, which spans from feature selection to performance evaluations of the classifiers. Also, it gives with introduction to Big Data Analytics. Both parts cover theory and applications with practical approach.

SCS 4205 - Computer Networks II

This course covers topics such as vector spaces, Linear Codes; Unicast Routing, Multicast Routing, Key Based Routing, Mobile Routing; Multi-Access Protocols - CSMA and Variants; Wireless Networks; Queueing Theory; Data Centre Networks; QoS; Virtualization.

SCS 4206 - Computer Graphics II

The following content is covered in this course. Introduction to Virtual/Augmented Reality Environment Technology and Applications, Graphics Pipe Line in 3D Simulations, Scene Graphs, Shaders and Graphics Programming, Physical Realism in Graphical Simulations, Collision Detection, 3D User Interfaces and Interaction Design, Spatial Data Structures, Game Design, Game Programming, Game AI.

SCS 4207 - Image Processing & Computer Vision

This course covers topics such as Image Characterization: Introduction to Image Processing and Computer Vision, Digital Image Representation, Color Theory; Spatial Domain Image Processing: Transformation and Histogram based Techniques, Filter based Techniques; Frequency Domain Image Processing: Frequency Domain Techniques; Special Topics in Image Processing: Image Restoration, Edge and Line Detection; Computer Vision: Image Segmentation, 3D reconstruction, Recognition, Computational Photography.

SCS 4208 - Theory of Computation

This course covers topics such as DFA, NDFA; Regular Languages, Context free Grammars, Pumping Lemma, Pushdown Automata; Computational Complexity, P, NP, EXP Classes; Halting Problem, Turing Machines; LAmbda and Pi Calculi.

SCS 4209 - Natural Language Processing

Natural Language Processing, also referred to as Computational Linguistics is a fascinating field of building computational models of Human Language and brings together the fields as diverse as Linguistics, Mathematics, Psychology, Statistics and Computer Science. This course includes relevant materials in Linguistics and Computer Science and it is designed to cover the background knowledge required to develop NLP related applications.

SCS 4210 - Parallel Computing

This course is designed to introduce students to Parallel Computing. As pre-requisites to the course, knowledge of C is desired although not essential. As learning outcomes, students will gain the skills to develop high performance parallel programs. Syllabus of the course contains Serial and Parallel Programs, Basic Serial Performance Optimization Guidelines, Hardware for Parallel Computing, Parallel Program Design, Software for Parallel Computing: MPI, Pthreads, OpenMP; Cuda Optimizing Parallel Programs.

SCS 4211 - Research Seminar

The Research Seminar course introduces students to research communication, evaluation and presentation culture. The expectation of this course module is to continually enhance the quality (critical thinking, analysis, evaluation & presentation in research) of the students by presenting/discussing research conducted in myriad of fields within the domain of Computer Science.

SCS 4212 - Formal Methods and Software Verification

This course provides a hands-on introduction to formal methods and software verification. The aim of this course is to teach knowledge and skills and judgement about, two important styles of formal methods for reasoning about software: deductive verification and model checking. Each style will be introduced in three ways: conceptual, theoretical, and practical, using particular tools. The course builds on skills in first-order logic and temporal logic and shows how these formalisms can be applied, and extended, for the verification of software.

SCS 4213 - Digital Forensics

With the profound usage of digital media and its connectivity to cyber space, cyber crime incidents are enormously increasing in numbers. Thus, contemporary world demands practitioners who are skilled in protecting the assets in cyber space and investigating cyber crimes in incident scenarios. The field of Computer Forensics specifically focuses on the investigation aspect of a cyber crime and hence, SCS 4213 Computer Forensics course module provides a broad understanding of the field by discussing topics such as Systematic Approaches in Investigation, Incident Management, Fundamentals of Forensic Investigation, Legal Aspects and more.

SCS 4214 - Natural Algorithms

This course covers topics such as Introduction; Sorting, Shortest Path, Travelling Salesman Problem; Evolutionary Computing: Genetic Algorithms (GA), Genetic Programming (GP), Genetic Based Machine Learning (GBML); Swarm Intelligence: Particle Swarm Optimization (PSO); Foraging Algorithms: Ant Colony Optimization (ACO), Bees Algorithm (BA), Cockroach Algorithm (CA); Artificial Immune Systems (AIS), Emerging Trends.

SCS 4215 - Computational Biology

After successful completion of the course students should be able to: explain the necessary principles and methods of genomics, gene expression and proteomics, show how popular bioinformatics algorithms work, design algorithms that solve biological problems, plan experiments; identify appropriate techniques/methods to analyze large/heterogeneous biological datasets; interpret results and draw conclusions, evaluate; criticize a piece of work in Computational Biology, recognize the future and trends in computational Biology.

SCS 4216 - Advanced Topics in Mathematics

This course is to acquaint students with basic combinatorial methods and theories that provide a foundation for further studies in the field as well as for applications in related areas, in particular Computer Science. This course covers the most elementary techniques in combinatorics such as Pigeonhole Principle, Inclusion-Exclusion Principle, Recurrence Relations and Generating Functions.

SCS 4217 - Embedded Systems

This course gives a technological and scientific perspective of Embedded Systems. The topics include Introduction (e.g., Typical Components of an Embedded System and Application Areas), Embedded Programming Languages (e.g., Programming FPGA using Verilog/VHDL, Programming PIC Microcontrollers using Assembly and C, and Arduino Programming), Embedded Communication Technologies (e.g., Serial Interfaces like I2C, SPI, UART, and 1-Wire, Parallel Bus Interfaces, and Wireless Interfaces like RF, Bluetooth, Wi-Fi, ZigBee, and GPRS), Technologies and Protocols for Creating Wireless Ad-hoc Sensor Networks (e.g., Ad-hoc Routing, Data and Power Management, Security, and Hardware Platforms such as XBee and ESP8266), and Engineering Approaches (e.g., Flow Charts, DFDs, State Machines, Timed-Automata and UPPAAL for Verification, Quality and Certification, and Human Factors). Students are required to do laboratory practical as part of the course.

SCS 4218 - Operating Systems II

After completing this course the student will be able to use well established advanced concepts as well as recent advancements in operating systems to solve problems related to Computer Systems. First part is based on the Xv6 operating system and the Operating Systems Engineering course on MIT OCW. This provides hands-on experience on Implementing/Modifying, System Calls, File systems, Device Drivers, Shells & Communication Abstractions (pipes etc.) The second part is based on Virtualization, Real-time Operating Systems & Micro Kernels.

SCS 4219 - Distributed Systems

This course covers Leader Election, Consensus, Byzantine Agreement, Atomic Commit, Logical Clocks, Snapshots, Broadcast Variants, Memory Consistency Models, Lamport Registers, Paxos, Software Transactional Memory, CAP Theorem and Large Scale Systems, Cassandra, Zookeeper, Spanner.

SCS 4220 - Data Structures and Algorithms IV

This course module provides an understanding of specialized areas in the study of algorithms and gives the ability to analyze amortized cost and randomized running time complexities. It covers Amortized Analysis, Application of Amortized Analysis, Randomized Algorithms, Concurrent Algorithms I, II and III, Computational Geometry I, II and III.

SCS 4221 - Software Engineering IV

Software Engineering IV is intended for advanced learners who wish to specialize in Software Engineering sub-discipline of Computing. The course is a blended learning course where there will be at least two-hour interaction in the classroom done by industry experts, course coordinators and online learning activities. This course introduces advanced software development models and software architectures which are essentially incorporated in the industry to build large-scale, complex software systems. Furthermore, the course discusses patterns and best practices that are used to solve commonly arising problems in the software lifecycle. The course includes theoretical details of underlying principles that are the essence of computing in the Cloud.

SCS 4222 - Logic Programming

This course discusses the Logic Programing paradigm through PROLOG. It introduces the syntax and semantics of propositional and predicate logic, presents the syntax and semantics of PROLOG and explores in detail the procedural aspects of PROLOG using UNIFICATION and BACKTRACKING. It analyzes and optimizes the PROLOG search space in writing PROLOG program.

SCS 4225 - Philosophy of Science

This course is designed to provide a basic introduction to the main philosophical questions concerning scientific knowledge. It is specifically designed to generate an interest on epistemological concerns in research among the students who follow undergraduate courses on non-humanities subject streams. The key focus of this unit is on ideas, concepts, and thoughts that shape the nature, agenda and goal of scientific inquiry. Therefore, it provides a brief historical account on the main debates that emerged in philosophy of science since the seventeenth century. This aims to broaden the thinking of students in order to prepare them for serious academic research. The course will span over 15 lecture hours and the students' performance will be evaluated during the lectures as well as at the end of the semester. The students will be provided with reading material and useful online material to help them to follow the course successfully. Following are the key themes covered in this course.

SCS 4226 - Intelligent Systems

Philosophy of AI, Search (Heuristic/Adversarial/Informed/ Uninformed Search), Knowledge Representation and Reasoning, CommonKADs, Planning, Learning, Introduction to NLP and Linguistics, Intelligent Agents, Semantic Web, Emerging Trends.

SCS 4223 - Final Year Project in Software Engineering

This final year project course is designed to support the students following the honours degree programme in Software Engineering to focus on the development of software products and their entire life cycle. During the course the students will develop software products using the models and theories developed as independent research in other disciplines such as CS and IS. It is always important to remember that in any SE project the outcomes should be visible in the form of a working product. This spans over both semesters of the year. The projects could be conducted in groups of 3 to 4 students. The project activities should be carried out according to the schedule provided in the Undergraduate Virtual Learning Environment (UGVLE) and the progress of the project should be reported to the course coordinator fortnightly.

SCS 4224 - Final Year Project in Computer Science

Final Year Project in Computer Science (SCS 4224) is a mandatory requirement for the award of BSc (Hons) in Computer Science degree at the University of Colombo School of Computing (UCSC). The project provides the student with an opportunity to design and conduct an independent piece of research or study related to the discipline of Computer Science (CS) under the guidance of a supervisor in his/her final year of undergraduate study.

3.2

Information Systems Degree Programme

The Information Systems (IS) degree programme originates from the Information and Communication Technology (ICT) degree programme which was introduced in the year 2004. After a curriculum revision based on the ACM guidelines, IS Degree programme was introduced in the year 2012.

The IS degree programme is designed to prepare students to be IT professionals who possess the necessary skills and knowledge in analysing and understanding business problems and applying information technology to solve these problems. The students will learn how to analyse client needs, define systems to meet these needs, develop applications, manage operations and act as technical intermediaries between management and other technical staff.

The high level learning outcomes of the IS degree programme are;

- Improving organizational processes
- Exploiting opportunities created by technology innovations
- Understanding and addressing information requirements
- Designing and managing enterprise architecture
- Identifying and evaluating solution and sourcing alternatives
- Securing data and infrastructure
- Understanding, managing and controlling IT risks

Please refer to the page 177 for the degree awarding criteria.

INFORMATION SYSTEMS DEGREE STREAM

The meaning of digits and symbols used in the course tables:

Lecture 1/2	One or Two hours lecture per week during the semester
Practical 1/2	One or Two hour practical session per week during the semester
X	Compulsory Course
O	Optional Course (Student has to register)
*	Offered throughout the year

YEAR 1 *(All Compulsory)*				
Semester	Course Code	Course Name	Credits	
			Lecture	Practical
1	IS 1101	Programming and Problem Solving	2	1
1	IS 1102	Computer Systems	2	-
1	IS 1103	Information Systems Management	2	-
1	IS 1104	Applications Laboratory	1	1
1	IS 1105	Introduction to Management	2	-
1	IS 1106	Discrete Mathematics	2	-
1	IS 1107	Interactive Media Design	2	1
1	EN 1101	Enhancement I (Business Communication)	1	-
2	IS 1108	Financial Accounting	1	1
2	IS 1109	Programming for Web Application Development	2	1

2	IS 1110	Database Management	2	-
2	IS 1111	Software Engineering	2	1
2	IS 1112	Probability and Statistics	1	-
2	IS 1113	Organizational Behavior and Society	1	-
2	IS 1114	Data Structures and Algorithms I	2	1
2	IS 1115	Fundamentals of Economics	1	-
2	EN 1102	Enhancement II	1	-

***YEAR 2** (All Compulsory)*				
Semester	Course Code	Course Name	Credits	
			Lecture	Practical
1	IS 2101	System Analysis and Design	2	-
1	IS 2102	Group Project I*	-	4
1	IS 2103	Digital Marketing	2	-
1	IS 2104	Rapid Application Development	2	1
1	IS 2105	Business Statistics	2	1
1	IS 2106	Business Process Management	2	-
1	IS 2107	Graphic and Visualization	1	1
2	IS 2108	IT Project Management	2	-
2	IS 2109	Information Systems Security	2	1
2	IS 2110	Data Structures and Algorithms II	2	-
2	IS 2111	Computer Networks	2	1
2	IS 2112	e-Business Strategies	2	-

2	IS 2113	Community Informatics (ICT for Developments)	2	-
2	IS 2114	Business Process Re-engineering	-	2
2	EN 2102	Enhancement III (Entrepreneurship)	1	-

YEAR 3						
Semester	Course Code	Course Name	BSc in IS	BSc Honours in IS	Credits	
					Lecture	Practical
1	IS 3101	Enterprise Resource Planning Systems	X	X	2	-
1	IS 3102	Human Computer Interaction	X	X	2	1
1	IS 3103	Software Quality Assurance	X	X	1	1
1	IS 3104	Strategic Management	O	O	2	-
1	IS 3105	Professional Practice	X	X	2	-
1	IS 3106	IT Procurement Management	O	O	2	-
1	IS 3107	Contingency Planning and Risk management	O	O	2	-
1	IS 3108	Middleware Architecture	O	O	2	1
1	IS 3109	Systems and Network Administration	O	O	2	1
1	IS 3110	Research Methods	O	X	-	2
1	IS 3111	Operations Research	O	O	2	-
1	IS 3112	Game Development	O	O	1	2
1	IS 3113	Group Project II	X	X	X	3

1	IS 3114	Enterprise Applications	X	X	2	-
1	IS 3115	Mobile Application Development	O	O	2	1
1	IS 3116	Database Management Systems II	O	O	2	-
1	IS 3117	Machine Learning and Neural Computing	O	O	2	-
1	IS 3118	E-Learning and Instructional Design	O	O	2	-
2	EN 3101	Industrial Placement	X	X	-	8

YEAR 4					
Semester	Course Code	Course Name	Mode	Credits	
				Lecture	Practical
1	IS 4101	Final Year Project in Information Systems*	X	-	8
1	IS 4102	Advanced Software Quality Assurance	X	1	1
1	IS 4103	Data Analytics	O	2	1
1	IS 4104	Research Seminar	X	-	2
1	IS 4105	Advanced Concepts in Software Design and Development	O	2	1
1	IS 4106	Advanced Database Management	O	2	1
1	IS 4107	Ethical Issues and Legal Aspects of IT	O	1	-
1	IS 4108	Natural Language Processing	O	2	1

1	IS 4109	Cognitive Robotics	O	1	1
1	IS 4110	Parallel Computing	O	2	1
2	IS 4111	Computational Biology	O	2	1
2	IS 4112	Geographical Information Systems	O	1	1
2	IS 4113	Digital Forensics	O	2	-
2	IS 4114	IS Innovation	X	2	-
2	IS 4115	Enterprise Architecture	O	2	-
2	IS 4116	Business Intelligence Systems	X	2	-
2	IS 4117	Intelligent Systems	O	2	-
2	IS 4118	Embedded Systems	O	2	1
2	IS 4119	Philosophy of Science	X	1	-

MEDALS AND AWARDS FOR INFORMATION SYSTEMS

The following are the awards given at the Annual Convocation for the graduates with respect to the degree programme.

	Candidates	Name of the Award
Best performance (Highest GPA)	3rd Year Graduates	*Virtusa Academic Excellence Award*
	4th Year Graduates	*Prof. Mohan Munasinghe Award*
Best Industrial Training (Awarded for Best Result at Industrial Training in 3rd Year)	3rd/ 4th Year Graduates	*David Pieris Group Gold Medal*
Best Final year Project/ Research	4th Year Graduates	*ICTA Award*
Most Outstanding Graduate of the UCSC (Combined award for CS and IS)	4th Year Graduates	*Prof. V K Samaranayake Award*

INFORMATION SYSTEMS COURSE DESCRIPTIONS

Year 1 Courses

IS 1101 - Programming and Problem Solving

In this course, the student will learn how programming languages are used to solve real-world problems. Students will be introduced to programme design, development approaches, object-oriented, procedural, declarative, rapid application, techniques for modelling programme structures algorithms, flowcharts, pseudo-codes and hand traces. Further programming concepts, variables, literals, primitive data types, expressions, procedures, functions, parameters, operators and operations, decision logic selection, simple selection, multiple selection, looping, break, continue subprocedures, passing parameters, coding, unit testing, control structure, sequential, conditional, recursion, file handling, access databases and problem-solving application will be discussed. As a good, yet powerful programming language to start with, C programming language is practically utilized for real-world problems.

IS 1102 - Computer Systems

In this subject, the student will be taught to describe the basic operations of a computer, design simple logic circuits and describe how to install, configure, maintain and troubleshoot a computer system at the end of the course. Throughout the course students will learn History of the computer systems, Data representation, Logic Operation, Logic Circuit Design, Inner workings of the CPU and Memory Components and Organization.

IS 1103 - Information Systems Management

Applications Laboratory gives the laboratory exposure to use the GNU/Linux operating system (Ubuntu GNU/Linux). The students will gain practical experience in handling the operating system through the graphical user interface as well as the command line interface. You will be also introduced to the free and open source versions of word processing, spreadsheet and presentation tools/software. Additionally, the installation of packages, understanding the directory structure and file permissions of GNU/Linux will be discussed. Further, you will get an introduction into LaTeX, a documentation tool commonly used for academic writing that is useful for your documentation needs of the degree program. The Git is also introduced as a version management system to be used for software development.

IS 1104 - Applications Laboratory

On successful completion of this course, students should be able to navigate the Linux environment using the command line, explain how to set permission using the command line, create and modify directory structures on Linux, create an HTML page using the vi/vim editor, explain how to install Linux and configure the hardware and to create documents and charts with an Office application.

IS 1105 - Introduction to Management

After the successful completion of this course students will be able to apply management theories and practices in the decision making process, identify the skills needed by managers and managerial roles, analyse any company using business analysis tools, analyse industry situations, develop business strategies, recognize the importance of leadership qualities and motivation theories, develop marketing strategies based on marketing principles and apply economic principles in day to day business operations. The course content will be consist of the topics on Evolution of Management, Managerial Roles & Skills, Management Process, Organizational Structure & Behaviour, Motivation & Leadership Marketing, Business Analysis, SWOT, PEST and Porter's Forces Analysis, Business Strategy Development, and Managerial Economics.

IS 1106 - Discrete Mathematics

The aim of this course is to provide basic mathematical and statistical concepts of numbers and arithmetic; basic algebra; solving quadratic and simultaneous equations; fundamentals of measurement; ratios and proportions; indices and logarithms; percentages and interest rates; time related problems; permutations and combinations; sets, logic and truth tables; relations and functions; basic statistics; introduction to probability; and sequences and series.

IS 1107 - Interactive Media Design

This course introduces the principles of interactive media design and teaches how to apply a structured approach for multimedia development to the creative development of a complete multimedia project.

EN 1101 - Enhancement I (Business Communication)

This course provides the students a conceptual framework and specific tools to communicate in academic and business environments by training them in writing, oral and collaborative skills necessary for future business courses, internships and professional positions.

IS 1108 - Financial Accounting

After successful completion of this course students should be able to discuss the concepts, principles, and procedures of accounting Interpret main financial statements and their advantages and limitations, analyze financial statements to make financial decisions and prepare financial statements using computer based accounting packages.

IS 1109 - Programming for Web Application Development

This course mainly covers the web application development techniques; client-side (HTML, JavaScript, CSS) and server-side programming (PHP, MySQL database connection) improving students' skills and project-based experience needed for web design and development of the careers using a variety of strategies and tools. Further it intends to make students aware on World Wide Web (WWW), HTML editors for website development, solution stacks (LAMP, XAMP and WAMP), 3-tier architecture, web servers, website hosting and Internet Service Providers (ISP).

IS 1110 - Database Management

After the successful completion of this course students should be able to understand the role of a database system and the functions of a database administrator, understand the three-schema architecture for databases and thus the difference between conceptual, external and physical schemas, understand the database application development process, understand SQL as a data definition language, data manipulation language and access control language and understand how to develop a database application.

IS 1111 - Software Engineering

IS 1111 provides a broad understanding of the software engineering process, concepts, the systematic development and management of software projects. This course covers the modules of software design process models; requirements engineering; design principles; coding practices; testing strategies; software maintenance and evolution; software project management and fundamentals of software quality assurance.

IS 1112 - Probability and Statistics

The main aim of this course is to provide a range of skills and knowledge in probability and statistics to form the theoretical background required for practical applications of Statistics. It commences with an introduction to statistics and basic concepts, followed by measures of location and dispersion, probability theory, conditional probability, Bayes' theorem, discrete probability distributions and continuous probability distributions. The course is offered by the Department of Statistics, Faculty of Science, University of Colombo.

IS 1113 - Organizational Behavior and Society

At the completion of the course, the student should be able to explain the terminology associated with organizational behavior, understand the systems approach as applied to human and organizational behavior, gain knowledge of contemporary issues and approaches to the organizational change facing organizations and apply organizational behavior approaches to the analysis of one organization's initiative(s).

IS 1114 - Data Structures and Algorithms I

Data Structures and Algorithms I introduces different data structures used in programming such as lists, stacks, queues, several types of linked lists and graphs and their applications and implementation. Also related with the data structures discussed, algorithms such as Bubble sort, Linear insertion, Selection sort, Merge, Shell, Heap, Quick, Straight Radix, and Radix Exchange sort and analysis of algorithms are also explained.

IS 1115 - Fundamentals of Economics

After the successful completion of this course students should be able to comprehend and relate core economic concepts such as opportunity cost, the role of the market, different market structures, and the connections between economic agents and economic activities. The course content will consist of topics of Demand, Supply and Equilibrium, Consumer and Producer Surplus and Government Intervention, the theory of Consumer Behaviour, the theory of Production and Cost of Production, Market Structures and Optimization, Macroeconomic Problems, Introduction to Exchange Rate Determination and Introduction to Balance of Payment.

EN 1102 - Enhancement II

On completion of this course, students will be able to identify various fields within the domain of humanities, understand different aspects of the fields within the domain of humanities, create relationships between ICT and different fields within the domain of humanities and develop cross domain research ideas that can be explored later in the degree programme. Guest lectures will be done by the professionals in the field of Performing arts, Music, Art & painting, Philosophy, Psychology, Sociology, Literature, Cinematography, History, Archaeology and political science.

Year 2 Courses

IS 2101 - System Analysis and Design

After successful completion of this course students should be able to describe fundamental concepts and trends that provide the context of systems analysis and design methods and apply the techniques practically to analyze and design an information system, describe object oriented analysis and design concepts and apply them to solve problems and prepare object oriented analysis and design (OODA) documents for a given problem. The main topics are Conceptual modelling, Use Case modelling, UML diagrams, OOAD, Software process models, Software Processes, Automated tools and technology, Model driven engineering and xUML

IS 2102 - Group Project I

This course is designed to enable students to apply the knowledge acquired through system analysis, design, development, verification and validation, maintenance and project management while working on a project to develop a real-world application. The course will be conducted throughout the academic year. Though it is designed as a group project, individual participation is also evaluated to ensure that each and every student has attempted to gather knowledge and skill in planning and developing a software solution and technical documentation.

IS 2103 - Digital Marketing

Digital marketing course mainly provides a detailed view of traditional marketing concepts and digital marketing concepts. Emphasis will be placed on the practical applications of these marketing concepts and various digital marketing tools and techniques. This course offers knowledge on marketing concepts, marketing mix, STP model, consumer psychology, customer relationship management, marketing strategies, developing a marketing plan and budget, marketing information system, digital marketing concepts, marketing automation, e-marketing segmentation, e-marketing plan, digital marketing strategies and techniques and real-world applications of these concepts. After successful completion of this course, students will be able to understand the importance of marketing concepts, apply these concepts in real world problems and come up with innovative solutions.

IS 2104 - Rapid Application Development

This course is designed to ensure the fact that the students have been provided a suitable knowledge of the core concepts of Agile practices and the Agile values and principles across a breadth of Agile methodologies. Hands-on exercises are included in order to enable the students to apply Agile concepts such as Scrum, Extreme Programming and Lean and Kanban. The major areas include Agile software development process, RAD (Rapid Application Development) concepts, Java applications development and software process maturity models and standards.

IS 2105 - Business Statistics

IS 2105 concentrates on the practice of statistics and through this course students will develop: a mature awareness of the nature and value of statistics, including its ability to draw meaningful conclusions in the face of uncertainty; interest and aptitude in applying this area of mathematics for the issues from many areas of human inquiry; the ability to perform accurate calculations and evaluations using tools and techniques from probability, descriptive statistics, statistical estimation, statistical distribution, inferential statistics, correlation, and regression; a sound, critical approach to interpret statistics, including an awareness of both the legitimate uses and possible misuses of statistical information; an ethical perspective concerning the practice of statistics; facility with one or more statistical software package; and proficiency in the art of clearly presenting mathematical information, in both written and oral form.

IS 2106 - Business Process Management

This course aims firstly, to establish the theoretical base of business process management which include (but not limited to), core elements and types of business processes and the stages of the business process life cycle as noted in "Fundamentals of Business Process Management" by Marlon Dumas, Marcello La Rosa, Jan Mendling, Hajo A. Reijers. Secondly, the students are exposed to case studies and practical scenarios for each stage of the above cycle, focusing on the potential of IT to support business process management.

IS 2107 - Graphic and Visualization

This course provides an introduction to Graphics & Visualization. It discusses the fundamentals of computer graphics with a mathematical perspective and various visualization techniques of data.

IS 2108 - IT Project Management

IS 2108 covers the modules of introduction to project management by defining the characteristics of a project and the life cycle of an IT project; identifying and planning activities and understanding activity planning objectives and methods; importance of Software effort estimation (SEE) and how to estimate effort of a given scenario using SEE techniques; managing risks in IT projects-steps in risk management process; types of risks and risk planning; nature of resources in IT projects and how to schedule and allocate resources; how to effectively monitor and control a project and importance of ensuring software quality and methods to adopt.

IS 2109 - Information Systems Security

IS 2109 facilitates students providing them the ability of describing the nature of security risk in a business and its content; compare and apply several models for security risk assessment; facilitate a risk assessment process and gain consensus on risk-based decisions; incorporate risk assessment into an IT security plan and describe various protection measures including cryptographic approaches covering main course modules; security goals, cryptography, social engineering and risk assessment methodologies and techniques.

IS 2110 - Data Structures and Algorithms II

This course is designed to enhance the knowledge gained on IS 1114 - Data Structures and Algorithms I by introducing more data structures, algorithms and algorithm design techniques. Related with data structures, graphs, balanced trees and hash tables will be introduced. Divide and conquer (e.g merge sort), greedy, recursive algorithms and memorization are introduced under algorithm design techniques. Graph traversal algorithms (DFS, BFS), shortest path and minimum spanning tree algorithms are also explained under this course.

IS 2111- Computer Networks

IS 2111 facilitates students by providing them the ability of explaining the principles underlying the layered systems architectures and their application in computer networks; describe the functionality and the role of different hardware and software components used in networks; and apply the core concepts underlying IP networks to solve simple network design problems, including IP subnetting covering the modules of types of networks, core network components, TCP/IP model, physical layer: wired and wireless connectivity, data link layer: Ethernet, network layer: IP, IP addressing and routing, transport layer: TCP, application layer: core Internet application protocols, network security and security devices, the Internet as a key networking platform and network device configuration.

IS 2112 - e-Business Strategies

IS 2112 provides a sound understanding of the applications and technologies in e-Business, and familiarizes the student with the concepts in e-Business, the Business applications, marketing on the web, the new revenue models, legal issues related to B2C (Business to Consumer) and B2B (Business to Business) applications. Further it prepares students with the skills needed to work in any e-Business environment and to decide on strategic business decisions related to e-Business. While making the students understand ethics and professional issues in an e-Business environment it prepares them to work in an e-Business environment in the global market. Moreover, this course is supposed to enhance the ability of the students by taking a company through the e-Business Transformation process.

IS 2113 - Community Informatics (ICT for Development)

The aim of this module is to introduce students to the fundamental concepts and discourse of the ICT4D and Community Informatics field. Focus is placed on application of concepts and theories associated with these fields to enable design of projects using ICT to achieve sustainable economic and/or social development. Students will learn to: Describe the concepts of Development; Analyse the role of ICTs in development (emphasis is placed on socio-economic development within the context of e-Government as well as other ICT4D projects and reflect on its appropriateness); Describe the challenges and issues arising with the application of ICTs for development; Analyse the role of national policy and regulations in promoting effective developmental use of ICTs; Design community informatics/ ICT4D projects using ICT and Evaluate ICT4D/Community Informatics projects.

IS 2114 - Business Process Re-engineering

This course is directed at exposing students to the practical components of the Business process management cycle, which is taught in the IS 2006 course, with a main focus to the re-engineering aspect of business processes. Students are required to participate in industry visits to selected organizations and to identify and document selected business processes. Then they are required to propose re-engineering initiatives/enhancements for the identified processes, and prepare a report and presentation on the same.

EN 2102 - Enhancement III

The course is taught through a real-life customer development context where students acquire the skills and know-how to develop their business idea all the way from the conceptual stage to the marketplace. The knowledge is gained by learning success stories of local and global businesses that have been set up by entrepreneurs.

Year 3 Courses

IS 3101 - Enterprise Resource Planning Systems

This course offers an introduction to business functions and business processes along with a comprehension of the concept of Enterprise Resource Planning system. It also provides knowledge on tactics, tools, metrics and methodologies available for implementing an ERP system as well as the knowledge on common pitfalls of an ERP system.

IS 3102 - Human-Computer Interaction

This course will discuss the humans, machines and how do the humans interact with machines in their day-to-day lives. Theoretical aspects of human computer interaction will be discussed and students will also get hands-on-experience in designing interfaces and systems using the theoretical knowledge that they gained. Some of the topics that will be covered in the course are, understanding humans, evolving technologies for rich interaction, interaction modeling and design, user centered design, developing effective prototype interfaces.

IS 3103 - Software Quality Assurance

Software Quality Assurance is offered for third-year students at the University of Colombo School of computing. The course delivery is a two-hour lecture session done by course coordinators and industry experts. Industry experts invited for this course provide knowledge regarding software testing and quality control approaches that are currently used in the software development industry. Thus, students will gain both theoretical and practical knowledge about software quality assurance. This course introduces quality assurance practices applied in various stages of software projects to depict the importance of quality in relation to software systems. The teaching practices mainly introduce software testing strategies and software quality standards. Moreover, the course delivers knowledge on subject matters such as test automation frameworks, mobile application automated testing, load testing and performance testing. After the completion of the course, students will be able to explain the current trends in SQA and use these practices efficiently and effectively for their software development projects.

IS 3104 - Strategic Management

This course addresses the strategic management of organisations, including the formulation of longer term strategic directions, the planning of objectives and supporting strategies, and the control of strategic implementation. It provides students an understanding of the approaches and the tools for planning and controlling strategy of the organisation and sub-unit levels, as well as experience in case analysis and practical application of planning and controlling skills. Topics covered by this course include evaluating the strategic environment, industry and

competitive analysis, formulating mission and setting objectives, strategy selection and implementation, and strategic control.

IS 3105 - Professional Practice

After the completion of this course, students will be able to identify ethical issues in the development and application of computing technology, explain ethical issues of the development and application of computing technology using ethical theories, and explain means to address ethical issues in the development and application of computing technology using ethical theories and the relevant code of conduct. Furthermore, the course will be discussed on ways to design, develop, and apply computing technology to minimize ethical issues.

IS 3106 - IT Procurement Management

IS 3106 covers the modules of public procurement; IT procurement management; procurement categories (goods, works, services, consultancy and information system); methods of selection of goods and services; methods of selection of information systems; methods of selection of consultancy; difference between methods of selection; Invitation for Bid (IFB); Expression of Interest (EOI) and Request for Proposal (RFP); Terms of Reference (TOR); contract management and e-Government procurement.

IS 3107 - Contingency Planning and Risk Management

IS 3107 develops a facet of soft skills needed to address information systems assurance. The body of required knowledge stems from the emphasis by the top management of organizations on information systems security. The exposure given through practical and theoretic means strives to provide the expertise needed in terms of technical knowhow coupled with understating of business required to influence a business decision in driving information systems security and assurance.

IS 3108 - Middleware Architecture

This course provides students with a fundamental concepts behind middleware and the role played by middleware in distributed systems. The course covers the basic principles of middleware and introduces the different types and uses of middleware. The functionality of middleware is taught through practical examples and hands on design and implementation. The course also focuses on how the software industry uses middleware by having industry experts as guest lecturers during the course. This also introduces different categories of middleware and how it is used in software industry.

IS 3109 - Systems & Network Administration

This course introduces the technical operational tasks of a system and network administrator through both lectures and practical sessions. The course covers topics such as Linux/Unix systems, Apache configuration, DNS configuration, web caching, shell scripting and systems administration automation.

IS 3110 - Research Methods

This course discusses different approaches, methods and techniques used in scientific research in general and provides an introduction to research in computer science and information systems. The course covers the three main research approaches: quantitative, qualitative and mixed method and introduces different sampling methods and data analysis techniques. During the course, the participants will engage in different types of activities such as reviewing literature, presenting research ideas and designing research studies.

IS 3111 - Operations Research

After the successful completion of this course students will acquire the skills to improve the effectiveness of a system as a whole, with emphasis on allocation of scarce resources. Students will learn to use appropriate quantitative techniques and tools including mathematical models to solve problems in the real world. The topics covered include Introduction to Operations Research, Linear Programming Models, Graphical solution, Simplex algorithm, Sensitivity Analysis, Transportation models, Queuing models and inventory models.

IS 3112 - Game Development

This course introduces fundamental concepts of game development industry and its development process. The course expands more detail on game design principles by explaining theories in game designing. The course further discusses various technologies that involve in game and game engine development. Practical sessions enable students to get hands-on experience in designing, prototyping, and implementing video games as a game team.

IS 3113 - Group Project II

The third year group project is a mandatory course for those who follow 3 year degree programme in both CS and IS streams. The objectives of the course are to improve the students' knowledge and develop skills required for the software development by carrying out activities in the stages of software development lifecycle (SDLC), develop the relevant system documentation and user documentation of the software project assigned in all stages of SDLC, to Present, present, demonstrate and defend the working software system of the project as a group as well as an individual contributor and demonstrate it as a completed software product ready for the deployment.

IS 3114 - Enterprise Applications

This course aims to extend the enterprise applications/software knowledge of Enterprise Resource Planning (ERP) systems course into Supply Chain Management (SCM) and Customer Relationship Management (CRM) areas of business organizations. In relation to both core aspects (SCM and CRM) of the course, up to date theoretical content (covering current trends in the industry) and technologies will be delivered to the students. The ultimate aim of the course is to enable students to build a holistic view of business organizations through linked business processes using the above integrated business applications.

IS 3115 - Mobile Application Development

This course covers topics such as introduction, operating systems for wireless mobile devices, android overview and android development environment, anatomy of an android app and the app lifecycle, applications development for android devices with android studio, android user interface, android intents & android persistence, android web view & web services, android animation and graphics, location-based apps, sensing & sensors, hybrid mobile app development, native mobile app development, and mobile security.

IS 3116 - Database Management Systems II

This course is designed to enhance the knowledge gained on database management under IS 1110. The course consists of data modeling techniques, introduction to indexing, transaction management concepts, integrity validation techniques, triggers, stored procedures and database security techniques.

IS 3117 - Machine Learning and Neural Computing

This course unit consists of the following: Introduction to Machine Learning and Pattern Recognition, Learning paradigms: Supervised learning (generative/ discriminative learning, parametric/non-parametric learning, neural networks, support vector machines); Unsupervised learning (clustering, dimensionality reduction, kernel methods); Learning theory (bias/variance tradeoffs); Reinforcement learning and adaptive control, Boltzmann Machine, Bayesian statistics, Fuzzy Logic vs Machine Learning, Recent applications of machine learning such as robotic control, data mining, autonomous navigation, bioinformatics, speech recognition and text and web data processing.

IS 3118 - e-Learning and Instructional Design

Those who are interested in designing e-learning environments, should know how to design e-learning content and the environment to support learners to do their learning successfully. This course provides a broad overview of e-learning design concepts, principles and things to remember in designing effective e-learning environments. Furthermore, this course guides the participants towards preparing a syllabus for an online course and design, develop, implement and evaluate an online/CD-ROM based course.

EN 3101 - Industrial Placement

The Industry Placement provides the much needed industry exposure for the students which is an essential part of the education in order to meet Industrial standards. The Industrial Training programme is scheduled for a period of 5-6 months which improves their professionalism to make them ready for the industry. The students are placed in various sectors of the industry where they will be working as interns. Students are allowed to choose a list of interesting fields at the beginning of the programme, allowing them to work in a preferred area. The Internship programme produces quality graduates in the fields of Computer Science (CS) and Information Systems (IS).

Year 4 Courses

IS 4101 - Final Year Project in Information Systems

This research project course is designed to support the students who are following the honours degree programme in Information Systems to develop their research skills and knowledge. During the course the students will design and conduct an original research project in information systems and report and present their research findings. This is a 10 credits course and it spans over both semesters of the year. The projects could be conducted individually or in groups. The size of a group should not be more than three. Each individual/group should submit a project proposal at the beginning of the academic year. The project activities should be carried out according to the schedule provided in the undergraduate virtual learning environment and the progress of the project should be reported to the course coordinator fortnightly.

IS 4102 - Advanced Software Quality Assurance

Advanced Software Quality Assurance is offered for the fourth-year students at the University of Colombo School of computing. The course is designed to deliver content related to the fundamentals of software test automation frameworks. Students will be able to enhance their software quality assurance knowledge through a practical approach by following course deliverables regarding test patterns, testing in agile frameworks, mobile application testing and security testing. Furthermore, students will gain a thorough understanding regarding testing tools that are widely used in the industry.

IS 4103 - Data Analytics

This course constitutes of two parts. Part I covers an introduction to Data Mining. It describes the knowledge discovery process and data mining techniques. Part II consists of pattern recognition, which spans from feature selection to performance evaluations of the classifiers. Also, it gives the introduction to Big Data Analytics. Both parts cover the theory and applications with the practical approach.

IS 4104 - Research Seminar

This course is designed as a seminar series to provide a forum where students can explore literature in computing domain and demonstrate both verbal/written skills to critically appraise research papers. The course will span over one semester and students should present / critically review, peer reviewed conference paper or a journal publication, recommended by a supervisor based on the final year research project. The forum will provide the opportunity to the audience to ask questions from the presenter and in turn the presenter to argue/ defend audience feedback. Two peer reviewers will be assigned to a presenter to give constructive feedback. At the end of this course unit students should author a research paper based on his/her final year research project.

IS 4105 - Advanced Concepts in Software Design and Development

Advanced Concepts in Software Design and Development is offered in the first semester for the 4th year IS students and 4th year students at the Faculty of Science, University of Colombo. This course is developed to introduce advanced concepts in software design and development together with the best practices in software development. Students are expected to analyze these concepts/practices based on their experience collaboratively. The course is a blended learning course where there will be at least two-hour interaction in the classroom done by industry experts and course coordinators and online learning activities conducted through the virtual learning environment of the undergraduate programme. Hence, the active participation of students is expected, and it will be considered in the evaluation criteria.

IS 4106 - Advanced Database Management

The expectation of this course is to acquire necessary database administration skills to assist in database support activities and to get the motivation to acquire higher database skills. This course covers advanced database concepts like database security, file organization and indexing, query processing and optimization, transaction management, concurrency control and recovery techniques, and distributed database design concepts.

IS 4107 - Ethical Issues and Legal Aspects in IT

During this course the students will gain an ability to describe what is meant by the term information technology, identify various advantages and disadvantages related to the code of ethics in IT, explain the term called intellectual property and explain the protections provided by copyright, patent, and trademark and the challenges related to IT ethics.

IS 4108 - Natural Language Processing

Natural Language Processing, also referred to as Computational Linguistics is the fascinating field of building computational models of Human Language and which brings together diverse fields such as Linguistics, Mathematics, Psychology, Statistics and Computer Science. This course includes relevant materials in Linguistics and Computer Science and it is designed to cover the background knowledge required to develop NLP related applications.

IS 4109 - Cognitive Robotics

This course discusses two different approaches for developing robots: conventional artificial intelligence (AI) based approaches and new AI based approaches. The topics include an introduction to basic concepts (a short history, the concept of autonomy, dynamics and kinematics, sensors and actuators, etc.), the three robotic paradigms for organizing intelligence in robots (hierarchical, reactive/behavior-based, and hybrid deliberative/reactive), robot navigation (topological path planning, metric path planning, localization and map making, etc.), as well as the topics in new AI inspired by cognitive science such as visual routines, dual coding theory, affordances, and enactive cognition. During this course, students will not only learn about how to build a cognitive robot, but also use the robotic system as a platform to test various theories and methods from cognitive science and artificial intelligence.

IS 4110 - Parallel Computing

This course is designed to introduce parallel computing for students. As pre-requisites to the course, the knowledge of C is desired although not essential. As learning outcomes, students will gain the skills to develop high performance parallel programs. Syllabus of the course contains Serial and Parallel Programs, Basic Serial Performance Optimization Guidelines, Hardware for Parallel Computing, Parallel Program Design, and Software for Parallel Computing: MPI, Pthreads, OpenMP; Cuda Optimizing Parallel Programs.

IS 4111 - Computational Biology

After successful completion of the course, students should be able to: explain the necessary principles and methods of genomics, gene expression and proteomics and demonstrate how popular bioinformatics tools are being used in the area of bioinformatics. Students should be able to search and retrieve data using biological databases, interpret the results, perform sequence alignment using existing popular tools and techniques.

IS 4112 - Geographical Information Systems

Geographic Information System (GIS) deals with the analysis and management of geospatial information. This course offers an introduction to methods of managing and processing geographic information. Emphasis will be placed on the nature of geographic information, data models and structures for geographic information, geographic data input, data manipulation and storage, spatial analytic and modeling techniques, and error analysis. After successful completion of this course, students will be able to understand the basic GIS theory and principles; develop the competency of spatial data collection, format, storage, editing, and analysis; illustrate the competency of map design; and acquire the competency in basic knowledge and skills regarding GIS software for a basic GIS Project.

IS 4113 - Digital Forensics

With the profound usage of digital media and its connectivity to cyber space, cyber-crime incidents are enormously increasing in numbers. Thus, contemporary world demands practitioners who are skilled in protecting the assets in cyber space and investigating cyber-crimes in incident scenarios. The field of computer forensics specifically focuses the investigation aspect of a cyber-crime and hence, SCS4113/ IS4013 Computer Forensics course module provides a broad understanding of the field by discussing topics such as systematic approaches in investigation, incident management, fundamentals of forensic investigation, and legal aspects etc.

IS 4114 - IS Innovation

Theoretical perspectives on managing IT innovations, current best practices of innovating with IT, the main theoretical perspectives on managing IT innovations, familiarize with current best practices of innovating with IT, and develop innovation skills in various organizational settings such as project teams, functional departments, organizations, communities, and society at large), creative problem solving and strategies for creative problem solving, impact of technological innovations on the economy and society, innovation skills needed for today's dynamic, global, and technology-enabled competitive environment, innovation skills to various organizational settings such as project teams, functional departments, organizations, communities, and society at large will be discussed during this course. Personal thinking preferences, everyday creativity and eliminating mental blocks, creative thinking techniques, idea selection approaches, teaming

techniques for creativity, conditions that promote creativity, design for interaction, disruptive technologies, and intellectual property will also be discussed during the course. Furthermore, the course will be focused on how organizations innovate with new information technologies to compete in the marketplace, collaborate with partners, serve customers, motivate employees, and improve operations. The ICT innovation activities in Business systems (experience sharing with ICT and other industry experts) will be covered as well during the course.

IS 4115 - Enterprise Architecture

This course offers a comprehensive knowledge on the principles and the practices of enterprise architecture by integrating strategic, business, and technology planning methods. The major areas covered by this course are Enterprise Architecture Frameworks, Zachman Framework for Enterprise Modelling, Service Oriented Architecture, Design Patterns, Web Architectures and Web Architectural Patterns, Enterprise/System Integration, Data/Information Architecture and Data Integration, Agility in Business - Agile and Scrum, Enterprise Data Modelling, Green Computing, Virtualization of storage and systems, the role of open source software, and Software as a Service.

IS 4116 - Business Intelligence Systems

This course is designed to give the students the ability to apply Business Intelligence technologies in an organizational setting while discussing about real life analysis, data mining methods, the social and ethical issues related to the use of Business Intelligence technologies in organizations and the method of optimizing the use of information in organizations in forecasting.

IS 4117 - Intelligent Systems

This course will be focused on the Philosophy of AI, Search (Heuristic/Adversarial/Informed/Uninformed Search), Knowledge Representation and Reasoning, CommonKADs, Planning, Learning, Introduction to NLP and Linguistics, Intelligent Agents, Semantic Web, and Emerging Trends.

IS 4118 - Embedded Systems

This course gives a technological and scientific perspective of embedded systems. The topics include an introduction (e.g., typical components of an embedded system and application areas), embedded programming languages (e.g., programming FPGA using Verilog/VHDL, programming PIC microcontrollers using Assembly and C, and Arduino programming), embedded communication technologies (e.g., serial interfaces like I2C, SPI, UART, and 1-Wire, parallel bus interfaces, and wireless interfaces like RF, Bluetooth, Wi-Fi, ZigBee, and GPRS), technologies and protocols for creating Wireless Ad-hoc Sensor Networks (e.g., ad-hoc routing, data and power management, security, and hardware platforms such as XBee and ESP8266), and engineering approaches (e.g., flow charts, DFDs, state machines, timed-automata and UPPAAL for verification, quality and certification, and human factors). Students are required to do laboratory practicals as part of the course.

IS 4119 - Philosophy of Science

This course is designed to provide a basic introduction to the main philosophical questions concerning scientific knowledge. It is specifically designed to generate an interest on epistemological concerns in research among the students who follow undergraduate courses on non-humanities subject streams. The key focus of this unit is on ideas, concepts, and thoughts that shape the nature, agenda and goal of scientific inquiry. Therefore, it provides a brief historical account on the main debates that emerged in philosophy of science since the seventeenth century. This aims to broaden the thinking of students in order to prepare them for serious academic research. The course will span over 15 lecture hours and the students' performance will be evaluated during the lectures as well as at the end of the semester. The students will be provided with reading material and useful online material to help them to follow the course successfully. Following are the key themes covered in this course.

COMMON AWARDS

These are several awards at the Annual Convocation for the graduates with respect to the degree programme.

	Candidates	Name of the Award
Most Outstanding Graduate of the UCSC	3rd & 4th Year	*Prof. V. K. Samaranayake Memorial Medal*
Best Performing Students	1st, 2nd, 3rd & 4th Year	*Faculty Award for Best Performing Students*
Director's List	1st, 2nd, 3rd & 4th Year	*Faculty Award for Students with Best Academic Performance*
Student of the Year Award (Open Awards)	3rd & 4th Year	*Student of the Year*
Peace Prize (Open Awards)	3rd & 4th Year	*D. P. P. Samarasekera Peace Prize*
General Merit (Open Awards)	4th Year	*Canekeratne Prize*
Academic Excellence (Open Awards)	3rd & 4th Year	*Prof. Tilak Hettiarachchy Award*

04

Rules, Regulations, and Ethics

ETHICS

STUDENT DISCIPLINE

The UCSC expects its student community to be well disciplined. Resources and facilities provided are liable to be withdrawn, if they are found to be misused. Storing of unauthorized material, hacking, email spamming or software piracy is strictly prohibited in the Labs. Disciplinary action will be taken according to the UCSC regulations on such matters. Where necessary, such instances will be reported to law enforcement agencies. Students violating examination rules will be punished separately. These punishments include cancellation of exam results and suspension from academic work for a specified period. Please refer to the the UGC Commission Circular No. 946 through the below link. *https://cmb.ac.lk/administration/wp-content/uploads/COMMON-G-UIDELINES-ON-S-TUDENT-DISCIPLINE_ugc_Commission-Circular-No.-946.pdf*

Unethical and Illegal Actions within the University Premises:

- Plagiarism, copyright infringement and cheating
- Aggressive behaviour, dissent and remonstrance
- Not being respectful (discourteous) and disobedient
- Illegal use of property, services and information
- Collecting funds without permission
- Solicitation
- Keeping and consuming alcohol, narcotics and tobacco within the University premises
- Gambling
- Harassment / violence
- Mental torture and ragging
- Sexual harassments

- Theft
- Damaging or destroying the property wilfully or maliciously

RAGGING

Ragging and other forms of violence such as insults and cruel acts are totally prohibited according to "Prohibition of Ragging and Other Forms of Violence in Educational Institutions Act. No 20 of 1998" which has been approved by the parliament. Any act which causes or is likely to cause physical or psychological injury, fear or mental pain or fear to a student or a member of the staff of an educational institution is called ragging. The law makes ragging, a distinct and punishable offence (See Appendix A for more information).

DISCIPLINARY ACTIONS

If any student breaks the rules in the disciplinary actions or ragging, those will be punished according to the By-Laws of the University of Colombo related to the student disciplinary matters (https://cmb.ac.lk/administration/wp-content/uploads/BYLAW-ON-STUDENT-DISCIPLINE.pdf). All punishments and any disciplinary action taken shall be recorded in the students' personal file and may be reflected in the testimonial and the student record book. Punishments for ragging within or outside of the university might result in rigorous punishment based on their offence. Several students were warned in front of their parents for violating university regulations.

RULES AND REGULATIONS

Some of the most essential rules and regulations relevant to undergraduates are given below. These rules and regulations are in accordance with the University of Colombo School of Computing by-laws with effect from 15th January 2015.

REGISTRATION FOR THE OPTIONAL COURSES

If optional courses are offered in a particular year, students should register for such courses. Registration will commence one week prior to the start of the academic year. Optional courses having less than a specified number of students may not be offered, and students who have registered for such courses should opt for other available courses based on their preferences. No changes in courses will be permitted after 2 weeks of the commencement of the semester. Admission cards to sit for semester examinations will be issued using the registration list. Repeat students have to pay the examination fee at the time of re-registration. Most of the registration activities are now done through online application forms.

EXAMINATION PROCEDURE

Rules to be followed in Examination

1. Students have to be **present** at the examination hall at least **15 minutes before** starting the paper, but they are not allowed to enter the hall until the Supervisor gives permission.

2. Students will not be **admitted** to the examination hall after the **first half-an-hour of the examination.** Any student who violates this rule will be considered as an unauthorized candidate of the exam. Once admitted to the examination hall, students are not allowed to leave the examination hall till the examination is over.

3. After entering the hall, students should go to the seat assigned to them and they are not allowed to change it without the permission of the Supervisor.

4. Students **must** have their **Student Identity Card (SIDC)** and Admission Card for each paper. If students fail to bring their SIdC, they have to sign a declaration and produce the SIdC to the Senior Assistant Registrar/Examinations and Registration the next day. If a student loses their SIdC, they can obtain a new Identity Card from the Marshal office of the University of Colombo

5. **Admission Cards** are signed in front of the Supervisor/ Invigilator when a student sits for a paper.

6. Students **have to bring** their own pens, ink or any other approved equipment and **stationery**.

7. Examination stationery (i.e. Writing paper, graph paper, etc.) will be supplied and only these papers can be used at the Examination. Answer books supplied to the students can not be torn or mutilated. All materials supplied, whether used or unused, have to be left behind and cannot be removed from the examination halls.

8. Students are prohibited to have any notes, formulae or any other **unauthorized material** with them during the examination. Books, handbags etc. which students have brought with him/her should be kept at a place shown by the Supervisor/Invigilator.

9. Every student has to enter their **Index Number** on the answer book and on every extra sheet. A student who writes another student's index number on their answer sheet, can be considered as having **attempted to cheat**. The Supervisor/Invigilator has the authority to check the answer scripts of the student. An answer script that bears no Index Number or an Index Number which cannot be identified, might be rejected. Students can't write their names on the answer book.

10. Students are under the **authority** of the Supervisor and they have to carry out their Invigilators' instructions throughout the exam.

11. **Absolute silence** has to be maintained in the examination hall and around it. A student cannot talk or have any dealings with anyone other than the Supervisor/ Invigilator. If a student needs to draw the attention of the Supervisor/Invigilator they can raise their hand. A student can be excluded from the examination hall for causing a disturbance.

12. After starting the exam, students **cannot leave** the examination hall even temporarily. In case of an emergency, the Supervisor/ Invigilator will grant them permission under constant surveillance.

13. Students have to **stop writing** immediately when the Supervisor/Invigilator orders. If this instruction is not followed, the Supervisor/Invigilator has the authority to make a statement on the answer book.

14. All calculations and **rough work** will be done only on the given paper. Such work should not be done on admission cards, timetables, question papers or on any other paper. Any student who disregards these instructions can be considered as having written notes with the intention of copying.

15. Any answer or part of the answer which is not to be considered for the purpose of the assessment will have to be **neatly crossed out**. If the same question has been attempted in more than one place, the answers that are to be disregarded have to be **neatly crossed out**.

16. Every student has to hand over the **answer scripts** personally to the Supervisor/Invigilator or remain in their seat until it is collected. They cannot hand over their answer scripts to an attendant, a minor employee or another student.

17. After **handing** over the paper, students cannot have it back.

18. Students **cannot remove** answer scripts from the Examination hall.

19. Students **cannot copy** from any material or from the answer scripts of another student. Nor can they help another student or get help from another student.

20. **Impersonating** students at the examination is **not allowed**.

21. The Supervisor/Invigilator can request a student to make a statement in writing due to an incident during the examination, and such statement will have to be signed by the student. Students **cannot refuse** to make such a statement or to sign it.

22. Every student who registers for an examination will be considered to have sat for the examination unless:
    (a) They are permitted by the Senate for a valid reason to withdraw from examination on a ground acceptable to the Senate within the given period

    OR

    (b) They submit a medical certificate prior to the start of the examination or within **7 working days after the exam**.

23. If a student can't present themselves for any section of an exam, they will have to notify it to the Director/UCSC immediately. This should be confirmed in writing with a support document **within 48 hours by registered post**.

24. A student who withdraws or absents himself/herself from the examination **will not be eligible** for a Honours at the next examination unless the senate decides otherwise.

25. Students can not sit for the examination, if they have exhausted the number for that examination, unless they are granted special permission to do so by the senate.

EXAMINATION OFFENCES

Students are strongly advised against committing plagiarism in the submission of assignments and thesis reports. In the case of other written examinations, the possession of unauthorized material is considered as an offence punishable under the University of Colombo rules on the conduct of examinations.

Some Examples of past punishments:

- Plagiarized content in an assignment worth less than 20% of course work – zero marks for the assignment
- Plagiarized content in an assignment worth more than 20% of course work – zero marks for the entire assignment component
- Keeping unauthorised material during an examination – paper will be cancelled if content not relevant to the subject matter of the examination is found

- Keeping unauthorised material during an examination – all papers of that semester examination will be cancelled if content relevant to the subject matter of the examination is found
- Keeping unauthorised material using university property (including writing on admission card) – all papers of that semester examination will be cancelled and cannot sit for any examinations for one further year

EXAMINATION OFFENCES AND PUNISHMENTS

1. Examination offences can be classified as follows:
   (a) Possession of unauthorized documents or removal of examination stationery.
   (b) Disorderly conduct.
   (c) Obtaining or attempting to obtain improper assistance or cheating or attempting to cheat.
   (d) Impersonation.
   (e) Aiding and abetting the commission of any of these offences.
   (f) Violation of any of the requirements or conditions stipulated in Part I.

2. There shall be an Examination Disciplinary Committee to inquire into and make recommendations (including punishments) regarding examination offences.
3. In all cases of examination offences, the Supervisor will take action and forward his report to the Director/UCSC.

4. Having prior knowledge of a question paper is an examination offence.

5. If students possess unauthorized material at an examination hall, it will be presumed that they have used it until the contrary is proved by them.

6. In cases of disorderly conduct, the Supervisor will in the first instance warn the student, and if the student persists in disorderly conduct, the Supervisor may exclude the student from the examination hall and issue him/her a letter cancelling their candidature from the examination.

7. In all other cases of examination offences, the Supervisor will take over the unauthorized documents and will obtain a statement from the student and write his report on the matter.

8. A student who is guilty of an examination offence is liable to the following punishments.
   (a) Removal of their name from the pass list.
   (b) Cancellation of their candidature from the whole or part of the examination.
   (c) Suspension from any university examination.
   (d) Suspension from the university for a period.

9. Any student found helping to commit an examination offence will receive the same punishment as the offender.

END SEMESTER EXAMINATIONS AND CONTINUOUS EVALUATIONS

End semester examinations for a particular module are conducted in the form of a written paper and continuous evaluations (assignments). Continuous evaluations can consist of a combination of reports, presentations, oral examinations and practical examinations. It should also be noted that there can be certain modules which do not have an end semester written examination (i.e. IS 2102 Group Project I, EN 2101 Industrial Practices, EN 3001 Industrial Placement/Industrial Project)

All examinations are conducted and completed within the given semester except for courses such as IS 2102 Group Project I, IS 3113 Group Project II. The duration of the theory examinations, practical and oral examinations are determined by the board of study for the the internal undergraduate degrees. The duration of each examination and the rubric of the examination (i.e. final marks calculations with respect to assignments and final course exam/evaluation) are informed during the respective semester.

RE-SCRUTINIZATION

Provision is given for students to request for verification of their examination marks and grades if they wish to do so. However, the verification process will be limited only to check for accuracy of addition and computation and not for re-marking of scripts.

Requesting re-scrutinization of marks and grades shall be limited only during the first week immediately following the release of the result of an examination. The cost of re-scrutinization process

must be borne by the student and hence a non refundable fee of Rs.500/= have to be paid in advance per examination. If the marks and grades are not changed, the candidate shall be notified by the Director through Senior Assistant Registrar / Examinations of the School. However, if the marks and grades are changed, the outcome of the verification shall be notified to the candidate (s) only after the ratification of the results.

The results issued to the student (s) following the re-scrutiny of marks and grades shall be the final and no more requests shall be entertained thereafter.

ELIGIBILITY REQUIREMENTS TO SIT FOR END SEMESTER EXAMINATIONS

The main requirement in order to be eligible to sit for the end semester exam is to be enrolled in the course at the beginning of the semester. Since all the courses offered in the first and second years are compulsory, students need not specifically enrol for those courses. But since optional courses are offered in the third and fourth years, students are advised to specifically register for each optional course that is offered in that particular year at the beginning of that academic year. In addition, a student would not be permitted to take an end of semester examination unless he/she has satisfied all the requirements of the relevant course including but not limited to:

- regular attendance at lectures ("Students are strictly advised to maintain 80% attendance at the lectures")
- attendance to laboratory classes
- submission of assignments at the appropriate time

ABSENCE

Students who are unable to appear for a theory and/or practical component of an examination due to medical reasons should submit a Medical Certificate issued by the Chief Medical Officer (CMO)/University Medical Officer (UMO) of the University of Colombo or a valid Medical Certificate with the "Form to submit Medical Certificates" (Which will be available at the Examination Division of the UCSC or download from the UGVLE) to the Medical Center of the University of Colombo.

Students are advised to strictly adhere to the following guidelines in this regard:

(1)

(a) A student who falls ill during a period of examination of the UCSC should report to the Chief Medical Officer (CMO)/University Medical Officer (UMO) of the University of Colombo. The CMO/UMO will examine the student and issue a medical certificate, if necessary.

(b) The medical certificate issued by the CMO/UMO with the "Form to submit Medical Certificates" (which will be available at the Examinations Division of the UCSC or downloaded from the UGVLE) should be forwarded to the Medical Centre of the University of Colombo within seven working days from the examination date.

(2)

(a) If a student who resides outside Colombo city limits finds it difficult to report to the CMO/ UMO due to the seriousness of the illness, he/she should get treatment from the nearest government medical institution or SLMC Registered Doctor with M.B.B.S. Qualifications.

(b) In such instances, he/she should follow the procedure given below with regard to the submission of medical certificates:

(i) All medical certificates other than those issued by the CMO/UMO should be forwarded to the CMO/UMO along with the "Form to submit Medical Certificates" (which will be available at the Examinations Division of the UCSC or downloaded from the UGVLE) within seven working days from the examination date.

(3)

(a) Medical certificates submitted after the above deadline and/ or without the recommendation/ observation of the CMO/ UMO will not be accepted.

(b) The following categories of medical certificates will only be accepted by the CMO/ UMO for consideration.

(i) Medical certificates issued by a government hospital/ district medical officer

(ii) Medical certificate issued by an SLMC Registered Doctor with M.B.B.S. Qualifications

(c) The CMO/ UMO may request the following documents as further proof of illness

(i) Receipt of payment for the medical certificate from the government hospital;

(ii) Prescriptions of the medicines taken;

(iii) Reports of the blood tests etc.

If the required documents are not submitted the application may be rejected.

Absence for Assignments and Continuous Evaluations

If a student is absent for continuous evaluations (assignments), the final grade is computed without the marks of the relevant assignment unless the student provides valid evidence accepted by the UCSC within a prescribed period of time. Students are advised to inform the lecturer if he/she is unable to attend to a continuous evaluation, beforehand if possible.

Travelling Overseas

If a student is planning on going overseas, he/she is required to formally inform the the board of study for internal undergraduate degrees.

GRADE AND GPV REQUIREMENTS FOR PASSING A COURSE

A student obtaining a grade below C (GPV below 2.00) may re-sit the course examination (if available) for the purpose of improving the grade. In the event of a student obtaining a lower grade while repeating, he/she is entitled to the previous grade. However, in

calculating the award for a class in the final degree, the maximum contribution from a repeated course is considered to be a C grade. Repeat candidates must apply for courses they wish to repeat when the Examination & Registration Division publishes the notices in the UGVLE.

CRITERIA FOR COMPLETION OF A COURSE

A student is considered to have completed a course (Except an Enhancement course):

- Compulsory Courses - If he/she has received a grade of "D" or above
- Optional Courses - If and only if he/she has received a grade of "E" or above in respect of the evaluation of such component

A student shall be deemed to have 'completed' an Enhancement Course if and only if his/her attendance at such Enhancement Course and the prescribed Course Activities are not less than the prescribed minimum.

DEGREE AWARDING CRITERIA (THREE YEAR DEGREE)

A student shall not be entitled to the award of the three year Degree unless he/she has:

- Completed a minimum of 90 credits.
- Completed all Academic Credits in the first two academic years and at least 18 academic credits in the third academic year.

- Completed the number of Enhancement Credit Value Equivalents prescribed in respect of each year.
- Obtained a minimum GPA of 2.00.
- Completed the third year Industrial Placement/Industrial Project.
- Completed the relevant requirements within six Academic Years.

DEGREE AWARDING CRITERIA (FOUR YEAR DEGREE)

A student shall not be entitled to the award of the Honours Degree unless he/she has:

- Completed a minimum of 120 credits.
- Completed all Academic Credits in the first two years, a minimum of 18 Academic Credits in the third academic year and a minimum of 30 Academic Credits in the fourth academic year.
- Completed the number of enhancement credit value equivalents prescribed in respect of each year.
- Obtained a minimum GPA of 2.50.
- Completed the third year Industrial Placement/Industrial Project; obtained a grade not inferior to a C for the fourth year Final Year Project.
- Completed the relevant requirements within six Academic Years.

EFFECTIVE DATE OF THE DEGREE

The effective date of awarding the degree shall be from the first day of the month following the last date of the final year second semester examination.

BATCH TRANSFER POLICY

A batch transfer is to move a student from the batch that he/she has registered, to a junior batch on a request of that student. Although batch transfers are not encouraged, it is possible for students to request batch transfers under genuine and exceptional circumstances with documentary evidence to prove their case. Students are advised to submit such requests at the beginning of the academic year through the head of the undergraduate degrees to the Board of Study/ Academic Syndicate for its recommendation. A batch transfer is considered by the Board only if the student who makes the request has the provision to complete the degree programme within six years from the date of the registration. The student is placed on the same by-laws and regulations enforced at the time of his/her registration in spite of a change in the by-law and regulation in the later years. If there is any difference in the by-laws and regulations, the student shall sit for repeat papers based upon the curriculum prevailed at the time of his/her registration. There is no guarantee for such student to get eligible for the special honours degree programme from his/her current batch.

05

Other Activities at UCSC

POSTGRADUATE EDUCATION

MPHIL AND PHD PROGRAMMES

The UCSC offers Master of Philosophy (M.Phil) and the Doctor of Philosophy (PhD) in the field of computing.

1. Master of Philosophy (MPhil) in Computing(Full time/ Part Time)
2. Doctor of Philosophy (PhD) in Computing(Full time/Part Time)

MASTER'S PROGRAMMES

The UCSC conducts six different master's programmes to cater towards six distinct categories of postgraduate students.

- Master of Computer Science
- Master of Science in Computer Science
- Master of Information Technology
- Master of Information Security
- Master of Business Analytics
- Master of Cybersecurity

NEW MASTER'S PROGRAMMES

1. Master of Computing by Research (one year programme) is proposed to be introduced in 2022

For further details on postgraduate degree programmes by research, visit the UCSC website: www.ucsc.cmb.ac.lk/pg

EXTERNAL STUDIES

BACHELOR OF INFORMATION TECHNOLOGY (BIT)

Bachelor of Information Technology (BIT), widen the higher educational opportunities for the students who have been unsuccessful in meeting the competitive eligibility criteria for admission to the state university system. Another reason has been the massive demand from the ICT industry for high quality human resources far exceeding the number provided by the state universities. The BIT degree programme commenced in the year 2000 and has so far produced 2674 graduates and almost all graduates have been absorbed by the ICT industry. Internal students of all state universities have the right to follow BIT degree programme since it is a part time programme.

For more details visit the web site: http://www.bit.lk

FOUNDATION OF INFORMATION TECHNOLOGY (FIT)

Foundation in Information Technology (FIT), aims at enhancing the literacy and competency in using basic computer applications together with analytical thinking and communicational skills required for school leavers. It is a pre-degree programme that prepares students who are willing to read for their first degree. Furthermore, it is designed for anyone irrespective of the study streams they have followed in Advanced Level (secondary education). At the same time, FIT is an alternative qualification for students who do not possess Advanced Level qualifications to enroll into the Bachelor of Information Technology (BIT) programme. FIT is also a certification

programme for employment seekers or school leavers to justify their knowledge and skills in ICT for their future endeavors. The students who registered for the FIT programme will get access to a virtual learning environment at fitvle.bit.lk.

For more information and registration visit the web site: http://fit.bit.lk/

SHORT-TERM COURSES

The following short-term courses are conducted by Computing Services Centre (CSC) and the Advanced Digital Media Technology Center (ADMTC) of the UCSC.

- Graphic Design and Creativity Development
- Advanced Multimedia Web Design and Development Techniques
- Dynamic Web Application Development with PHP and MySQL
- Software Quality Assurance Using Test Automation Frameworks
- Java Application Development Using JavaSE
- Fundamentals of IT for Beginners
- Computing for Career Development
- Certificate Course in Videography and Video Production
- Hybrid Mobile Application Development with Flutter
- Program Design and Programming using C
- Training course on Data Science with Python
- Beginners Course for Robotics and Physical Computing

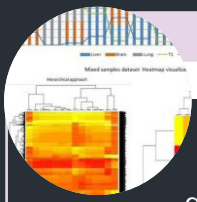
For more details visit the website: https://ucsc.cmb.ac.lk/training-programmes/

RESEARCH GROUPS @ UCSC

Research and innovations lie at the heart of success in a University. As the pioneer in Computer Science education in the country, the UCSC has already identified the potential to help solve the real-world problems through technology partnerships and collaborations. Our culture of collaboration encourages innovative discoveries in areas vital to the betterment of the world.

Eleven independent research groups are working on diverse areas witnessing the importance of interdisciplinary research. We have identified them as the intersection of disciplines where new ideas emerge, and innovative research happens. Our labs are enriched with academicians and students from undergraduate, masters' and doctoral studies.

All members of the UCSC community are encouraged to create new knowledge through inventive insights and solutions.



LANGUAGE TECHNOLOGY RESEARCH LABORATORY

Dr. B. H. R. Pushpananda

Language Technology Research Laboratory (LTRL) was established in 2004 to address the growing need for local language computing in Sri Lanka by conducting Localization and Language Processing research and development. The LTRL maintains strong relationships with all related parties, collaborating with the researchers, practitioners, linguists and policymakers in the island. The research group has a diverse range of activities: Research & Development, Consultancy, Training and Services. The LTRL conducts research in the field of computational linguistics: phonetics/phonology, morphology, and syntax of local languages. These researches are mainly focused on mathematical and statistical modeling of local languages, namely Sinhala and Tamil. These research programs are

strengthened by the supervision and consultation of a panel of senior scholars from various linguistic traditions.

More Details: https://ucsc.cmb.ac.lk/ltrl/

SUSTAINABLE COMPUTING RESEARCH

Dr. Kasun de Zoysa

The Sustainable Computing Research Group (SCoRe) at the UCSC conducts research covering various aspects of wireless sensor networks, embedded systems, digital forensics, information security, mobile applications and e-learning. The goal of our research is to generate computing solutions by through identifying low-cost methodologies and strategies that lead to sustainability.

More Details: https://ucsc.cmb.ac.lk/score/



UNMANNED AERIAL VEHICLE RESEARCH (UAVR) LAB

Prof. G.D.S.P. Wimalaratne

The R&D in the UAV infrastructure development (payload,communication, ground control stations etc) and Humanitarian Operations & Agricultural Applications of the UAVs.



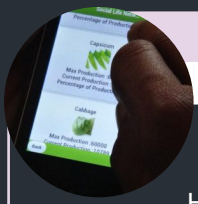
MODELLING & SIMULATION GROUP

Prof. G. K. A. Dias

The modeling and simulation group of the UCSC was initially formed in 2008 to work on a Ship Handling Simulator (ViduSayura) for the Sri Lankan Navy. This was a collaborative research effort involving personnel from the UCSC, Department of Physics

of the University of Colombo, and the Sri Lankan Navy. The modeling and simulation group of UCSC collaboratively carried out various researches and development activities with national and international organizations.

More Details: https://ucsc.cmb.ac.lk/simulation/



SUSTAINABLE AGRI-ECOSYSTEM GROUP

Dr. M. D. J. S. Goonetillake

Digital Agrifood ecosystems play a significant role in sustaining food security towards achieving Zero Hunger (SDG1) and No Poverty (SDG2). To that end, closed-loop information ecosystems are essential to provide timely information to empower the stakeholders, particularly the farmers engaged in the agriculture sector, to make actionable decisions. The objective of the research group is to explore emerging technologies in developing a digital Agrifood ecosystem to deliver contextualized, just-in-time information assistance and support for the livelihood activities of the stakeholders. Emerging new technologies in IT will enable new applications to enhance the efficiency in agricultural activities to achieve well-being and sustainability. To this end, the group explores the new techniques to manage agricultural data and knowledge and investigates the applicability of emerging technologies such as artificial intelligence, IoT, sensors, drones in Agri tech to make actionable decisions. The research group was formed in 2011 as an international collaborative research group involving researchers from Sri Lanka (University of Colombo School of Computing, University of Ruhuna), Australia, Italy, and the USA.

More Details: https://ucsc.cmb.ac.lk/sustainable-agri-ecosystem/



DISTRIBUTED COMPUTING GROUP

Dr. D. N. Ranasinghe

Members of the distributed computing group have worked on a wide range of topics: algorithms for persistent spaces, permissioned consensus variants under novel configurations
and byzantine failure conditions, evolutionary combinatorial multi-objective optimisation as well as multi-objective reinforcement learning based control for multi-party scenarios, privacy preserved multi-party computation and streaming graph summarisation.

More Details: https://ucsc.cmb.ac.lk/distributed/



BIOINFORMATICS AND COMPUTATIONAL BIOLOGY (BCB) GROUP

Dr. A. R. Weerasinghe

The Bioinformatics and Computational Biology (BCB) research group in UCSC conducts interdisciplinary research at the interface of Computer and Biological Sciences.
Members of the group are from various sub domains including machine learning, bioinformatics, Life science, high performance computing and statistics,Our research
primarily involves conducting quantitative studies, such as pattern recognition and network analysis to discover biological knowledge; and developing computational
techniques, algorithms, tools and statistical models to analyze various biological data and to make predictions on them.



UCSC SPATIAL EXPERIENCE AND HUMAN-COMPUTER INTERACTION (USE-HCI) RESEARCH GROUP

Dr. H K T C Halloluwa

USE-HCI research lab (UCSC Spatial Experience and Human-Computer Interaction) focuses on designing, building, and enhancing innovative technologies to solve real-world problems.

We believe it is critical to understand how the needs of people can be reflected in our future technologies. To this end, USE-HCI Lab aims to develop technology solutions to address community-driven problems by bringing together an interdisciplinary set of people to share ideas and collaborate on research related to the interaction between design, people, and technology.The aim is to engage in collaborations with scholars and designers across the world, driving research presented at venues such as CHI, UIST, DIS, VIS, and CSCW, and create novel artifacts that lead to real-world impact, benefiting end-users beyond the academic community.

More Details: https://usehci.org/

AWARDS AND ACHIEVEMENT

2021

Jayasinghe K P U, **Best Poster Award** at IEEE 17th International Conference on Wearable and Implantable Body Sensor Networks (BSN) 2021

Wimalaratne G D S P, **Senate Award for Research Excellence (Open Award) 2019** at the Annual Research Symposium - 2020, University of Colombo

Sayakkara A P, **Senate Award for Research Excellence (Early Career) 2019** at the Annual Research Symposium - 2020, University of Colombo

2020

Halloluwa H K T C, **Executive Dean's Commendation for Outstanding Doctoral Thesis Award** for 2019 at QUT Science and Engineering Faculty, May 2020.

Jayaratne K L, **ICT Researcher of the Year Award for Research Contribution for the year** 2020 at the Computer Society of Sri Lanka (CSSL) Information and Communication Technology (ICT) Awards, Colombo, Sri Lanka.

Jayasinghe K P U, **PhD Researcher of the year award** for Biomedical Engineering in 2020, at the University of Reading, UK.

Jayaratne K L, Wickramasinghe M I E, Marasinghe M A P P, and Anjana S, **Gold Award in the Research and Development Category** for "Radio Monitoring System for Royalty Collection from Songs" at National Best Quality ICT Awards (NBQSA 2020) [to select the award winners to honor significant technological developments in the field of Software Technologies in Sri Lanka, British Computer Society, Sri Lanka].

Sayakkara A P, **Best Poster Award** at the Digital Forensics Research Workshop (DFRWS EU 2020).

Sayakkara A P, **Best Student Paper Award** at the Digital Forensics Research Workshop (DFRWS EU 2020).

Sayakkara A P, **Best Student Paper Award** at the Digital Forensics Research Workshop (DFRWS EU 2020).

Sayakkara A P, **Senate Award for Research Excellence** (Early Career 2019) at the Annual Research Symposium - 2020, University of Colombo.

Weerasinghe A R, Pushpananada B H R, Thilini H N D, **Best Paper Award** at the 20th International Conference on Advances in ICT for Emerging Regions (ICTer 2020)

Wijethilake T N B, **Best Oral Presentation Award** at the13th International Research Conference (KDUIRC 2020).

Wijethilake T N B, **Best Paper Award** at the 13th International Research Conference (KDUIRC 2020).

Wimalaratne G D S P, **Senate Award for Research Excellence** (Open Award 2019) at the Annual Research Symposium - 2020, University of Colombo.

2019

Dias G K A, **ICT Educator of the Year** 2019 at the CSSL National IT Conference on 8th October 2019.

Hettiarachchi K H E L W, **Best Presentation Award** at the 10th International Conference on Distance Learning and Education (ICDLE) for the publication: "Analyzing the Impact of Introducing Active Learning in a Blended Educational Environment".



Sayakkara A P, **Best Student Paper Award** at the DFRWS-USA Special Issue in Elsevier Digital Investigation, for "Leveraging Electromagnetic Side-Channel Analysis for the Investigation of IoT Devices".

Wimalaratne G D S P, **ICT Researcher of the Year** 2019 at the CSSL National IT Conference 2019.

Wimalaratne G D S P, **Vice-Chancellor's Award of Research Excellence** at the 2018 Postgraduate Convocation of the University of Colombo.

2018

"IEEE WIE" Student Branch Affinity Group of the UCSC, Best Event Poster at the competition "IEEE WIE" Student Branch Affinity Group of the UCSC, Best Event Poster at the competition organized by the IEEE Region 10 Women in Engineering

Gunatilake H, Hidellaarachchi D and Perera S, "**Silver Award**", under "Tertiary Student Project (Business)" from National Best Quality ICT Awards (NBQSA) 2018 for the project titled "An ICT based Solution for Virtual Garment Fitting for Online MarketPlace" (The project was supervised by Sandaruwan K. D. and Weerasinghe M was the Adviser).

Kodikara N D, **ICT Educator of the Year** 2018 at the CSSL National IT Conference 2018

Karunaratna D D, Sandaruwan K D, Rajapakse R N, Vidanapathirana M, Dharmaratne A T, **Technology Award of Excellence** by National Science Foundation under the Support of Technology Development grant scheme for "Face ID: Computer-Based Forensic Facial Recognition using 3D Graphics" project.

Liyanage H S U, Jayaratne K L and Wickramasinghe M I E, **Merit Award Winner in the e-Health and Well-Being Category** (2018): "An Affordable Solution for Cardiopulmonary Resuscitation Training using Virtual Reality" (Digital Social Impact Awards (e-Swabhimani 2018) to select the award winners to honor significant technological developments of the country's best e-content applications in the category of e-Health and Well-Being, the Ministry of Telecommunications and Information Technology, Sri Lanka)

Liyanage H S U, Jayaratne K L, Munasinghe A and Wickramasinghe M I E, **Winner Award in the e-Learning Category** (2018): "An Affordable Solution for Cardiopulmonary Resuscitation Training using Virtual Reality" at the 3rd Commonwealth Digital Health Awards organized by the Commonwealth Medical Association (CMA) and the Health Informatics Society of Sri Lanka (HSSL), Colombo, Sri Lanka.

The UCSC team, "Codettes" won the "**Dream Venture – Startups for Women**" organized by the IEEE Sri Lanka Section.

Mudannayake M A D A L, Weerasinghe T A, won the **1st runner up** for "ICT for Psychosocial Competency Development: A study Conducted in Sri Lanka", at the 3rd Commonwealth Digital Health Awards organized by Commonwealth Medical Association (CMA) and The Health Informatics Society of Sri Lanka (HSSL), Colombo, Sri Lanka.

2018

Dias G K A, **Vice-Chancellor's Award of Research Excellence** at the 2017 Postgraduate Convocation of the University of Colombo.

Jayaratne K L, **ICT Researcher of the Year Award** for Research Contribution for the year 2017 at the Computer Society of Sri Lanka (CSSL) Information and Communication Technology (ICT) Awards 2017, Colombo, Sri Lanka.

Kodikara N D, Rosa S R D (Department of Physics), Keppetiyagama C I, Sandaruwan K D, Dias G K A and Senadeera K R (Sri Lanka Navy), **NSF Technology Award of Excellence** was won by the project "COPY Sayura: The three dimensional coastal surveillance system" in 2017.

Pushpananda B H R, Weerasinghe A R and Niranjan M, **Bronze award** in the Postgraduate Student project category at the National Best Quality ICT Awards (NBQSA 2017) for "Improving Performances of Statistical Machine Translation between Sinhala-Tamil Language pair".

Sayakkara A P, Jayasuriya N, Ranathunga T, Suduwella C, Vithanage N, Keppitiyagama C I, Zoysa T N K, Hewage K, Voigt T., **Best paper award** for the project; "Eloc: Locating Wild Elephants using Low-cost Infrasonic Detectors" at the Conference on Distributed Computing in Sensor Systems (DCOSS) in 2017

Wimalaratne G D S P, **Senate Award for Research Excellence** (Open Award 2017) at the Annual Research Symposium - 2018, University of Colombo

2016

Kodituwakku W H, Hettiarachchi C, Wijesundara D M, **Winner Award** in the Category 'Culture & Tourism' at e-Swabhimani Awards -2016 for the project titled " 'Travel Meter': Forecasting Tourist Arrivals to Sri Lanka" (The project was supervised by Dias G K A, Karunarathne D D , and Thilakaratne C. from the Department of Statistics was the Advisor).

Team "WhileLoop" of the UCSC was awarded as the **Champions** of the Janashakthi Full Option Appathon Challenge 2016.

The UCSC won **three awards** in three categories "m-Content", "Inclusion & Empowerment", and "Culture & Tourism" at "e-Swabhimani Awards 2016" organized by the ICTA in 2016.

Wimalaratne G D S P, **Presidential Awards for Scientific Publication** at the award ceremony held on 22nd November 2016.

Wimalaratne G D S P, **Senate Award for Research Excellence** (Open Award) 2016 at the Annual Research Symposium - 2018, University of Colombo.

2015

Jayaratne K L, **Research Award** (2015): Awarded in Recognition of Excellence in Research in the year 2015, Postgraduate Convocation of the University of Colombo, Colombo, Sri Lanka.

The UCSC staff won the **Gold and Bronze** at the NBQSA e-Health and Education & Training categories for the project Run Tropica (collaboratively done with University of Monash, Malaysia) and K-8 Flight Simulator (collaboratively done with CRD Ministry of Defense).

2014

Modelling and Simulation Group of the UCSC, **e-Swabhimani Winner** - "SIYARA Harbour Vessel Traffic Management System", Best e-content applications in the category e-Science and Technology, 2014

Modelling and Simulation Group of the UCSC, **Manthan Awards - Winner** - "SIYARA Harbour Vessel Traffic Management System", 2014

Peiris P N, Perera M H, Kumarage M S, Chandana D, **gold award** at e-Swabhimani- 2014 for "SIYARA Harbour Vessel Traffic Management System", Best e-content applications.

Ranasinghe K C, Kumari S C, Kiriella D B and Jayaratne K L , **Winner Award** in the e-Inclusion and Participation Category - (2014): "Swaraloka - Adaptive Music Score Trainer for Visually Impaired in Sri Lanka", (National Best e-Content Award (e-Swabhimani 2014) to select the award winners to honor significant technological developments of the country's best e-content applications in the category of e-Inclusion and participation by the Ministry of Telecommunications and Information Technology, Sri Lanka).

Ranasinghe K C, Kumari S C, Kiriella D B and Jayaratne K L, **Winner Award** in the e-Inclusion and Accessibility Category - (2014): "Swaraloka - Adaptive Music Score Trainer for Visually Impaired in Sri Lanka" (The Manthan Award South Asia & Asia Pacific 2014 to select the award winners to honor significant technological developments of the Digital Inclusion and Development Applications in the category of e-Inclusion and Participation, New Delhi, India.)

2013

Modelling and Simulation Group of the UCSC, **APICTA Award** Certificate of Nomination, Research and Development Category, "SIYARA Harbour Vessel Traffic Management System".

Jayaratne K L, **Research Award** in Recognition of Excellence in Research in the year 2013, Postgraduate Convocation of the University of Colombo, Colombo, Sri Lanka.

Ranasinghe K C, Kumari S C, Kiriella D B and Jayaratne K L, **Merit Award in the Tertiary Category** - (2013) for "Swaraloka - Adaptive Music Score Trainer for Visually Impaired in Sri Lanka" (National Best Quality ICT Awards (NBQSA 2013) to select the award winners to honour significant technological developments in the field of Software Technologies in Sri Lanka, British Computer Society, Sri Lanka).

Senevirathna E D N W and Jayaratne K L, **Best Research Paper**: "Automated Content Based Audio Monitoring Approach for Radio Broadcasting", Proceedings of sixth Annual International Conference on Computer Games, Multimedia and Allied Technology (CGAT 2013), Singapore.

Senevirathna E D N W and Jayaratne K L, **Merit Award in the Research and Development Category** for "Content Based Audio Music Monitoring Approach for Sinhala Songs", at the National Best Quality ICT Awards (NBQSA 2013) (to select the award winners to honor significant technological developments in the field of Software Technologies in Sri Lanka, British Computer Society, Sri Lanka.)

Modelling and Simulation Group of the UCSC, won **two gold awards** for overall performance and for the Research and Development category of the National Best Quality ICT for the "SIYARA harbor VTMS (New Dimension in Port Traffic Management)".

2011

Sandaruwan K D, won **Tillekeratne H, Research Fund Award for Outstanding Postgraduate Research in Information Technology** for his postgraduate research work carried out during 2009-2011.

2010

Modelling and Simulation Group of the UCSC, won **Gold Award (Education & Training Category)** at the National Best Quality Software Award (NBQSA)- 2010 for "Vidusayura" Product.

Hettiarachchi K H E L W, **Bronze Award (Education & Training Category)** at the National Best Quality Software Awards (NBQSA) 2010 for "SCORM Based Online Assessment Objects for Computing Skill Evaluation".

Hettiarachchi K H E L W, Mozelius P, Hewagamage K P, Hatakka M, Balasooriya I, Karunarathne D, **Merit Award (Research & Development Category)** at the National Best Quality Software Awards (NBQSA) 2010, "eNOSHA, a Free Open Source Learning Object Repository" for Research Project.

Language Technology Research Laboratory of the UCSC, won **e-Swabhimani 2010 award** for the" Subasa" Project under the e – Inclusion category.

Modelling and Simulation Group of the UCSC, **Merit Award** at the International Asia Pacific ICT Alliance (APICTA) Awards 2010 for the "Vidusayura" Project.

Modelling and Simulation Group of the UCSC, **Overall Bronze Award** at the National Best Quality Software Award (NBQSA)-2010 for the "Vidusayura" Project.

The UCSC, student project "Nivarana" was awarded the **e-Swabhimani 2010 award** under the e-Health category (At e-Swabhimani 2010, the UCSC won in three categories and was also awarded certificates for two other projects).

The UCSC, was awarded a **Certificate of Special Merit** for the "Shikshaka" project of the Language Technology Group and a Certificate of Appreciation for the VLE Open Learning.

2009

Modelling and Simulation Group of the UCSC, **Best Poster Award (Joint)** for "Virtual Learning and Training Environment for Maritime Education (VLTEME)" at the 27th National Information Technology Conference, September 2009, Colombo, Sri Lanka

Modelling and Simulation Group of the UCSC, **Winner** - National Best e-Content Award at e-Swabhimani, Sri Lanka for "Vidusayura" project.

06

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Research Interests:
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Research Interests:
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Research Interests:
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GIS Web Services, Semantic Web, Location Based Services, Ontology Engineering, Compiler Construction



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Distributed Algorithms, Nature Inspired Heuristics for Combinatorial Optimization, Model of Computation



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Research Interests:

Positive Operators in Ordered Spaces, Mathematics and Theoretical Computing Education



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Research Interests:
Evolutionary Game Theory, Network Science, Machine Learning, Distributed Computing, Optimization

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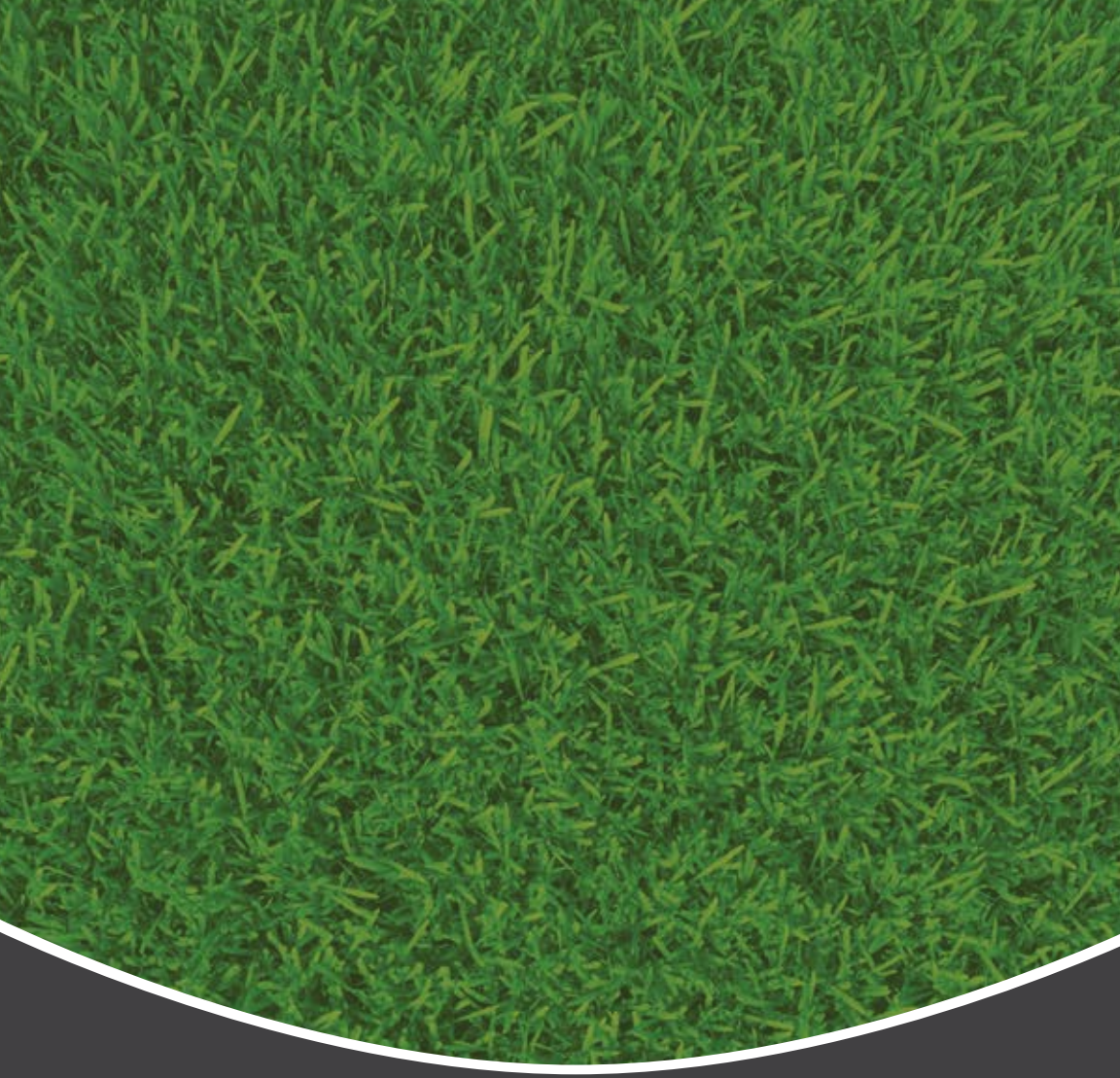


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