University of Colombo
School of Computing

UNDERGRADUATE HANDBOOK 2024

University of Colombo School of Computing

UNDERGRADUATE STUDENT HANDBOOK 2024

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 2024, and is applicable to the students of Academic Year 2022/2023
[Based on the G.C.E. (A/L) Examination 2022]

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

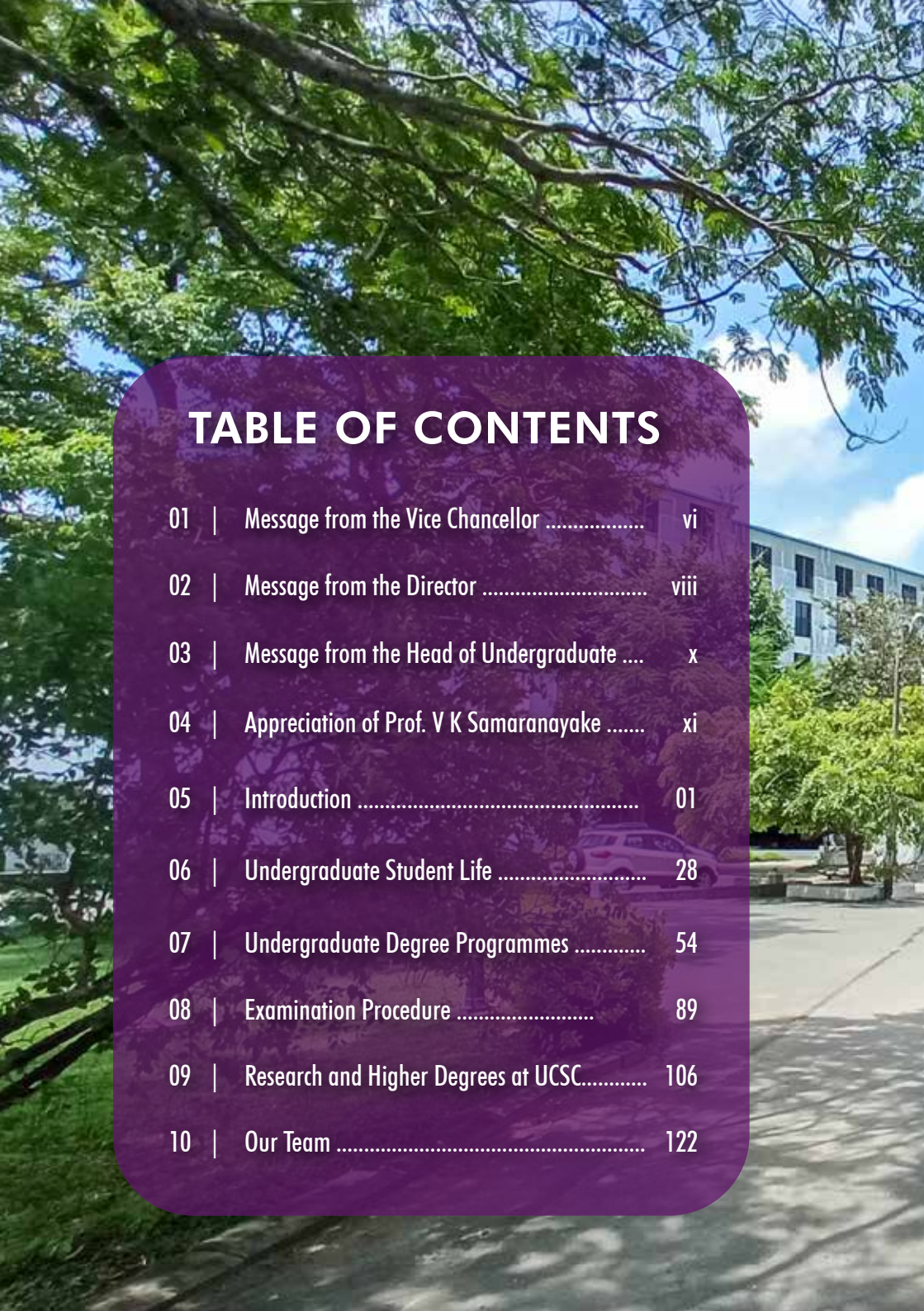
http://www.ucsc.cmb.ac.lk/ug

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

Dear New Undergraduates,

I am delighted to write this message on the occasion of the publication of the Undergraduate Handbook 2024, compiled by the University of Colombo School of Computing (UCSC). In the dynamic world of Information and Communication Technologies, we find ourselves at the forefront of thrilling advancements and are keenly awaiting the revolutionary shifts occurring within IT education in Sri Lanka. This anticipation underscored the urgent necessity for a comprehensive higher education institution. Thus, in 2002, the University of Colombo School of Computing was founded. It is with great respect and appreciation that I take this moment to pay tribute to the late Professor V. K. Samaranayake, whose priceless contributions and commitment were instrumental in the growth and progress of UCSC.

I offer my heartfelt tributes to the UCSC, which stands as a pillar of distinction and a key player in the realm of IT education in Sri Lanka. Under the visionary leadership of its Directors, UCSC has ascended to the pinnacle of prestigious educational institutions within the country. The current Director, Dr. Ajantha Athukorale, has

skilfully built on the foundation laid by former directors, adopting a forward-thinking strategy to propel UCSC towards unparalleled academic excellence. This handbook serves as an essential guide for new students, furnishing them with the latest insights about the institution they are hoping to join. Its pages are a treasure trove of knowledge, enriching not only students but anyone eager to apprise themselves with UCSC's educational and administrative landscapes. My profound gratitude goes to the UCSC Handbook Committee for their dedication and hard work in assembling this invaluable resource.

As students of this distinguished university, you are privileged to access a multitude of opportunities that promise to enrich your lives significantly. I urge you to embark on this journey with open minds and hearts, aspiring to evolve into responsible and mindful members of society. I sincerely wish you a profoundly fulfilling and rewarding journey at the University of Colombo School of Computing.

Senior Professor (Chair) H.D. Karunaratne
Vice Chancellor, University of Colombo

MESSAGE FROM THE DIRECTOR

Dear New Undergraduates,

It is with great honor that I extend a warm welcome to each of you on behalf of the University of Colombo School of Computing community. Congratulations are also in order for securing admission to the premier institution for higher education in Computing in Sri Lanka.

Since its establishment in 2002, the University of Colombo School of Computing has consistently maintained its position as the leading institution in Sri Lanka, offering the most advanced training and resources in the field of computing. As you embark on this new phase of your academic journey, it's essential to recognize that university education differs significantly from your previous schooling. Here at UCSC, our focus is on facilitating your learning, placing you at the center of your educational experience.

We are committed to providing a student-centered education that promotes academic excellence through meticulously crafted syllabi, aligned with industry standards such as the IEEE/ACM Computing guidelines and UGC SLQF guidelines. Our dedicated faculty members are here to support you in reaching your full academic potential, ensuring that you receive the guidance and assistance necessary for success.

Since its beginning, UCSC has consistently strived for excellence, driven by the goal of becoming a worldwide leader in the field of computing. Additionally, we take pride in our contribution to meeting the growing demand for Computing professionals in the country. Since 1985, the University of Colombo has been producing graduates equipped with the skills and knowledge needed to excel in the computing industry.

It's important to acknowledge the role of English proficiency in completing your degree successfully. As all courses are conducted in English, you may encounter challenges, but through dedicated effort, you will enhance your language skills over time.

Beyond academic pursuits, life at UCSC offers a wealth of extracurricular activities, allowing you to strike a balance between studies and personal interests. Engaging in these activities will not only enrich your university experience but also foster personal and professional growth.

As you progress through your academic journey, you'll have the opportunity to participate in various events organized by students, honing your innovative and social skills. Embrace these opportunities fully, as they will contribute significantly to your overall development.

While the beginning may present challenges as you adjust to your new environment, I encourage you to remain resilient in pursuit of your goals. Our staff is here to support you every step of the way, offering guidance and assistance whenever needed. Establishing positive relationships with academic advisors, counselors, mentors, and staff members is crucial for your success.

As the premier institution for computing education in Sri Lanka, we are dedicated to enhancing your education and nurturing your skills, recognizing that the future of our country depends on your contributions. Remember, becoming an outstanding graduate requires taking responsibility for your own learning journey, being proactive, and demonstrating a commitment to excellence.

I have every confidence that each of you will excel and emerge as locally and internationally recognized leaders in your field. On behalf of the University of Colombo School of Computing, I extend my best wishes for the exciting journey ahead.

Sincerely,

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

MESSAGE FROM THE HEAD OF UNDERGRADUATE PROGRAMMES

Greetings and welcome to UCSC! As someone who started out as a student in the Faculty of Science at the University of Colombo back in 1992, I am delighted to have the opportunity to welcome you to this esteemed institution. I fondly recall my undergraduate years at UoC and I am certain that you will have a similarly enriching experience here at UCSC.

UCSC and the University of Colombo are known for their cutting-edge facilities, which are designed to enhance your learning experience, as well as to provide a range of extracurricular activities and social opportunities. With numerous clubs, societies, and sports activities available to UCSC students, I encourage you to take full advantage of these resources. To help you navigate your new surroundings, we have provided a comprehensive handbook that will serve as a roadmap throughout your time here at UCSC.

We review and revise our curricula regularly. After a lengthy review process the new Computer Science, Information Systems, and Software Engineering curricula are ready now. Yours is the first batch of students to benefit from the new curricula.

I would like to extend my best wishes to you as you embark on this exciting new chapter of your life. We are honoured to have you as part of our community, and we look forward to supporting you as you pursue your academic and personal goals.

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

College House

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 ten Faculties with 77 Academic Departments, a Campus, a School, 7 Institutes and 18 centres. The following faculties with University of Colombo School of Computing cater to undergraduates as well 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
- Faculty of Indigenous Medicine

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

Contact No: (+94) 112583810
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Acting Deputy Chief Marshal - Marshal Office

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DIRECTOR

Dr. D A S Atukorale

2022 - Present

PAST DIRECTORS

Professor K P Hewagamage

2016 - 2022

Late Professor
G N Wikramanayake

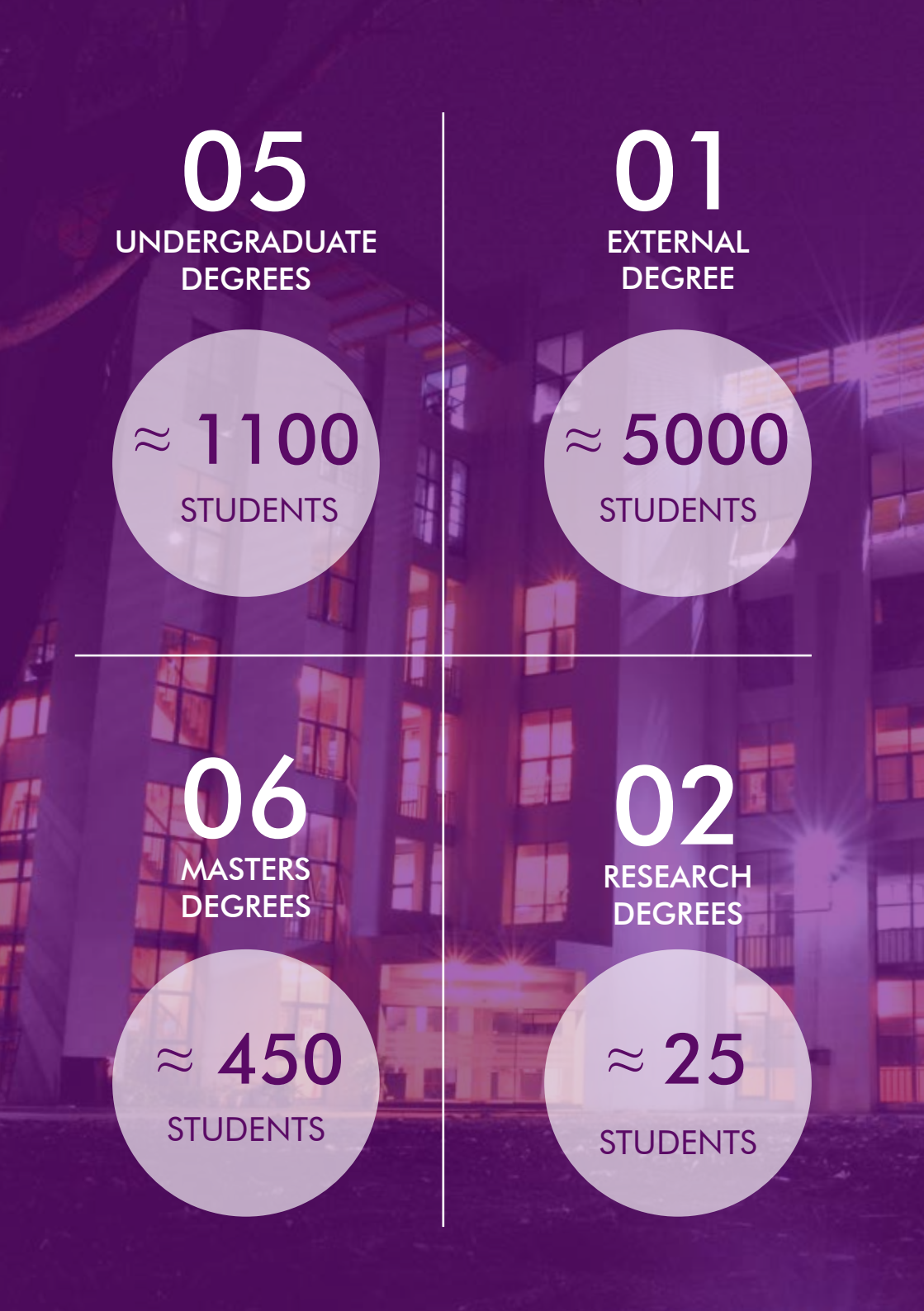
2010 - 2016

Dr. A R Weerasinghe

2004 - 2010

Late Vidya Jyothi Professor
V K Samaranayake

2002 - 2004


05
UNDERGRADUATE DEGREES
≈ 1100
STUDENTS
01
EXTERNAL DEGREE
≈ 5000
STUDENTS
06
MASTERS DEGREES
≈ 450
STUDENTS
02
RESEARCH DEGREES
≈ 25
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)

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.

University of Colombo

The e-museum 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

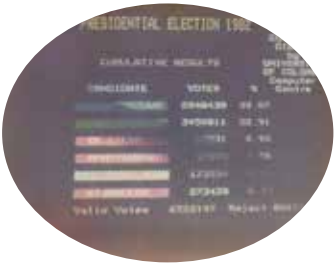
1981

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


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

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 08 professors, 29 PhD qualified academics graduated from leading universities in UK, Canada, Australia, Japan, Sweden etc., 09 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 international awards.

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 (page 23).

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)

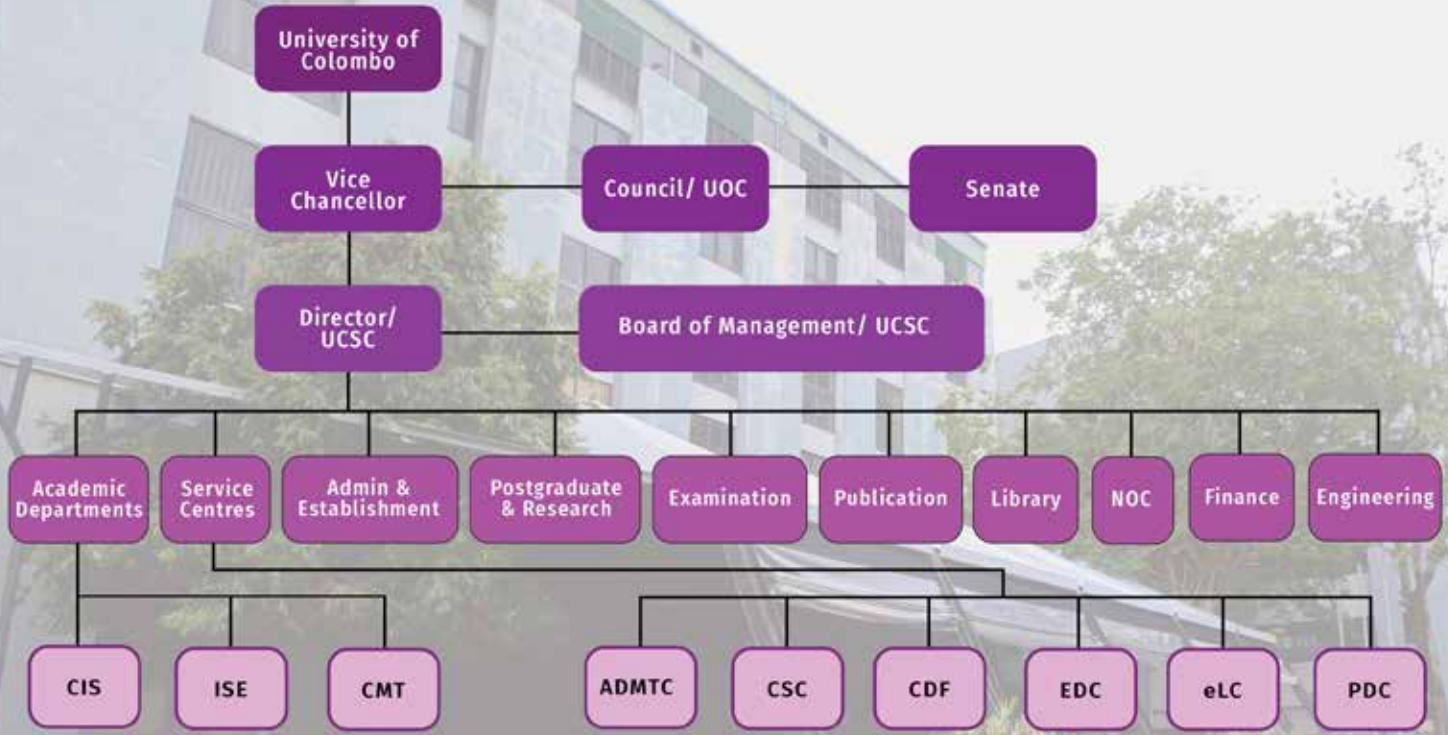


Figure 1: Administration and Operational Units

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 Publication materials and videos for UCSC.

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: Prof. 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: Dr. S M K D Arunatileka
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 3440 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) and FITVLE (https://fitvle.bit.lk/) are managed by them.

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

Professional Development Centre (PDC)

The Professional Development Centre (PDC) of the University of Colombo School of Computing (UCSC) is focused on enhancing the professional attributes of internal undergraduate students. The PDC plays a crucial role in creating opportunities for students to develop their skills and professional networks. It maintains close connections with the IT industry, UCSC alumni, and other external parties to provide various opportunities for students to enhance their career prospects. Also, the PDC assists students in finding internships and connecting with industry professionals, which allows them to gain practical experience and exposure to the IT industry.

Coordinator: Dr. P V K G Gunawardana
For more details visit the website: *http://www.ucsc.cmb.ac.lk/pdc*

02

Undergraduate Student Life

BEGIN YOUR JOURNEY TO SUCCESS AS A NEW UCSC STUDENT

As you embark on your exciting journey as a first-year student, there are a few important tasks to complete to ensure a smooth start to your university life. Below is a checklist of essential items to help you get started:

- **Receive Your University ID**: Visit the Examination and Registration Division to obtain your official university identification card.(Please visit the page 31)
- **Set Up Wifi Connectivity**: Connect to the university's wifi network to access online resources and stay connected with your peers and professors.(Please visit the page 35)
- **Activate Your Student Email**: Activate your university-provided email address to receive important announcements, updates, and communicate with faculty and staff.(Please visit the page 36)
- **Set Up your VLE (Virtual Learning Environment) Login**: Log in to the Virtual Learning Environment (VLE) to access course materials, assignments, and other resources essential for your studies.(Please visit the page 36)
- **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. (Please visit the page 90)

Completing these tasks will ensure you have the necessary tools and access to fully engage in your university experience. If you have any questions or need assistance, don't hesitate to reach out to the student services team. Welcome to the beginning of an incredible journey at University of Colombo School of Computing.

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	500.00	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 2.2: 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.

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 Senior Assistant Registrar/ Examination & Registration Division of UCSC along with a police report, a request letter and a payment receipt of Rs. 500.00 for a new student ID card.

ORIENTATION PROGRAMME

The main objective of the orientation programme is to prepare the students to university life and guide them to adhere to university standards by providing essential information about the program, its curriculum, resources, and opportunities available. Generally, the orientation programme will be conducted for about tawo weeks before to the beginning of the academic year. It starts with an inauguration ceremony where the academic staff welcomes new students and their parents.

The Vice Chancellor of the University of Colombo, the Director of UCSC, the student counselors and the heads of academic study programmes will address the audience introducing the University of Colombo School of Computing. After this ceremony, students will be able to talk to their advisors.

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.

During the orientation, students will become familiar with various facilities and resources available to them, including computer laboratories, libraries, research centers, and valuable industry

partnerships. Moreover, the program encourages students to explore the lively computer science community on campus. Engaging in student organizations, participating in hackathons and coding competitions, and networking with industry professionals will enrich their academic experience and unlock exciting opportunities.

The academic staff is dedicated to supporting students throughout their academic journey. They will provide guidance, mentorship, and assistance in understanding the program's requirements, selecting courses, and planning for future careers. The program fosters an inclusive and supportive environment that values diversity and promotes equal opportunities to all students.

By the end of the orientation program, we hope that students will have a clear understanding of the program's expectations, available resources, and the path that lies ahead. We strongly encourage students to embrace challenges, seek out new opportunities, collaborate with their peers, and make the most of their time in this degree program.

SERVICES AT UCSC

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 (E107, first floor of the UCSC). Details of Mahapola and bursary scholarships are given in Table 2.3.

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

Table 2.3: 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.

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.

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 immediately after the approval of the NOC.

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/

EMAIL POLICY

University of Colombo School of Computing will provide each student with an email address (Gmail/Microsoft 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.
When students get their permanent registration number NOC will create the email address accordingly and announce through the UGVLE site news.

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 Network Operations Centre (First Floor of the 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 35 and 36, 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. Students should pay Rs.1200.00 as annual hostel fee.

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

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. 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 NOC of the UCSC should be contacted regarding technical matters related to the computers of the laboratories.

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.

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/).

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.

HEALTH FACILITIES

The Health Centre is located in a close proximity to the UCSC, and these facilities are available for all UCSC students.It is open from 8.30 am to 3.30 pm and provide 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, from 9.00 am to 12.00 pm. The health service is organized to assist students to have an active and healthy life during their academic life.

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).

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.

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 05

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.

Student Counsellors

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

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

Dr. Dinuni K. Fernando
Contact No: (+94) 71 758 3337

E-mail: dkf@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) 70 200 5550

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

- From Pettah/Town-Hall side: Bus route numbers 138, 120, 122, 125
- From Borella Junction/Kandy Road: Bus route number 154
- 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.
- From Ratnapura/Highlevel Road: Bus route numbers 138,125,122
- From Horana road: 120, 162
- From Mattakkuliya: Bus route number 155

For more details on Colombo bus routes please visit:
https://en.everybodywiki.com/Western_Province_(Sri_Lanka)_bus_routes

RAILWAY ROUTES

- 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.

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.

STUDENT SOCIETIES

COMPUTER SCIENCE SOCIETY OF UNIVERSITY OF COLOMBO

The mission of the Computer Science Society of the University of Colombo, known as "CompSoc," is to elevate technical proficiency within the university and society, emphasizing ICT skills development for underprivileged communities. CompSoc, driven by students with faculty guidance, not only serves the university but also engages in societal upliftment through computer literacy workshops for schools, STEM lectures, and outreach projects like sessions at Hanwella Vidyalaya and an exhibition at Visaka Vidyalaya, recognizing its duty to disseminate knowledge for societal advancement.

"PAHASARA" (පහෑසර) - UCSC MEDIA UNIT

Pahasara, the University of Colombo School of Computing's media unit, passionately documents and disseminates campus life and academic endeavors through photography, videography, and articles. Offering comprehensive coverage of university events, from conferences to cultural festivals, Pahasara enables real-time experiences for students, alumni, and the broader community worldwide. Additionally, it produces insightful articles, showcasing the institution's pioneering work in computer science.

EXPLORATION CLUB

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

UCSC ISACA STUDENT GROUP

The Information Systems Group (ISG) is a student organization dedicated to promoting education and expanding recognition of IT audit, security, and governance disciplines beyond the classroom. It empowers students by enhancing their knowledge and skills in these fields, aligning with professional standards and objectives. The Mechatronic Society focuses on improving UCSC undergraduates' understanding of mechatronic technologies, programming, research, and development, fostering a community for exchanging techniques and staying updated on industry advancements.

UCSC MOZILLA CLUB

The UCSC Mozilla Club, affiliated with the Mozilla Organization, aims to expand the Mozilla community at the university level by raising awareness of Mozilla products, hosting events, and engaging in campaigns. Members gain leadership skills, university recognition, and pathways to becoming Mozilla Reps, along with valuable career-enhancing experiences in the open-source community.

IEEE STUDENT BRANCH OF UCSC

IEEE aims to be indispensable to the global technical community, recognized for advancing technology's contributions to global well-being. The IEEE Student Branch at the University of Colombo School of Computing (UCSC) fosters technological innovation and professional development among students through workshops, conferences, and competitions, emphasizing both technical expertise and essential skills like leadership and communication.

IEEE CS STUDENT BRANCH CHAPTER OF UCSC

The IEEE Computer Society Student Branch Chapter at UCSC, affiliated with IEEE, focuses on advancing computing-related areas by providing technical information, resources, and personal development opportunities to its members. Through various activities and sessions, it enhances professional and technological knowledge while promoting leadership, organization, and interaction skills among UCSC students. 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.

MECHATRONIC SOCIETY OF UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

The Mechatronic Society aims to enhance UCSC undergraduates' proficiency in mechatronic technologies, programming, and research. It promotes knowledge exchange and communication on IT governance, audit, and security, while encouraging students' engagement in competitions and DIY projects. Additionally, it fosters integrity, collaboration, and competence among students and facilitates interaction with relevant organizations and universities.

"REKHA" (රේඛා) - UCSC MUSIC CIRCLE

Established in 2022, the Rekha Music Circle at UCSC offers students a platform to explore their musical talents and provide entertainment for fellow students, marking the first music circle at the university. It fosters a supportive environment for learning, practicing, and performing music across various genres and instruments, welcoming students of all skill levels. The club serves as a creative outlet, promoting well-being and offering opportunities for students to showcase their talents through concerts and performances, fostering confidence, experience, and networking skills while providing stress relief and emotional expression.

UCSC STUDENTS' UNION

The Students' Union of UCSC is a dedicated body of representatives striving to advocate for and address the needs of the student community, fostering a positive and inclusive university culture. Through various initiatives, events, and advocacy efforts, it creates opportunities for students to engage, build relationships, and pursue their interests, promoting student welfare, rights, academic success, and career development.

IEEE WIE STUDENT BRANCH AFFINITY GROUP OF UCSC

The IEEE Women in Engineering (WIE) Student Branch at the University of Colombo School of Computing strives to enhance women's participation and empowerment in electrical and electronic engineering. Established in 2017, it offers platforms for women to excel in their fields through events promoting technical and soft skills development. Initiatives like the annual Hackaholics hackathon and scholarship awareness sessions aim to foster collaboration, diversity, and inclusivity in the IT industry, while events like WiCSaT celebrate and showcase women's achievements, inspiring future female leaders in technology.

THE ACM STUDENT CHAPTER OF UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

The UCSC ACM Student Chapter aims to enhance students' knowledge across scientific domains, fostering exploration in areas like science, design, development, and modern computing. It is known for events like the National Olympiad in Informatics (NOI) and tech-talks and provides diverse learning experiences, fostering technical skills, and networking, while preparing future innovators in computer science.

ROTARACT CLUB OF UCSC

The Rotaract Club of UCSC, part of Rotary International District 3220, empowers youth to enact positive change locally and globally. Chartered on June 6, 2022, it organizes impactful projects fostering leadership, friendship, and fellowship among undergraduates, building lifelong connections within Rotary International District 3220 while promoting societal improvement and positive transformation.

For more details visit the following URl: https://ucsc.cmb.ac.lk/student-societies

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
UOC Venturers	The hiking club of the UOC

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.

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 of mid-semester break and one or two weeks of study leave at the end of the semester before the examinations.

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 examination.

Students should complete a prescribed number of credits each year. Students should complete all Academic credits in the first two academic years and at least 22 academic credits in the third academic 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.

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 Respective Grades

Grade Point Values(GPV) associated with each grade are as shown in the Table 3.1. These GPV values are used to compute the Grade Point Average(GPA) 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

Students can earn credits for EN 1303 and EN 1203 enhancement courses by participating in sports activities or competitions accepted by the course. Further information could be obtained from the enhancement course coordinator.

INTERNSHIP PROGRAMME

Industrial Training is an integral part of Honours Degree Programs conducted by the University of Colombo School of Computing (UCSC). Bridging the divide between academic theory and real-world application, industrial training is crucial for honours degree graduates, furnishing them with the requisite skills and practical experiences vital for their professional success.

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

AWARDS

OPEN AWARDS OF THE UNIVERSITY OF COLOMBO

Student of the year

- Only undergraduate degrees awarded to full-time internal students of the UCSC will be considered.
- During the student's period at UCSC, the following aspects will be taken into account: Academic excellence, Publications and research, Prizes, medals, or awards, Sports performance and extracurricular activities, Contributions to social and cultural life, Maintaining the reputation of UCSC and the University of Colombo

D.P.P. Samarasekera Peace Prize

- Only full-time internal students at UCSC who have completed undergraduate degrees will be eligible.
- During their time at UCSC, candidates will be assessed based on their involvement in voluntary work promoting social harmony, public or mass media contributions related to social harmony, participation in societies or clubs focused on social harmony, technical work related to social harmony, and any earned qualifications or knowledge related to social harmony.

Prof. Tilak Hettiarachchy Award for Academic Excellence

- Only full-time internal UCSC undergraduate students are eligible.
- Consideration will be given to those who achieved a First Class in their degree, published research, obtained scholarships, awards, and recognition, and won prizes or medals during their time at the University of Colombo.

Canekeratne Prize for General Merit

- Only full-time internal UCSC undergraduate students are eligible.
- Their academic performance, involvement in activities fostering university-industry relationships, sports participation, engagement in UCSC and university society activities, and contributions to social and cultural aspects enhancing the university's reputation will be considered during their time at UCSC.

GENERAL CONVOCATION AWARDS OF THE UCSC

COMMON AWARDS FOR COMPUTER SCIENCE AND INFORMATION SYSTEMS DEGREE PROGRAMMES

Prof. V.K.Samaranayake Memorial Award for the most outstanding student of the UCSC

- The award recognizes the top-performing student who graduates with a first-class degree on their first attempt from UCSC.
- Only full-time internal undergraduate students are eligible, and their achievements in academics, research, publications, awards, sports, extracurricular activities, social and cultural contributions, and positive interactions with staff are considered. Candidates must also maintain the university's reputation and not engage in behavior that tarnishes it.

Prof. N.D. Kodikara Award for Academic Excellence in Computing

- The top student among those graduating on their first try with a first-class degree will receive an award.
- Student must have the highest weighted average marks, calculated from the courses used to determine their class GPA, excluding non-GPA or enhancement courses. Only full-time internal undergraduate students at UCSC are eligible, and in case of a tie, the award will be shared. Students with disciplinary actions or examination offenses are not eligible, and the award applies to third-year general and fourth-year honours degree programs at UCSC.

AWARDS FOR COMPUTER SCIENCE HONOURS DEGREE PROGRAMME

Professor Mohan Munasinghe Award for Academic Excellence in Computer Science

- The student with the best grades in their Bachelor of Science Honours in Computer Science degree, graduating on their first try with a first-class, will receive an award.
- This award is based on their weighted average marks from the courses used to calculate their class GPA, excluding non-GPA courses. If there's a tie, the award is shared, but students with disciplinary actions or examination offenses aren't eligible.

ICTA Award for the Best Final Year Project in Computer Science

- The award goes to the student with an 'A' grade or higher for their final year project in Computer Science.
- A committee selects the winner based on project marks and excludes students with disciplinary or examination offenses.

AWARDS FOR COMPUTER SCIENCE GENERAL DEGREE / COMPUTER SCIENCE HONOURS DEGREE PROGRAMMES

David Pieris Group Award for the Best Industrial Training in Computer Science

- This award is for a graduating student who finished industrial training in the year with a Bachelor of Science in Computer Science or Bachelor of Science Honours in Computer Science.
- A committee picks the winner from those shortlisted based on specific criteria. Students with disciplinary actions or examination offenses won't be considered.

AWARDS FOR COMPUTER SCIENCE GENERAL DEGREE PROGRAMME

Virtusa Award for the Best Performance in Computer Science

- The student who earns the highest average marks among first-time graduates with a Bachelor of Science in Computer Science, achieving a first-class degree, will receive an award.
- This average is based only on the marks from courses used to calculate the student's class GPA, excluding non-GPA courses. In case of a tie, the award will be shared. Students with disciplinary actions or examination offences are not eligible for the award.

AWARDS FOR SOFTWARE ENGINEERING HONOURS DEGREE PROGRAMME

IFS Award for Academic Excellence in Software Engineering

- The student who has the best grades among those graduating for the first time with a Bachelor of Science Honours in Software Engineering in the current year, earning a first-class degree, will receive an award.
- This award is based on the average grades of courses used to calculate their GPA, excluding courses that don't count towards GPA. If there's a tie, the award is shared. Students with disciplinary actions or exam offenses are not eligible for the award.

Soma Goonetillake Memorial Award for the Best Final Year Project in Software Engineering

- This award goes to graduating students who scored an 'A' or higher in their final year project for the Bachelor of Science Honours in Software Engineering degree.
- A committee selected by the Board of Study for Internal Undergraduate Degrees assesses the shortlisted projects using specific criteria to choose the winner. However, students with disciplinary actions or examination offenses won't be eligible for consideration.

Wimala Jayaratne Memorial Award for Software Engineering

- The award goes to the student with the highest average grade in Software Engineering courses across all four years of their undergraduate studies, with at least a "B" grade in each course.
- If there's a tie, multiple students will receive the award. However, students with disciplinary actions or examination offenses are not eligible for consideration.

AWARDS FOR INFORMATION SYSTEMS HONOURS DEGREE PROGRAMME

IFS Award for Academic Excellence in Information Systems

- The student who achieves the highest average marks, excluding non-GPA courses, in their first attempt at graduating with a Bachelor of Science Honours in Information Systems degree, and earns a first-class classification, will receive an award.
- In case of a tie, the award will be shared. However, students with disciplinary actions or examination offenses won't be eligible for the award.

Sampath Bank Award for the Best Final Year Project in Information Systems

- The award will go to graduating students who got an 'A' or higher for their final year project in the Bachelor of Science Honours in Information Systems program that year.
- A committee will judge the shortlisted projects based on specific criteria to pick the winner. Students who faced disciplinary action or committed exam offenses won't be eligible for the award.

AWARDS FOR INFORMATION SYSTEMS GENERAL DEGREE PROGRAMME

David Pieris Group Award for the Best Industrial Training in Information Systems

- This award is for a graduating student who finished industrial training during the year and holds a Bachelor of Science in Information Systems degree or a Bachelor of Science Honours in Information Systems degree.
- A panel of examiners will nominate students, and a committee will assess them based on certain criteria to select the winner. Students with disciplinary actions or examination offenses won't be eligible for the award.

Zebra Technologies Award for the Best Performance in Information Systems

- The student with the highest overall grades among those graduating on their first try with a Bachelor of Science in Information Systems degree, earning a first-class distinction, will receive an award.
- Their grades will be based on the courses used to calculate their GPA, excluding non-GPA or enhancement courses. In case of a tie, the award will be shared. Any student with disciplinary actions or exam offenses won't be eligible for the award.

OTHER AWARDS

Faculty Award for Best Performing Students

- Faculty Award for Best Performing Students is awarded annually to the overall best performing students in each batch based on their achievements in the academic and extra-curricular activities of the year under consideration.

The Director's List

- Any internal undergraduate student registered for a degree programme offered by the UCSC will be included to the Director's list of each semester if he/ she achieves a GPA equal to or more than 3.70 [Class GPA].

ACADEMIC PROGRAMMES

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.

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. However 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. Students need to maintain 80% attendances to be eligible for the Mahapola Scholarship.

TUTORIAL SESSIONS

Tutorial is a comprehensive way of developing a great understanding on course materials in a way to correct misunderstandings one may have. 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.

PRESENTATIONS

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. 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

All internal undergraduate programs are considered as full time. 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.

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 examination period.

INTERNAL QUALITY ASSURANCE CELL

The primary purpose of establishing the Internal Quality Assurance Cell (IQAC) 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 Quality Assurance Center of the University of Colombo.

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

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 of first two years and preference, 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 101 for the degree awarding criteria.

COMPUTER SCIENCE DEGREE STREAM

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

Symbol	Definition
L	Lecture Credit (1 L = 15 hours)
P	Practical Credit (1 P = 30 hours)
+	Year-Long Course Module
SCS	Program Relevant Course
ENH	Enhancement Course
O	Optional Course Module
X	Mandatory Course Module
3*	Bachelor of Science in Computer Science Programme
4* CS	Bachelor of Science Honours in Computer Science Programme
4* SE	Bachelor of Science Honours in Software Engineering Programme
	Course not offered

YEAR 1 *(All Compulsory)*				
Semester	**Course Code**	**Course Title**	**Credits**	**Non-GPA Credits**
1	SCS 1301	Data Structures and Program Design in C	3L + 1P	
1	SCS 1302	Discrete Mathematics	2L	
1	SCS 1303	Introduction to Software Engineering	2L	
1	SCS 1304	Problem Solving Strategies and Computation Approaches	2L	

1	SCS 1305	Computer Systems	2L	
1	SCS 1306	Linear Algebra	2L	
1	SCS 1307	Probability and Statistics	2L	
1	ENH 1301	Application Laboratory	1P	Yes
1	ENH 1302	Communication Skills	1P	Yes
2	SCS 1308	Foundations of Algorithms	3L + 1P	
2	SCS 1309	Database Management Systems	3L + 1P	
2	SCS 1310	Object Oriented Modelling and Programming	2L + 1P	
2	SCS 1311	Internet and Web Technologies	2L + 1P	
2	SCS 1312	Operating System Concepts	2L + 1P	
2	ENH 1303	Aesthetic Studies	1P	Yes

YEAR 2 *(All Compulsory)*				
Semester	**Course Code**	**Course Title**	**Credits**	**Non-GPA Credits**
1	SCS 2301	Group Project+	4P	
1	SCS 2302	Calculus	2L	
1	SCS 2303	Software Architectures	2L	
1	SCS 2304	Advanced Algorithms	3L	
1	SCS 2306	Computer Networks	2L + 1P	
1	SCS 2307	Information Technology Project Management	2L	
1	SCS 2308	Numerical Methods	2L	
1	SCS 2309	Statistical Inference	2L	
2	SCS 2310	Digital Signal Processing	2L	
2	SCS 2311	Cryptography and Information Security	2L	

2	SCS 2312	Computational Models and Programming Language Concepts	4L	
2	SCS 2313	Computer System Architecture	2L	
2	SCS 2314	Middleware Architecture	2L	
2	SCS 2315	Electronics and Physical Computing	2L + 1P	
2	ENH 2301	Entrepreneurship	2L	Yes

YEAR 3						
Semester	**Course Code**	**Course Title**	**Credits**	**3***	**4* CS**	**4* SE**
1	SCS 3301	Industry Project+	4P	X		
1	SCS 3302	Computer Graphics and Image Processing	2L + 1P	O	O	O
1	SCS 3303	Compiler Theory and Construction	3L + 1P		X	O
1	SCS 3304	Intelligent Systems	2L	O	O	O
1	SCS 3305	Robotics and Cognitive Systems	2L + 1P		O	O
1	SCS 3306	Digital Forensics	2L + 1P	O	O	O
1	SCS 3307	Data Warehousing and Mining	2L	O	O	O

1	SCS 3308	Machine Learning	2L + 1P		X	X
1	SCS 3309	Human-Computer Interaction	2L + 1P	O	O	X
1	SCS 3310	System and Network Administration	2L + 1P	O	O	O
1	SCS 3311	Mobile Application Designing and Development	2L + 1P	O	O	X
1	SCS 3312	Research Methods	2L		X	X
2	SCS 3313	Applied Machine Learning	2L + 1P	X		
2	SCS 3314	Database Programming	2L + 1P	X		
2	SCS 3315	Literature Review	2P		X	X
2	SCS 3316	Software Quality Assurance	2L + 1P	X		
2	SCS 3317	Professional Practice and Behavior	1P	X	X	X
2	ENH 3301	Industry Placement	8P		X	X
2	ENH 3302	Business communication and Soft Skills	1P	X		

YEAR 4					
Semester	Course Code	Course Title	Credits	4* CS	4* SE
1	SCS 4301	Advanced Operating Systems	2L	X	O
1	SCS 4302	Advanced Computer Networks	2L	X	O
1	SCS 4303	Computer Vision and Deep Learning	2L + 1P	O	O
1	SCS 4304	Natural Language Processing	2L + 1P	O	O
1	SCS 4305	Research Seminar	2P	X	X
1	SCS 4306	Formal Methods and Software Verification	2L	X	X
1	SCS 4307	Computational Biology	2L	O	O
1	SCS 4308	Distributed Systems	2L	X	O
1	SCS 4309	Final Year Project in Software Engineering+	8P		X
1	SCS 4310	Final Year Project in Computer Science+	8P	X	
1	SCS 4311	Philosophy of Science	1P	X	X
1	SCS 4312	Advanced Database Systems	2L + 1P	O	X
1	SCS 4313	Advanced Software Engineering	2L		X
1	SCS 4314	Software Quality and Security Assurance	2L		X

1	SCS 4315	Embedded Systems	2L + 1P	O	O
2	SCS 4316	Analog, Quantum, and Alternative Computing Models	2L	X	O
2	SCS 4317	Game Theory	2L	X	O
2	SCS 4318	Advanced Computer Graphics	2L + 1P	O	O
2	SCS 4319	Enterprise Architectures	2L		X
2	SCS 4320	Secure Software Engineering	2L		X
2	SCS 4321	Network Security	2L + 1P	O	O
2	SCS 4322	Parallel Computing	2L	X	X
2	SCS 4323	Natural Algorithms	2L	O	O

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.

INFORMATION SYSTEMS DEGREE STREAM

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

Symbol	Definition
L	Lecture Credit (1 L = 15 hours)
P	Practical Credit (1 P = 30 hours)
+	Year-Long Course Module
IS	Programme Relevant Course
EN	Enhancement Course
O	Optional Course Module
X	Mandatory Course Module
3*	Bachelor of Science in Information Systems
4*	Bachelor of Science Honours in Information Systems
	Course not offered

YEAR 1 *(All Compulsory)*				
Semester	**Course Code**	**Course Title**	**Credits**	**Non-GPA Credits**
1	IS 1201	Programming and Problem Solving	2L+1P	
1	IS 1202	Computer Systems	2L	
1	IS 1203	Foundations of Information Systems	2L	
1	IS 1204	Fundamentals of Software Engineering	2L	
1	IS 1205	Introduction to Management	2L	
1	IS 1206	Mathematics for Computing	2L	
1	IS 1207	Internet and Web Technologies	2L+1P	
1	EN 1201	Communication Skills	1P	Yes
1	EN 1202	Application Laboratory	1P	Yes
2	IS 1208	Systems Analysis and Design	2L	
2	IS 1209	Information Technology Project Management	2L	
2	IS1210	Database Systems	2L+1P	
2	IS 1211	Computer Networks	2L+1P	
2	IS 1212	Probability and Statistics	2L+1P	
2	IS 1213	Organizational Behavior	2L	
2	IS 1214	Data Structures and Algorithms	2L+1P	
2	EN 1203	Aesthetic Studies	1P	Yes

***YEAR 2** (All Compulsory)*				
Semester	**Course Code**	**Course Title**	**Credits**	**Non-GPA Credits**
1	IS 2201	Group Project+	4P	
1	IS 2202	Advanced Data Structures and Algorithms	2L	
1	IS 2203	Object Oriented Programming	2L+1P	
1	IS 2204	Information Systems Security	2L	
1	IS 2205	Mobile Application Design and Development	2L+1P	
1	IS 2206	Business Process Management	2L+1P	
1	IS2207	Electronics and Physical Computing	2L+1P	
2	IS 2208	Information Systems Management and Strategy	2L	
2	IS 2209	Data Management and Governance	3L+1P	
2	IS 2210	Applied Data Science	2L+1P	
2	IS 2211	UI/UX Design	2L+1P	
2	IS 2212	Cloud Infrastructure and Applications	2L	
2	EN 2201	Entrepreneurship	2L	Yes

YEAR 3						
Semester	Course Code	Course Title	Credits	Non-GPA Credits	3*	4*
1	IS 3201	Industry Project+	4P		X	
1	IS 3202	Research Methods	2L			X
1	IS 3203	Cybercrime, Privacy, and Legislation	2L		X	X
1	IS 3204	Enterprise Resource Planning Systems	2L		X	X
1	IS 3205	Data Visualization	2L + 1P		O	X
1	IS 3206	Enterprise Architecture	2L		O	O
1	IS 3207	E-Business and Digital Marketing	2L		O	O
1	IS 3208	Middleware Architecture	2L+1P		O	O
1	IS 3209	Systems and Network Administration	2L+1P		O	O
1	IS 3210	Digital Innovation	2L		O	O
1	IS 3211	Operations Research	2L		O	O
1	IS 3212	Robotics and Cognitive Systems	2L+1P			O
2	IS 3213	Literature Survey	2P			X
2	IS 3214	Professional Practice and Behavior	1P		X	X

2	IS 3215	Software Quality Assurance	2L+1P		X	
2	IS 3216	Applied Machine Learning	2L+1P		X	
2	IS 3217	Social Impact of Information Systems and Ethics	1L		X	
2	IS 3218	E-Learning Concepts and Technologies	2L+1P		O	
2	IS 3219	Information Technology Audit	2L		O	
2	IS 3220	Interactive Media Design	2L		O	
2	IS 3221	Contemporary Topics in Software Development	2L		O	
2	EN 3201	Industrial Placement	8P	Yes		X
2	EN 3202	Business Communication and Soft Skills	1P	Yes	X	

YEAR 4				
Semester	Course Code	Course Title	Credits	Non-GPA Credits
1	IS 4201	Final Year Project in Information Systems+	8P	X
1	IS 4202	Research Seminar+	2P	X
1	IS 4203	Data Analytics	2L+1P	X
1	IS 4204	Software Quality Assurance	2L+1P	X
1	IS 4205	Machine Learning	2L+1P	X
1	IS 4206	Advanced Concepts in Software Design and Development	2L	O
1	IS 4207	Geographical Information Systems	2L+1P	O
1	IS 4208	Natural Language Processing	2L+1P	O
2	IS 4209	Business Intelligence Systems	2L	X
2	IS 4210	Philosophy of Science and Computational Thinking	1L	X
2	IS 4211	Contemporary Topics in Information Systems	2L	X
2	IS 4212	Affective Computing	2L	O
2	IS 4213	Digital Forensics	2L+1P	O
2	IS 4214	Bio-Informatics	2L	O

04

Examination Procedure

REGISTRATION FOR 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 registered student list of each course. Repeat students are required to pay the examination fee at the time of re-registration in the academic year. Most of the registration activities are now done through online application forms available in the UGVLE.

EXAMINATION PROCEDURE

Rules to be followed in the Examination

1. Students shall present at the examination hall at least 15 minutes before starting the examination. However, the students shall not enter the hall until they are requested to do so by the supervisor.
2. Any student who is admitted to the examination hall after the first half-an-hour of the examination will be considered as an unauthorized candidate of the examination. Such student is required to sign an unauthorized/ late form. However, no additional time will be allowed for them to take the examination.

3. Once admitted to the examination hall, students are not allowed to leave the examination hall untill the examination is over.
4. On admission to the hall, students shall occupy the seat assigned to them and shall not change it without the permission of the supervisor.
5. If a student loses his /her student identity card, he/she shall promptly inform the Senior Assistant Registrar/ Examinations & Registration and apply for a duplicate identity card.
6. Admission Cards are signed in the presence of the Supervisor/Invigilator when a student sits for an examination paper.
7. Students shall bring their own pens, ink or any other approved equipment and stationery to the examination.
8. Examination stationery (ie. Writing paper, graph paper, rough sheets, etc.) will be supplied at the examination. Answer books supplied to the students shall not be torn or mutilated. All materials supplied, whether used or unused shall be left behind and shall not be removed from the examination halls.
9. Students are prohibited to keep any notes, formulae or any other unauthorized material with them during the examination. Books, handbags etc. which a student has brought with him/ her should be kept at a place shown by the Supervisor/ Invigilator.

10. Every student shall enter his/ her Index Number at the appropriate place on the answer book and on every continuation paper. A student who writes another students' index number on his/ her answer sheet, will 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 shall not write their names on the answer book.
11. Students are under the authority of the Supervisor and shall carry out instructions of the Supervisor/ Invigilator throughout the examination.
12. Every student shall maintain absolute silence in the examination hall and its surrounding. A student is not permitted to communicate with or to have any contact with any person other than the Supervisor/Invigilator. If a student needs to draw the attention of the Supervisor/ Invigilator, he/ she can raise hand from where he/ she is seated. A student can be excluded from the examination hall for causing disturbance.
13. After starting the examination, students are not allowed to leave the examination hall even temporarily. In case of an emergency, the Supervisor/ Invigilator will grant them permission to do so under constant surveillance.
14. Students shall 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.

15. All calculations and rough work shall be done only on the supplied papers for the examination. Such work should not be done on admission cards, timetables, question papers or on any other paper. Any student who disregards these instructions is liable to be considered as having written notes with the intention of copying.
16. Any answer or part of the answer which is not to be considered for the purpose of assessment shall be neatly crossed out. If the same question has been attempted in more than one place, the answers that are to be disregarded shall be neatly crossed out.
17. Every student shall hand over the answer scripts personally to the Supervisor/ Invigilator or remain in their seat until it is collected. A student shall not hand over their answer scripts to an attendant, a minor employee or another student.
18. After handing over the answer script to the Supervisor/ Invigilator, the student is not entitled to call it back.
19. Students shall not remove answer scripts from the examination hall.
20. Students shall not copy from any material or from the answer scripts of another student. Nor can a student either help another student or obtain help from another student.
21. No person shall impersonate a student at the examination, nor shall any student allow himself/ herself to be impersonated by another person at the examination.

22. The Supervisor/ Invigilator can request a student to make a statement in writing on any incident during the examination, and such statement shall be signed by the student. No students shall refuse to make such a statement or to sign it.
23. Every student who registers for an examination shall be considered to have sat for the examination unless:
    (a) They are permitted by the Senate for 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 examination.

EXAMINATION OFFENCES

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

EXAMINATION OFFENCES AND PUNISHMENTS

1. Examination offences can be classified as follows:
    - Possession of unauthorized documents or removal of examination stationery.
    - Disorderly conduct.
    - Obtaining or attempting to obtain improper assistance or cheating or attempting to cheat.
    - Impersonation.

- Aiding and abetting the commission of any of these offences.
- 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. 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.
5. In cases of disorderly conduct, the Supervisor will warn the students in the first instance, 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 him/her candidature from the examination.
6. 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.
7. A student who is guilty of an examination offence is liable to the following punishments.
    - Cancellation of results of the particular examination or the entire semester/ year
    - Cancellation of candidature for the programme
    - Suspension from the university for a specified period.
8. Any student found helping to commit an examination offence will receive the same punishment as the offender

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 examination 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 FOR EXAMINATIONS

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 to 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" 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" 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 board of study for internal undergraduate degrees within a prescribed period of time. Students are advised to inform the lecturer if he/she is unable attend to a continuous evaluation, beforehand.

Travelling Overseas

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

GRADE AND GPA 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 contributing towards the GPA.
- Completed all Credits contributing towards the GPA in the first two academic years and at least 22 Credits contributing towards the GPA 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 Industry Project with a minimum C grade.
- 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 contributing towards the GPA.
- Completed all Credits contributing towards the GPA in the first two years, a minimum of 22 Credits contributing towards the GPA in the third Academic year and a minimum of 30 Credits contributing towards the GPA 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; 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 evaluations of the final year second semester examinations.

DEFERMENT OF STUDIES

Deferment of studies is to delay the starting of studies of an academic year until the following year on the request of a student. Although deferment of studies is not encouraged, it is possible for students to request a deferment under the following exceptional circumstance only with documentary evidence acceptable to the board of study for internal undergraduate through the relevant programme coordinator.

- Due to medical conditions of the student or immediate family
- Due to exceptional personal circumstance

Students are advised to submit such requests at the beginning of the academic year. Deferment of studies 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.

The student should keep his/ her registration active in the programme by paying the prescribed registration fees for each academic year despite the deferment.

There is no guarantee for such a student to be eligible for the honours degree programme from his/her current batch.

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://shorturl.at/fhis4*

Unethical and Illegal Actions within the University Premises:

- Plagiarism, copyright infringement and cheating
- Aggressive behavior, 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 willfully or maliciousl

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/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.

RULES AND REGULATIONS

Some of the most essential rules and regulations relevant to the undergraduates of the University of Colombo School of Computing are given below. These rules and regulations are in accordance with the by-laws and regulations of the undergraduate degree programs of the University of Colombo School of Computing.

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Research and Higher Degrees 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

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:

https://ucsc.cmb.ac.lk/postgraduate-programmes/

EXTERNAL STUDIES

BACHELOR OF INFORMATION TECHNOLOGY (BIT)

Bachelor of Information Technology (BIT), widens 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 3440 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 short-term courses are conducted by Computing Services Centre (CSC) and the Advanced Digital Media Technology Center (ADMTC) of the UCSC.

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

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 aimed at strengthening 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. This space provides 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

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.

MODELLING & SIMULATION GROUP

Dr. K D Sandaruwan

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 the UCSC collaboratively carried out various researches and development activities with national and international organizations.

LANGUAGE TECHNOLOGY RESEARCH LABORATORY (LTRL)

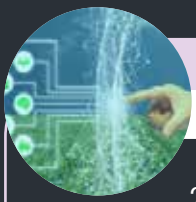
Dr. B H R Pushpananda

Language Technology Research Laboratory (LTRL) was established in 2004 to address the growing need of local language computing in Sri Lanka by conducting Localization and Language Processing research and development. 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. The research group has a diverse range of activities: Research & Development, Consultancy, Training and Services. The LTRL maintains strong relationships with all related parties, collaborating with the researchers, practitioners, linguists and policymakers in the island. Most of the research-based applications developed by LTRL are available for access on the website.

INTERDISCIPLINARY MOLECULAR COMMUNICATION AND SENSING RESEARCH GROUP (IMCS)

Dr. Asanka P Sayakkara

The Interdisciplinary Molecular Communication and Sensing Research Group is exploring the communication and sensing technologies at the molecular level. Our work spans over the fields of biology, chemistry, computer science, and engineering, with a focus on understanding how molecules can be employed for communication and sensing applications. Through interdisciplinary collaboration, we strive to pioneer breakthroughs that have the potential to impact diverse fields, from healthcare to environmental monitoring.



AGROTECH RESEARCH GROUP

Prof. K P Hewagamage

The AgroTech research group was established in 2023 to address the identification of Nitrogen(N) requirement which is one of the crucial problems engaged in the agriculture sector and help farmers to make actionable decisions. The objective of our research is to generate ICT based cost effective solutions in determining the Nitrogen based fertilizer requirement in paddy cultivation. 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, human computer interaction, data analytics and drones in Agri-tech to make actionable decisions.

SYSRES - SYSTEM RESEARCH GROUP

Dr. D A S Atukorale

System Research Group (SysRes) is a research group at UCSC dedicated to exploring the fascinating realms of operating systems, and, computer networks. Our primary focus is on advancing the understanding and development of efficient and reliable systems that power modern computing infrastructures. Within our group, we delve into cutting-edge topics, seeking to improve system performance, security, and scalability. Our members actively engage in both theoretical and practical investigations, utilizing state-of-the-art methodologies and tools to push the boundaries of knowledge in these areas. Collaborating with industry partners and academia, we seek to apply our findings to real-world scenarios, ultimately enhancing the overall computing experience for users worldwide.

SYNERGY RESEARCH GROUP

Mr. R J Amaraweera

Research Team : Mr. Rangana Jayashanka (Principal Investigator), Dr. Kasun Karunanayaka, Mr. Upul Anuradha

The Synergy Research Group is dedicated to applying the body of knowledge in computer science to solve problems across various domains, including Medicine, Education, Agriculture, and Environmental Sciences. Our focus lies in key areas such as Machine Learning, Data Analytics, Data Visualization, Human-Computer Interaction, Technology for Development, and Learning Analytics.

AI IN EDUCATION RESEARCH GROUP

Prof. K P Hewagamage

The AI in Education Research group in UCSC conducts research on enhancing the quality of education by applying latest developments of AI. Our research mainly focuses on harnessing the power of Generative AI and Large Language Models to develop interactive, high quality educational chatbots.

Students often struggle with new subjects, requiring personalized support to prevent disengagement. However, traditional teaching assistant ratios in large courses limit their ability to provide timely assistance. Despite global trends towards digital solutions, Sri Lankan Higher Education Institutes have not fully utilized Conversational AI for round-the-clock student services. To address this issue, we have developed a Teaching Assistant Bot (TA BOT) for a Software Engineering course which is available on https://chat.ucsc.cmb.ac.lk/ for experimentation.

ECLOUD ML / CLOUDNET

Dr. (Ms.) Dinuni Fernando

CloudNet Research Lab is dedicated to the realms of cloud computing and virtualization, with a specific emphasis on enhancing the performance of secure live migration of virtual machines. We explore innovative methods to elevate the efficiency and security of live virtual machine migration and fault tolerance. As a subgroup, further our ECloudML Education based machine learning research group was established in 2021 with diverse and multi disciplinary research work spread across education, machine learning and cloud domain. ECloudML collaborates with natural science research groups around the globe to conduct multi disciplinary machine learning based projects.

THE COGNITIVE SYSTEMS AND TIME SERIES (COTS) RESEARCH GROUP

Dr. M I E Wickramasinghe

The Cognitive Systems and Time Series (CoTS) research group explores the relationship between human cognition and analyzing time-dependent data. Cognitive systems refer to developing computational models and algorithms that mimic human cognitive processes such as perception, learning, reasoning, and decision-making. Moreover, time-series research analyses data collected over time to uncover patterns, trends, and dependencies. We integrate cognitive models with time series methods to analyze and interpret complex temporal data to make sense of complex time series data, leading to improved decision-making, forecasting, and understanding of dynamic processes in various domains.

MINDSYS - MIND SYSTEMS RESEARCH GROUP

Dr. H E M H B Ekanayake

Established in November 2023, the MindSys Research Group at the University of Colombo School of Computing is an interdisciplinary team dedicated to exploring mind systems at the intersection of philosophy, science, and technology. They emphasize a unique blend of insight and innovation, pushing the boundaries of cognitive science using computing technologies. Notably, the group integrates Eastern philosophical insights, particularly from Buddhism, into the Western philosophical framework, creating a holistic approach. Their research spans philosophical inquiries into consciousness, rigorous scientific investigations of human cognition, and the use of cutting-edge computational modeling, simulations, machine learning, and artificial intelligence. MindSys is committed to unraveling fundamental aspects of human cognition, including learning, perception, decision-making, behavior, and intelligence.

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

Mr. R M U A Rathnayake

The USE-HCI research lab is an interdisciplinary research lab working to invent the future of technology. The vision of the lab is to design, build and enhance innovative technologies to solve real-world problems. To this end, the 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.

EDUSMART RESEARCH GROUP

Dr. (Ms.) T A Weerasinghe

The research group EduSmart was formed to provide better support to lifelong learners through a smart learning environment, enabling learning and assessment to be more exciting and engaging.

The group aims to expand services that can support learning and development through online learning platforms, which can track its learners' progress and provide personalized support. To achieve this aim, the group will investigate research fields such as learning analytics, educational data mining, and interaction design.

GEOMATICS - GIS RESEARCH GROUP

Dr. (Ms.) Enosha Hettiarachchi

GeoMatics is a GIS research group at the UCSC dedicated to pushing the boundaries of geospatial technologies by addressing current limitations and developing innovative solutions across various domains. Our objectives encompass the development and implementation of cutting-edge methodologies for spatial analysis in areas like urban planning, environmental science, public health, disaster management, and natural resource management. We advocate for the widespread use of GIS in decision-making processes, emphasizing the importance of open-source software and data accessibility for research and development. Collaborative interdisciplinary efforts are encouraged, fostering partnerships between professionals and students from diverse fields such as Geography, Computer Science, Environmental Science, Public Health, and Engineering. Through knowledge sharing, capacity building, and a supportive research environment.

TRANSFORMERS RESEARCH GROUP

Dr. (Ms.) S M K D Arunatileka

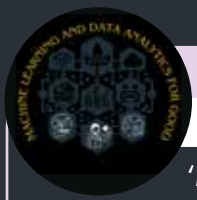
The eTransformation Research Group typically focuses on studying the impact, implications, and evolution of digital technologies on various aspects of society and industries for social good and benefit. This group explores how digital transformations influence different domains, seeking to understand the challenges, opportunities, and changes brought about by the adoption of digital technologies.

MIXED REALITY LAB

Dr. K A K T Karunanayake

The Mixed Reality Lab (MXR) aims to push the boundaries of research into interactive new media technologies through the combination of science, engineering, art, and creativity.

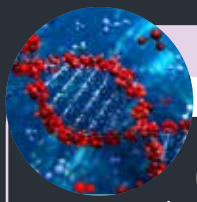
The aim of the lab is to invent the future through the visualization and realization of new media research. This continues the tradition established at Xerox PARC, Disney Imagineering, and the MIT Media Lab and by visionary individuals such as Douglas Englebart, Alan Kay, Brendan Laurel and Jaron Lanier. The key objectives of the Mixed Reality Lab are as follows: create a center of excellence for interactive media and entertainment technology, provide a multi-disciplinary research environment for students, propose new technologies to promote sustainable development, and develop new assistive technologies for children and the elderly.



MLDAG RSEARCH GROUP

Mr. G P Seneviratne

'ML and Data Analytics for Good is a forward-thinking research group that combines the power of machine learning, data analytics, and a deep understanding of agro and transportation systems to drive positive change in society. We are dedicated to harnessing the potential of data-driven insights to address complex challenges and improve the lives of individuals and communities worldwide. Our multidisciplinary approach focuses on leveraging advanced ML techniques and analytics to optimize agricultural practices, enhance crop yield, promote sustainable farming methods, and mitigate the impact of climate change on food production.



BIOSYS RESEARCH GROUP

Dr. (Ms.) M W A C R Wijesinghe

The Bioinformatics and Systems Biology (BioSys) research group in the 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.

C4SA - SUSTAINABLE AGRICULTURE RESEARCH GROUP

Dr. (Ms.) L N C De Silva

The "Computing for Sustainable Agriculture (C4SA)" research group focuses on using advanced computing technologies to promote sustainability in agriculture practices. By analyzing vast amounts of agricultural data through data analytics, machine learning, and artificial intelligence techniques, the group provides farmers and agricultural stakeholders with actionable information and decision support tools to improve productivity and sustainability across the agricultural value chain. Through close collaboration with industry partners, government agencies, and academic institutions, the group aims to translate research findings into practical solutions that address real-world challenges faced by farmers and agricultural communities, driving innovation and fostering sustainable practices that ensure food security, environmental stewardship, and economic prosperity for present and future generations.

ELEPIDYNAMICS RESEARCH GROUP

Dr. P V K G Gunawardana

'ElephIDynamics,' dedicated to the cause of wildlife conservation and the mitigation of human-elephant conflict in Sri Lanka. The primary focus of the group is on leveraging Machine Learning techniques for elephant identification using photographic images to accurately identify elephants, which is pivotal in comprehending their movements and population dynamics.

MIXED REALITY LAB

Dr. K A K T Karunanayake

The Mixed Reality Lab (MXR) aims to push the boundaries of research into interactive new media technologies through the combination of science, engineering, art, and creativity.

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For More details about research groups: https://ucsc.cmb.ac.lk/research/

06

Our Team

OFFICIALS

DIRECTOR

Dr. D A S Atukorale
B.Sc. (Col), PhD (Queensland), MCSSL

DEPUTY DIRECTOR

Prof. T N K De Zoysa
B.Sc. (Col), PhD (Stockholm)

HEADS OF DEPARTMENTS

Department of Computation and Intelligent Systems

Dr. C I Keppitiyagama
B.Sc. (Col), Ph.D. (British Columbia, Canada)

Department of Communication and Media Technologies

Prof. T N K De Zoysa
B.Sc. (Col), PhD (Stockholm)

Department of Information Systems Engineering

Mr. W. V. Welgama
B.Sc. (Col), M.Phil. (Col)

UNDERGRADUATE PROGRAMME COORDINATORS

Computer Science

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Information Systems

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Email: lnc@ucsc.cmb.ac.lk

Software Engineering

Mr. W V Welgama
Contact No: (+94) 112581245 / Ext: 8949
Email: www@ucsc.cmb.ac.lk

ACADEMIC STAFF

PROFESSORS

Senior Prof. K P Hewagamage

B.Sc. (Col), Phd in Information Engineering (Hiroshima)

Senior Professor in Computer Science, SMIEEE

Tel: (+94) 112581245 / Ext: 6350

Email: kph@ucsc.cmb.ac.lk **Web**: http://ucsc.lk/profile/kph

Research Interests:

Human-Computer Interaction, Software Engineering, e-Learning, Mobile Learning/Computing, ICT for development and AI for Education

Prof. G K A Dias

B.Sc. (SL), PG Dip (Essex), M.Phil. (Cardiff), MCSSL, MACM

Tel: (+94) 112581245 / Ext: 6307

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Research Interests:

Computer Aided Software Engineering, Multimedia for Education, Modelling and Simulation, Web Based Learning, Model driven Engineering, Machine Learning

Prof. K L Jayaratne

B.Sc. (Col), Ph.D. (Western Sydney, Australia), MCSSL, MIEEE, MACS

Tel: (+94) 112581245 / Ext: 6315

Email: klj@ucsc.cmb.ac.lk **Web**: http://ucsc.lk/profile/klj

Research Interests:

Multimedia Information Management, Intelligent Web Interaction, Web Information Management and Retrieval, Web Search Optimization, Audio Music Monitoring

Prof. D D Karunaratna

B.Sc. (Col), M.Sc. (Swansea), Ph.D. (Cardiff)

Tel: (+94) 112581245 / Ext: 6314

Email: ddk@ucsc.cmb.ac.lk **Web**: http://ucsc.lk/profile/ddk

Research Interests:

GIS Web Services, Semantic Web, Location Based Services, Ontology Engineering, Compiler Construction

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