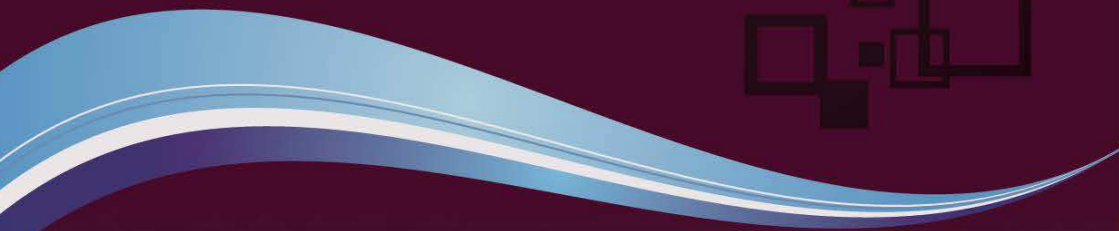


UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

# UNDERGRADUATE HANDBOOK 2016



University of Colombo School of Computing  
No 35 Reid Avenue  
Colombo 07  
Sri Lanka



**University of Colombo School of Computing**

*Undergraduate Handbook*

**2016**

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## **Disclaimer**

*This handbook is compiled with information received up to  
January 2016.*

*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>



# Mission & Vision

## **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 cross disciplinary research, producing socially responsible professionals with entrepreneurial skills, leadership qualities and integrity contributing to position the country as a knowledge hub in the region.

## MESSAGE FROM THE VICE CHANCELLOR



I am indeed pleased to issue this brief message on the occasion of publishing the Student Handbook 2016 compiled by the University of Colombo School of Computing. I firmly believe that, a hand book giving all required information for the new entrants to the UCSC, will be immensely beneficial for them.

The Institute of Computer Technology (ICT), the predecessor of the present UCSC was established in the year 1987. During that period there were no internal undergraduate courses conducted by the ICT and they were mainly concentrating on Postgraduate, Diploma and Certificate Courses. With the subsequent developments taking place in the area of information and communication technologies as well as the eagerly awaited structural changes in IT education in Sri Lanka, the need of a fully pledged higher educational institute teaching IT and communication related subjects were seriously contemplated by the Policy makers of the University. A lot of intellectual inputs were considered at the ensuing discussions on how such issues are to be addressed and finally the University of

Colombo School of Computing was established in 2002 replacing the then ICT. I will be failing in my duty, if I do not mention the name of the late Professor V K Samaranayake, without whose services and dedicated contribution neither the ICT nor the UCSC would have become a reality. I am happy to note that the UCSC at present has become a much sought after institution for IT education in Sri Lanka. I would also like to note with pleasure that, under the able guidance of the current Director Professor Gihan Wickramanayake, the academic staff of the UCSC is well-trained with many of them having earned their doctoral degree from highly recognized universities, fellowships and memberships from world renowned professional associations.

I am sure that, this handbook will provide the new entrants with up to date information about the place of learning they are about to enter. A hand book is always useful not only to the students but to those who wish to have an in-depth knowledge of the activities of the school including the operational mechanism of both academic and administrative spheres. I would like to thank the Hand book Committee of the UCSC for embarking on a very useful and constructive exercise.

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

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

***Professor Lakshman Dissanayake***

Vice Chancellor of the University of Colombo

## MESSAGE FROM THE DIRECTOR



The University of Colombo School of Computing (UCSC) is a Centre of Higher Learning setup under the University of Colombo for achieving excellence in Research and the dissemination of knowledge in Computing in Sri Lanka. At the UCSC we believe in student centred learning and developing higher levels of thinking skills. This data arranged in context becomes useful information, however it has to be interpreted correctly becomes knowledge. This knowledge when used appropriately becomes wisdom. It is towards helping our students realize this that we strive at the UCSC in keeping with the motto of the University of Colombo, Wisdom Enlightens.

It is also the case that such enlightening, brings with it to us the freedom to be humble, as were the truly great minds of the scientific revolution. In the words of Isaac Newton, “If I have seen further than others, it is by standing upon the shoulders of giants”. It is this same humility that enabled Albert Einstein to pay possibly the greatest of tributes ever paid to a fellow human when he said of

Mahatma Gandhi, “Generations to come will scarce believe that such a one as this walked the earth in flesh and blood”.

In striving for excellence in education, the UCSC has always attempted to foresee the needs of the country as a whole. Introducing Computer Science as a field of specialization as early as in 1985, we produced Software Engineers for the IT industry in Sri Lanka in addition to making fit the best of these for research and higher education. We also responded to the ever increasing demand for IT professionals by the ICT industry at the end of the millennium by introducing the first external IT degree in the form of the BIT in 2000. Beginning in 2005, we are also taking the bold initiative of introducing a ICT degree programme to fill a widely felt gap in the industry for Information System Engineers – in recognition of the maturing of the field of Computer Science and Information and Communication Technology. Computing degrees are classified into five main streams as defined by ACM/IEEE. To align with this UCSC has revised all their curriculum and renamed ICT degree as Information Systems and also commenced a degree programme in Software Engineering. Thus offering four of the five main computing degrees.

The UCSC has been able to secure high donor confidence having successfully completed many foreign funded projects. It also has gained the recognition from the local IT industry with many partners willing to take part in student placement, collaborative research and job placement activities. Holding down the most qualified set of academics and researchers in the field, the UCSC is currently engaged in mobilizing its vast research potential in order to clearly distinguish itself from the rest of the ICT education industry in Sri Lanka and the region as a whole.

At the end of the day however, we need to remind ourselves of those very wise words of Mahatma Gandhi: “The things that will destroy us are: politics without principle; pleasure without conscience;



wealth without work; knowledge without character; business without morality; science without humanity; and worship without sacrifice”.

To this end, I wish that each student walking into our corridors, would at the end of their 3 or 4 year stay at the UCSC be able to say, that this indeed was the most constructive investment of time they have ever made in their life. I have no doubt then, that they would go onto become a valuable asset to the IT industry in this country, and to Sri Lankan society at large.

***Prof. G N Wikramanayake***

Director of University of Colombo School of Computing

## ACRONYMS

ACM	:	Association for Computing Machinery
ADMTC	:	Advanced Digital Media Technology Centre
CMO	:	Chief Medical Officer
CS	:	Computer Science
CSC	:	Computing Services Centre
DFC	:	Digital Forensic Centre
e-LC	:	E-Learning Centre
GPA	:	Grade Point Average
IEEE	:	Institute of Electrical and Electronics Engineers
LEARN	:	Lanka Education and Research Network
NOC	:	Network Operating Centre
SDU	:	Software Development Unit
SIDA	:	Swedish International Development Agency
TEIN	:	Trans Eurasia Information Network
UGC	:	University Grants Commission
UGVLE	:	Undergraduate Virtual Learning Environment
UMO	:	University Medical Officer
Vidupiyasa	:	UCSC Virtual Campus

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# INTRODUCTION



"Do not wait for opportunities.  
Seek them and perform"  
- Prof. V.K. Samaranayake



## INTRODUCTION

A general overview of the University of Colombo and the University of Colombo School of Computing is introduced in this chapter of the book.

### THE UNIVERSITY OF COLOMBO

The University of Colombo has a history over 80 years as a leading higher education provider in Sri Lanka. The University of Ceylon was established by the state council on April 1942. By 1950, the University of Ceylon had 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, 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. 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 the 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 oldest institution of modern higher education in Sri Lanka, specialized in the fields of natural, social, and applied sciences as well as mathematics, computer sciences, medicine, education and law. It is ranked among the top 10 universities in South Asia.

### THE UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING (UCSC)

The University of Colombo School of Computing (UCSC) is an integral part of the University of Colombo, and has a history of twelve years as the leading computing higher educational institution in Sri Lanka.

Computer education at University of Colombo was established way back in 1967 by the historic affiliation of the Statistical Unit to the Department of Mathematics. The Statistical Unit was enhanced as the Statistical Consultancy and Data Processing Service Centre (SCDSC) by the salient guidance and efforts of late Vidya Jyothi Professor V.K. Samaranyake, who pioneered computing and IT development and usage in Sri Lanka and thus considered as the "Father of Information Technology" in Sri Lanka. He was a Professor of computer science and a former dean of the Faculty of Science, University of Colombo. Professor Samaranyake at the time of his demise was the chairman of the Information and Communication Technology Agency (ICTA) of Sri Lanka. An appreciation of his work is given in the Appendix B of this book, as a display of gratitude for his great service.

By the dawn of 1985, Statistical Consultancy and Data Processing Service Centre (SCDSC) had emerged as the Department of Statistics and Computer Science (DSCS). The lead role of DSCS was to offer special degree programmes in both statistics and computer science. DSCS launched the first post-graduate programme in computing offered by a Sri Lankan university in 1986 and later in 1990 instantiated a special programme in computer science which subsequently produced a scant forty graduates per batch which was desperately insufficient to meet the increasing demand for professionals to various disciplines in the field of computer science.

A batch of fifty students were offered to study computer science directly, through the University Grants Commission in 1997 and by this time the aforesaid ineludible demand for professionals raised concerns over the expansion of computer science subdivision of DSCS to emerge as a separate entity to aid and formulate strategies and policies to meet such a growing demand. Consequently in 2001, DSCS was reformed to function as two separate entities: Department of Computer Science (DCS) and Department of Statistics (DS).

Consolidating with the restrictive framework as a faculty, the Department of Computer Science identified potential limitations of its operations and concerned for meticulous autonomy. Moreover, the faculty highly envisioned of having a strong industry relationship for exploiting the future growth potential. The Institute of Computer Technology (ICT) which was already conducting the Bachelor of Information Technology (BIT) and the Post-graduate Diploma in Computer Technology programmes had a strong



relationship with industry and simultaneously was maintaining a high institutional profile among foreign donor agencies. The ICT was also enjoying a higher autonomy in their business operations than a typical faculty, making it effective to receiving large amounts of funding and resources from JICA, SIDA and other donors.

Considering the domain ICT was reigning and the golden opportunities which the institute already posed, it became the right counterpart for the Department of Computer Science to achieve the goals, the latter envisioned for. Thus, happened the historic merge between the industry focused Institute of Computer Technology and the more theoretically oriented Department of Computer Science and gave birth to University of Colombo School of Computing (UCSC) on the 01st of September, 2002.



*Establishment of the University of Colombo School of Computing UCSC on 1st September 2002. Chancellor Dr. P. R. Anthonis lighting the Traditional Oil Lamp.*



*Japanese Parliamentary delegation's visit to the UCSC in 2002. Also in the picture Vice Chancellor Tilak Hettiarachchi and Ambassador H. E. Seichiro Otsuka.*

The catalyst who helped attain this crucial merges is none other than the late Professor V.K. Samaranyake who also became the founding director of UCSC and whose proactive thinking and visionary leadership forged a path conducive to achieve success in every endeavour undertaken by the UCSC. Dr. Ruwan Weerasinghe succeeded Professor Samaranyake as the director in 2004. Present director of UCSC is Professor Gihan Wikramanayake.

## GOALS OF THE UCSC

To be a centre of excellence in teaching and learning in computing [*Education & Physical Resources*]

To extend boundaries and promote cross disciplinary research in computing [*Research*]

To create socially responsible professionals with entrepreneurial skills, leadership qualities and integrity [*Social Responsibility, Education*]

To establish and maintain conducive environment for productive work and career enhancement [*Physical and Human Resources, Social Responsibility*]

To enhance the institutional image [*Governance, Consultancy*]

To empower society through ICT [*Consultancy, Social Responsibility*]

To make significant contributions and to provide professional services to position the country as a knowledge hub [*Social Responsibility, Education, Research, Governance, Human Resource*]

## STRUCTURE OF THE UCSC

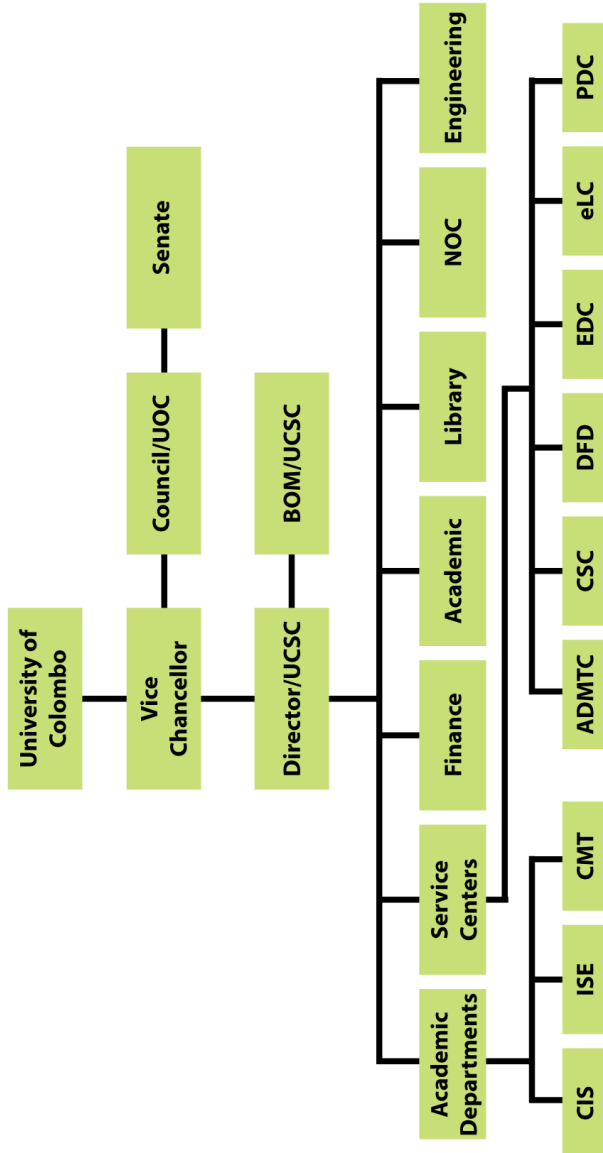
The primary activity of the University of Colombo School of Computing is to deliver quality undergraduate and postgraduate degree programmes in computing. The UCSC has three academic departments, four administration and finance divisions and six centres. The academic staff is allocated to the three academic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

Following are the three academic departments based on the research interest.

- ❖ **Department of Information Systems Engineering (ISE)**
- ❖ **Department of Computation and Intelligent Systems (CIS)**
- ❖ **Department of Communication and Media Technologies (CMT)**

### ABBREVIATIONS USED IN THE FIGURE 1

<b>BoS</b> : Board of Studies, which consists of IUD, RHD and EEP	<b>IUD</b> : Internal Undergraduate Degrees
	<b>RHD</b> : Research and Higher Degrees
	<b>EEP</b> : External and Extension Programmes
<b>Centres:</b>	<b>eLC</b> : e-Learning Centre
	<b>PDC</b> : Professional Development Centre
	<b>ADMTC</b> : Advanced Digital Media Technology Centre
	<b>CSC</b> : Computing Service Centre
	<b>EDC</b> : External Degree Centre
	<b>DFC</b> : Digital Forensic Centre
	<b>NOC</b> : Network Operating Centre
<b>Administrative Officials:</b>	<b>DR</b> : Deputy Registrar
	<b>DB</b> : Deputy Bursar
	<b>SAR</b> : Senior Assistant Registrar
	<b>SAB</b> : Senior Assistant Bursar
	<b>AR</b> : Assistant Registrar



### Professional Development Centre (PDC)

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

**Coordinator:** Dr. S. M. K. D. Arunathileka

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

### 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. Centre also conducts several training programmes in Multimedia, e-Learning and Digital Media Production. ADMTC produces many UCSC videos including BIT TV programmes.

**Coordinator:** Mr. S. T. Nandasara

*For more details visit the website: <http://www.admtc.lk>*

### 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 the private and public sector. The Software Development Unit (SDU) (<http://www.ucsc.cmb.ac.lk/sdu>) is a part of CSC and SDU carries out the software development activities of UCSC.

**Coordinator:** Mr. L. P. Jayasinghe

*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 of 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 1242 graduates and almost all have been absorbed by the ICT industry. Internal students of university of Colombo have the right to follow BIT degree programme since it is a part time programme.

**Senior Assistant Registrar:** Ms. S. D. Chandralatha

**Coordinator:** Mr. L. P. Jayasinghe

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

### Centre for Digital Forensics (CDF)

Digital Forensic Centre (DFC) of the UCSC was established in 2011. The advisory panel consists of UCSC and foreign academics. Centre facilities have been strengthened by using a generous donation of US\$ 25,000 by UOC alumni. Centre has played key role in assisting the Sri Lanka Police and the Criminal Investigation Department since 2003. The centre investigates evidence of digital crimes such as forgery frauds and pornography.

**Coordinator:** Mr. K. S. Goonathilake

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

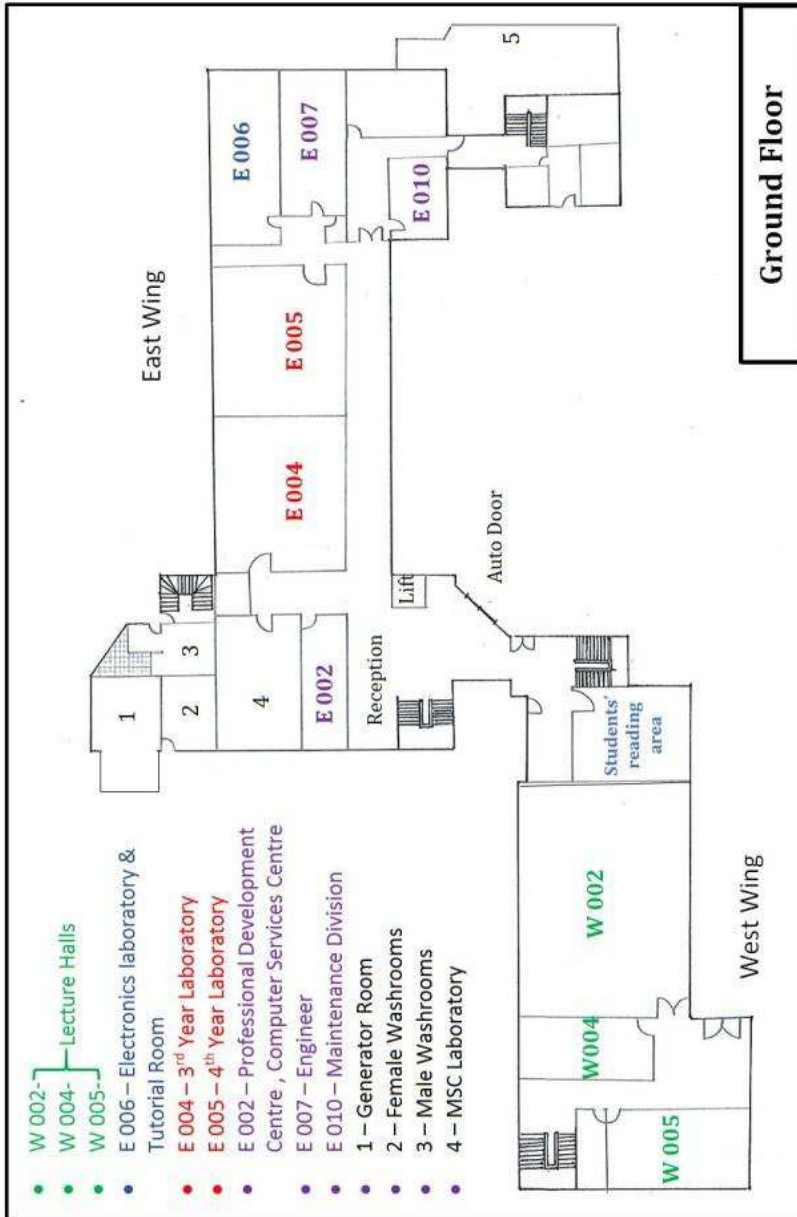
### E-Learning Centre (e-LC)

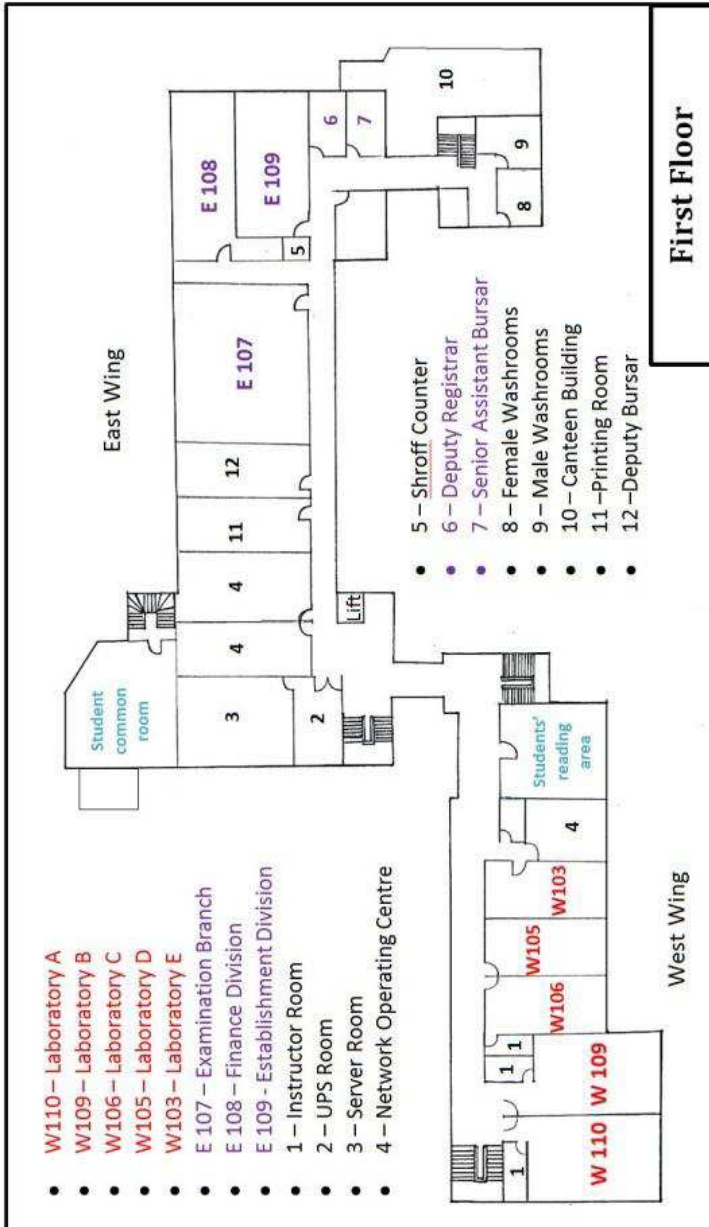
The UCSC was identified by donor agencies such as Swedish International Development Agency (SIDA) and European Union Asia Link Programme as an ideal location for a centre of excellence in e-Learning. In 2003, e-Learning Centre (e-LC) has established an online learning environment at UCSC. The centre provides necessary support to develop interactive e-Learning content and training. The online virtual learning environment of the BIT degree programme (<http://vle.bit.lk>) is managed by them.

**Coordinator:** Dr. D. D. Karunaratne

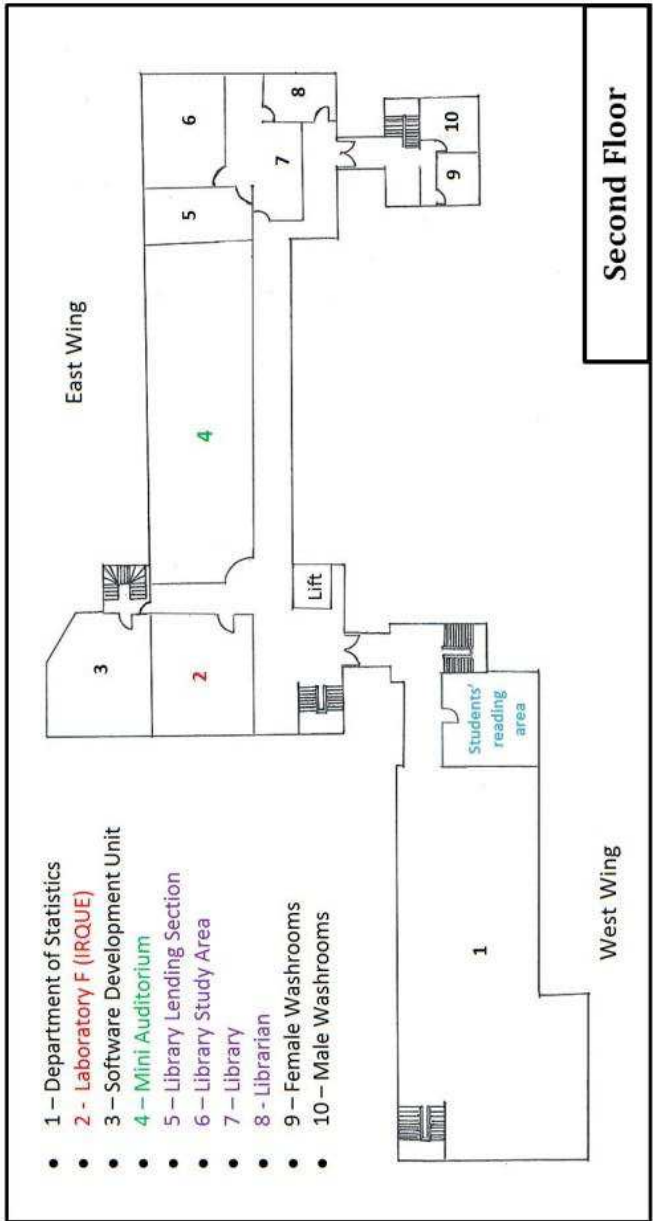
*For more details visit the website: <http://www.ucsc.cmb.ac.lk/elc>*

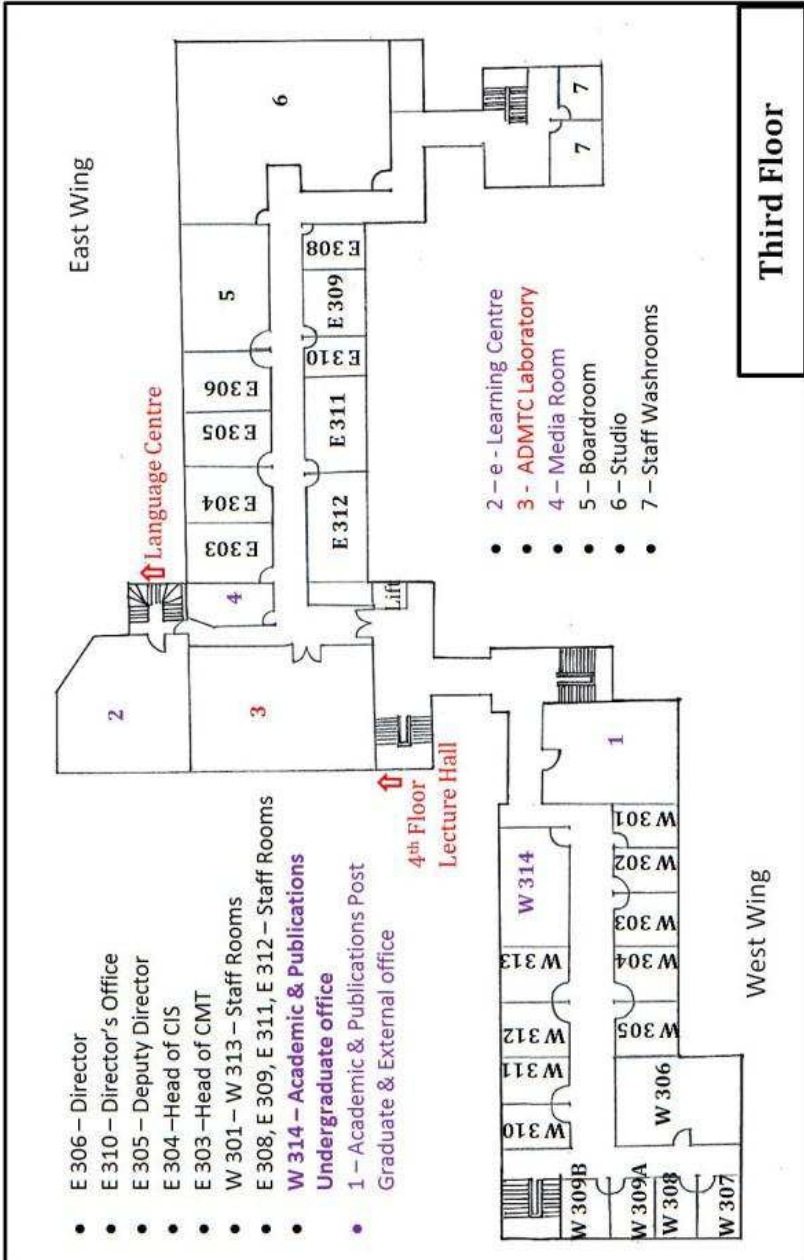
## A FLOOR MAP OF THE UCSC











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**Seating Left to Right – Front Row:** Mr. Ruwan Keragala, Mrs. D M A Harasgama, Prof. K P Hewagamage, Prof. G N Wikramanayake, Mr. M Dewasundara, Prof. K R R Mahanama, Deshamanya M D D Pieris,

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## TROPHIES AND AWARDS WON BY UCSC IN 2015

### NBQSA (National Best Quality ICT Awards)

#### Gold Medal Winners

- Run Tropica : An active video game based virtual rehabilitation system for children with brain injuries under e-Health category (Collaboration with Monash University)

#### Bronze Medal Winners

- “Effective Utilization of Nitrogen Fertilizer in Paddy Cultivation” under Tertiary (Business) category
- “Autogenous Diabetic Retinopathy Censor for Ophthalmologists – 'AKSHI” by W.O.K.A.S. Wijesinghe, under Tertiary (Technology) category
- “K-8 Flight Simulator” under “Education and Training” category (Collaboration with CRD Ministry of Defence)

### APICTA

#### Merit Awards

- “Autogenous Diabetic Retinopathy Censor for Ophthalmologists – 'AKSHI” by W.O.K.A.S. Wijesinghe

### Imagine Cup

#### Second runners-up

- The OOPS Creators

### Manthan Award

#### Winners

- Sangeethaya.lk under e-Entertainment & Games category
- Run Tropica, under e-Health category

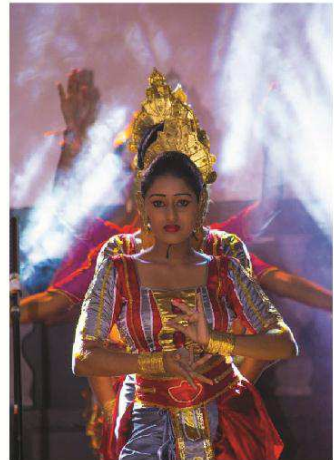
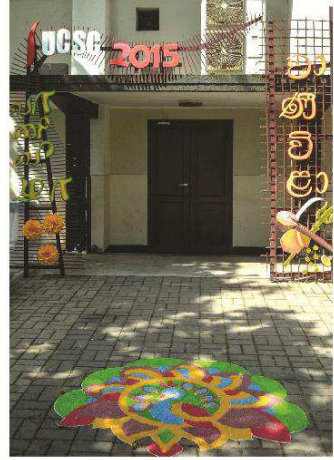
#### Finalist

- Automated Fingerprint Identification System (AFIS) for Criminal Record under e-Governance category





# UNDERGRADUATE STUDENT LIFE





## UNDERGRADUATE STUDENT LIFE

Most essential information for the student life of an undergraduate and various other facilities are described in this chapter.

### 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 of the Prime Minister's Office, Independence Hall, Colombo Town Hall and National Museum, as well as interesting tourists attractions such as Vihara Maha Devi Park, Public Library, Independent Square, Arcade Independence Square, Gallface Green, Gangaramaya Temple and many other churches and mosques, Floating market, BMICH, Nelum pokuna, Planetarium etc. So as an undergraduate, you can not only have your education here, but also a place where you can enjoy your life and feel the world. Following is a list of major directions which may guide you reaching the university.

#### *Bus Routes*

Refer to the UOC map provided at the back cover, for the Bus Stops given below.

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

For more details on Colombo bus routes please visit:

[http://en.wikipedia.org/wiki/Western\\_Province\\_%28Sri\\_Lanka%29\\_bus\\_routes#Colombo\\_Metropolitan\\_Routes](http://en.wikipedia.org/wiki/Western_Province_%28Sri_Lanka%29_bus_routes#Colombo_Metropolitan_Routes)

### *Railway Routes*

- **From Coastal line:** Get down at Bambalapitiya Railway Station and take **104, 154** or 155 from there to 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 route numbers 138 or 120 .

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

## **UNDERGRADUATE STUDENT REGISTRATION**

Following sub sections describe the process of undergraduate student registration and related detail.

### *Registration Procedure and Fees*

UCSC informs students to register for respective courses by completing the necessary application forms and paying the relevant fees at the registration.

*Table 2.1: Fee Structure*

<b>Type of Fee</b>	<b>Amount</b>	<b>When to Pay</b>
Student ID Fee	Rs. 250.00	During the 1 <sup>st</sup> year registration only
Lab and Library Deposit	Rs. 1,500.00	At the 1 <sup>st</sup> year registration only
Student Charter Fee	Rs. 100.00	At the registration only
<b>Total</b>	<b>Rs. 1850.00</b>	

*Table 2.2: Fee Structure - Annual*

Type of Fee	Amount	When to Pay
Annual Registration Fee	Rs. 600.00	At the beginning of each academic year
Annual Medical Fee	Rs. 500.00	At the beginning of each academic year
Annual Student Union Fee	Rs. 200.00	At the beginning of each academic year
Annual Amalgamated Club Fee	Rs. 200.00	At the beginning of each academic year
<b>Total</b>	<b>Rs. 1500.00</b>	

It is important to note that students are required to re-register 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 Exams division. Failure to do so may result in the cancellation of the studentship and the rights to claim Bursary or Mahapola payments and right to vote at the election of the student union.

### *Orientation Programme*

The main objective of the orientation programme is to prepare students for the university life and guide them to improve their communication skills and ICT literacy required for the respective study programmes. Generally, it will be no more than two weeks prior to the beginning of the academic year. It starts with an inauguration ceremony where the academic staff welcome new students and their parents. Vice chancellor of the University of Colombo, the director of UCSC, the student counsellors and the heads of academic study programmes will address the audience introducing the University of Colombo School of Computing. Students will also be able to talk to their advisors after this ceremony.

There is a separate coordinator for the orientation programme and he/she will be supported by the academic programme coordinators and head of

undergraduate studies. All senior and junior academic staff including some selected senior students in the final year will collaborate to conduct the orientation programme. All students will have to participate in the laboratory sessions for communication skills and ICT in the morning or afternoon depending on their group which may contain around 40 students. Syllabus of these courses and learning materials are published in the Virtual Learning Environment (VLE) of undergraduate students at <http://ugvle.ucsc.cmb.ac.lk>

All registered students will receive a username and a password to access this online system as a part of learning process. During the orientation programme, there will be two exams to evaluate their knowledge and skill of communication and ICT literacy required to commence higher education at the UCSC.

## STUDENT INDEX AND REGISTRATION NUMBER SYSTEM AND ID CARD

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

Eg for Registration Number: 2009/CS/052

Eg for Index Number: 09000526

Student ID cards are issued by University of Colombo. Students have to fill an application form with four photographs. When students want to use the university facility, they should provide their university ID card for identification. If a student loses the student ID card, he/she must inform the marshall office together with a police report, a request letter and a payment receipt of Rs. 250.00 for a new student ID card.

## SCHOLARSHIPS

The University Grants Commission and the Ministry of Trade and Consumer Affairs select the eligible students for the Mahapola Scholarships. The UCSC notifies the students who are qualified to receive Mahapola Scholarships thereafter.

The UCSC selects the eligible students for the bursary payments according to the UGC Commission Circular No: 856 & 900. Selected students are informed through a public notice.

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

Mahapola Scholarships <sup>1</sup>		Bursary Assistance	
Merit Scholarship	Rs. 5050/-	Merit Scholarship	Rs. 4000/-
Ordinary Scholarship	Rs. 5000/-	Ordinary Scholarship	Rs. 3900/-

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

There are several private scholarships for students and the information about them will be announced once the academic programme is started. Students who face critical financial problems are also assisted using the UCSC student welfare fund which has been established using a portion of generated income of postgraduate and external degree programmes. Students could obtain more details from the Academic and Publication Branch or relevant student counsellors of UCSC.

## HOSTEL FACILITIES

Limited hostel facilities are provided by the UCSC for the first year students based on the government regulation as well as availability. Presently, the men's hostel is situated at 218/8 Kaduwela Road,

<sup>1</sup> The values of Mahapola scholarship are subject to change in the near future.

Battaramulla. The Women's hostel is situated at No. 76/16A Sunethradevi Mawatha, Kohuwala, Nugegoda. 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 advices. All students who will receive hostel facilities should sign the relevant agreement and must obey the rules and regulations during their stay at the hostels. Academic and Publication branch is the responsible office to be contacted in matters regarding hostel facilities.

### RAILWAY SEASON TICKETS

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

### GUIDANCE AND COUNSELLING



Student counselling is a service provided by the UCSC to all undergraduate students free of charge. 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 increase.

The UCSC Counselling service is focused on providing an environment conducive for students to seek help at an *early stage* for 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 they are facing. However, the counsellors also trained to make a decision whether a particular problem requires further help, and so to refer such a student to a Professional Counsellor who visits the UCSC on a weekly basis.

It is important to note that all information that you communicate with 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 by 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.

As Student Counsellors, we also want 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 us at an *early stage* of a problem causing them unnecessary stress.

Dear Students,

**During the university, you are supposed to engage with lots of challenging activities and often have to work under stress which might sometimes exceed your emotional vulnerabilities. Also, most of you have to stay away from your parents and loved ones with whom you could share your sorrows. At such instances, don't think that you are alone, we, student counsellors are there to help you, listen to your worries and help you to overcome your difficulties. Therefore, do not get hesitated, come and talk to us or send us an email message to make an appointment.**

Student Counsellors, UCSC

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## UGVLE

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

When new students register, they will receive a temporary student number which will be the username to access the UGVLE. The password will be announced during a special session at the orientation. Once the formal registration number is issued, the username will be changed to this number and it will be announced during the first semester of academic year. You must have an email address to access the service of UGVLE.

If there are issues to access the UGVLE, students should contact the UGVLE administrator at the e-learning centre. (Location: No. 2 of Third Floor map of UCSC)

## LIBRARY

The UCSC Library provides its service to the staff and students of the UCSC and it has a special collection of computer science and information technology related books, magazines, and proceedings. There is also a small collection of science and mathematical books to support students to improve their background knowledge for studies. A Sinhala novel collection is available at the library for leisure reading. (Please refer to 5, 6, 7 and 8 of Second Floor map of UCSC)

### Library Opening hours:

<b>Regular Academic Period</b>	<b>9.00 AM – 5.45 PM</b>	<b>Monday to Saturday</b>
<b>During the Study Leave and Examination Period</b>	9.00 AM – 7.45 PM	Monday to Friday
	9.00 AM – 5.45 PM	Saturdays and Sundays

### *Study Areas*

There are two study areas in the library and one area has around 10 computers allowing students to access the digital library of UCSC, <http://www.ucsc.lk/dl>. Students could access dissertation and thesis of past studies at UCSC. The **General Reading Area** has a seating capacity of 56 and you can study individually or as groups in this area. The **Reference Reading Area** has a seating capacity of 44 for students to study individually.

### *Borrowing and Returning Books*

Students can borrow both academic books and general reading books from the library. Students require their student identify card to enter the library as well as to borrow and return books from the library. Students are advised to follow the rules and regulations which are displayed at the library, when they use library facilities. There will be fines for not returning the borrowed books on the due date or loss of books.

## **LABORATORIES FACILITIES**

There are 8 undergraduate laboratories with more than 260 computers and computers are connected to local area network to access common resources as well as Internet. Linux and/or Microsoft operating system are available in these computers depending on the requirements to be selected at the start-up of a computer. Students require a username and a password to access these computers which will be issued by the Network Operating Centre of UCSC based on student registration number. All these labs are opened during the semester from 8.00am to 5.00pm. 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. Network Operating Centre of UCSC should be contacted regarding matters related to lab facilities.

## **OBTAINING WI-FI CONNECTIVITY**

The students are required to submit a completed Wi-Fi connection request form to the NOC room (Room no. 4 of the First-floor map) during office hours. The request forms can be downloaded from UCSC web site ([ucsc.lk/noc](http://ucsc.lk/noc)). Only one device per student is allowed and the service will be bound to the physical address of the device. The service will be activated after one week of request submission.

The UCSC will monitor all user activities according to UGC policy and guidelines. Students are strongly advised not to engage in unethical or illegal activities using Internet connection and computing resources and all such activities are monitored to identify those activities. There is a limited bandwidth allocation for each user and they must not misuse this bandwidth to download large files without permission, play games during working hours, and access illegal/unethical sites using computing resources of UCSC. Those who violate these conditions will have to face disciplinary actions.

### **HEALTH FACILITIES**

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

### **PHYSICAL EDUCATION & SPORTS**

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

### **STUDENT SOCIETIES**

#### ***Computer Science Society Of University Of Colombo***

Computer Science Society of the University of Colombo alias “CompSoc”, is managed by the students of the university with the involvement and the guidance of the academic staff. It was established to enhance the general awareness of computing among undergraduate students and to provide assistance on computing related matters



At the same time, CompSoc is also involved in social activities like conducting workshops to enhance the computer literacy of school students and teachers.

CompSoc conducts a live radio programme known as “Internet Sampath Bhavithaya” which is broadcasted every week on Wednesdays from 9am – 10am in collaboration with the Sri Lanka Broadcasting Corporation. This program is intended to improve the general public awareness of Internet and Information Technology for public use.

For more details, please refer <http://www.compsoc.lk>

### **IEEE Student Branch Of Ucsc**

IEEE is one of the world’s largest professional organizations for enhancement of technology. Not only professionals, but also the students occupied in technological studies are able to be benefited through IEEE. Student members are encouraged by IEEE in order to guide them for innovation of technological advancements in the future.



IEEE student branch of University of Colombo School of Computing has been formed with the participation and contribution of all four batches of UCSC and it has been organizing many activities to enhance professional development of the students. As well as the technological experience and knowledge, personality development skills such as organization, leadership, interaction can be gained through engaging to the activities organized by the IEEE student branch of UCSC. The core purpose of the IEEE student branch of UCSC is to serve the humanity through technological innovations.

The society organizes a number of workshops and conferences for both UCSC students and members from another brother IEEE student branches in Sri Lanka with the purpose of enriching them with the most modern technological knowledge in order to survive in the industry and encouraging them for innovations in technology.

For more details, please refer: <http://www.compsoc.lk/services/ieee-student-branch>

### *Other Student Societies Of University Of Colombo*

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

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.

Accounting and MIS Society	Chemical Society
Botanical Society	Economics Students' Union
Buddhist Literature Society	Epsilon - Delta Society
Buddhist Students' Society of University of Colombo	Mathematical and Astronomical Society
Geography Students' Union	Catholic Students' Movement
Hindu Society	History Society
Science Society	Journalism Student Society
Law Society	Sinhala Society
Sociology Student Society	Gaveshakayo (Explorers)
Media and Arts Circle of University of Colombo	Student Involved in Rational Health Action
Muslim Majlis	Stat Circle
Oriental Music Society	Sociology Student Society
Parisarikayo	Tamil Society
University of Colombo Christian Fellowship	The Moor Court & Debating Society
Physics	Society
Sarasavi Diyaniyo Society	Society
Sarasavi Sevana	Vicharakayo

### *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 meeting, their names have to be notified to the Senior Student Counsellor's Office and the Senior Assistant Registrar, Welfare within one week of the meeting. It is hoped that these societies will work according to an annual activity plan. These societies have the power to raise funds for their activities. It is hoped that all money raised will be put in the bank accounts set aside for that society. All financial dealings

must be presented at the AGM and these must be ratified. A copy of this document then has to be sent to the Senior Student Counsellor's Office and the Senior Assistant Registrar, Welfare. To ensure honesty and transparency in financial dealings, these account/s will from time to time be audited by the Accounts Branch.

Based on the recommendations of the student members, an academic staff member will be nominated by the Vice Chancellor as the Senior Treasurer. This individual will take the responsibility for the Society in question.

### **CANTEEN FACILITIES**

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

### **PHOTOCOPY FACILITY**

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

### **MARSHAL OFFICE**

The Marshal Office is located in near proximity to the UCSC, at the one side of the medical centre. Marshals have been appointed to assist the authorities to maintain discipline within the University premises.



# UNDERGRADUATE DEGREE PROGRAMMES





## UNDERGRADUATE DEGREE PROGRAMMES

Academic details of the degree programmes and their courses are described in following sections.

### STRUCTURE OF PROGRAMMES

Medium of conducting Lectures, Tutorials, Practical and Examinations is English. Following sub sections will describe an overview of the methodology used for conducting the degree programme.

#### *Semester System*

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, practical, tutorials, continuous assessments and laboratory work shall be spread over a period of 15 weeks. Each semester may have a one week mid-semester break at the mid of the semester and one or two weeks study leave at the end of the semester before the examinations. The semester examination will be conducted within subsequent period of 2-4 weeks followed by a vacation.

#### *Hours and Credits System*

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

Each course is assigned a credit value. The credit value would depend on several factors among which are the duration of the course and its nature. A credit is equal to 15 hours of lectures or 30-45 hours of practical or an equivalent combination of lectures and practical. **80% attendance will be a requirement of a course to be satisfied before taking the corresponding exam.** Student should complete minimum of 30 credits in each year.

#### *Course Code System*

Each course code consists of four digits together with the prefix SCS, IS, ENH or EN to indicate whether it is a Computer Science subject, Information Systems subject or Enhancement subject. SCS and IS are academic Subjects while ENH (Computer Science) and EN (Information

Systems) represent Enhancement subjects. The first digit of each course code is the corresponding year (e.g: For a course in second year, it will be like 2xxx). Second digit represents the revision of the subject and it will increment if the subject is revised.

### ***Enhancement Courses***

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

### ***Internship Programme***

Industrial Training is an integral part of the 3 Degree Programmes conducted by the University of Colombo School of Computing (UCSC). This enables to provide much needed industry exposure for the students, which is an essential part in education to produce quality graduates in the fields of Computer Science (CS) and Information Systems (IS) to meet industry standards.

The Industrial Training is scheduled for a period of 5-6 months (approximately) during the second semester of the 3<sup>rd</sup> year of the students. This is managed through Professional Development Centre (PDC) in UCSC.

### ***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 to a grade according to the scheme given in Table 3.1.

*Table 3.1: Ranks and their Respective Grades*

Rank of Percentage Score	Grade	Grade Point Value	Attainment
90 - 100	A+	4.00 <sup>1</sup>	Superior
80 - 89	A	4.00	
75 - 79	A-	3.75	
70 - 74	B+	3.25	Meritorious
65 - 69	B	3.00	
60 - 64	B-	2.75	
55 - 59	C+	2.25	Adequate
50 - 54	C	2.00	
45 - 49	C-	1.75	
40 - 44	D+	1.25	Minimal
30 - 39	D	1.00	
20 - 29	D-	0.75	
00 - 19	E	0.00	Failure

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

---

<sup>1</sup> When calculating classes, A+ will be given a Grade Point Value of 4.25

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

\* Some courses may not contribute to the *Total number of credit values*.

### ***Award of Honours and Classes***

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

- a. **First Class** – for obtaining a minimum overall GPA of 3.50
- b. **Second Class (Upper Division)** - for obtaining a minimum overall GPA of 3.25
- c. **Second Class (Lower Division)** - for obtaining a minimum overall GPA of 3.00

### ***Academic Programmes (Internal undergraduate studies)***

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

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

### ***Tutorial classes***

Tutorial is a comprehensive way of developing a great understanding on course materials in a way to correct misunderstandings one may have. On average, a student can expect to have two tutorial classes per week. The tutor conducting the class may have his/her own way of organising the tutorial. Most of the tutorial classes will be based on a particular problem sheet which will be distributed before commencement of the class. Tutor is the first person for the student to consult on problems arising while studying towards 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 of the Tutorial classes will be recorded.

### ***Practical classes***

The purpose of practical classes is to give a better understanding on the application of the theories that were taught in the lecture to a practical viewpoint. Instructors will be present during practical sessions to help achieve the most out of the practical classes. It is found that many students who have attended all practical sessions, tend to do well at the final exam. Attendance of the practical classes will be recorded. Outcome of the practical classes may affect the final grade of the course. If a student is unable to attend a practical class he/she should inform the instructor(s) if possible before the session. The organisation of the practical class will be subject to dependent on the lecturer/instructor.

### ***Personal study***

Unlike work carried out in secondary school, at the university, students are expected to do much more personal (self) studies and to have a “do it myself” attitude. Apart from lectures, tutorials, and practical classes, students will find that they are required to read other materials and workout additional problems to fully master the course. A good starting point will be to consult reference books which are recommended in each course. 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 group or individual. Student may be allocated 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 student to have a clear idea about the criteria at the beginning of the course. The student 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 is able to concentrate on solving the problem. Students are strongly advised to properly manage the project in terms of time, distribution of workload and documentation.

### ***Presentation (Defence / Oral-Examination / Viva voce)***

Students may require doing presentations as a part of the evaluation or a learning activity of a course. There will normally be an evaluation panel at the presentation. Presentations may be concluded with a question and answering (Q&A) session from the evaluation panel/audience. It is common for presentations to be used as the means of evaluating a project. Presentations may be done individually or as a group. It is expected that a presentation will help to improve his communication and presentation skills. It is normal for a presentation to be guided by a set of presentation-slides. It is strongly advised to be properly dressed for presentations.

### ***Assignments***

Assignments is 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. Number of assignments and the organisation of the assignments for a course depend on the lecturer.

### ***End Semester Examinations***

There is a final examination at the end of each semester (Except for 3rd year second semester students.). All final examinations are paper- based exams which could be in the forms of multiple choice questions (MCQ), structured, or essay. End semester examination process is managed by the

examination branch. The examination branch will issue the admissions for the examination at the end of the semester, which 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 mark obtained by the student for each course is converted to a Grade according to the scheme provided by the Examination branch. Thus GPA is calculated using the final grade of each course that student has followed. The final mark of a course is calculated with a use of a rubric provided by the lecturer for each course associating portion of assignment marks and portion of written paper marks. Final grade of a course directly affects the GPA of a student.

### ***Holidays***

Both undergraduate programmes are considered as full time degrees. Therefore, full commitment for the degree is highly expected from the students. However, in case of exceptional requirements, students must contact student counsellors and send a request to the board of internal undergraduate degrees (IUD) through student representatives.

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

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

## COMPUTER SCIENCE DEGREE PROGRAMME

Computing for undergraduates was first introduced way back in 1967 as 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 was introduced. Direct intake for Computer Science was introduced in 1998 along with industry placement and accreditation of the degree program. With the establishment of the UCSC in 2002 the direct intake was moved to the UCSC.

This 4 year Computer Science special degree programme (2+2) was commenced in 1990 selecting students enrolled for the Faculty of Science from 1985/86 batch onwards. It was offered by the then Department of Statistics and Computer Science of the Faculty of Science. Students were selected based on their performance in the first two years of the degree program. Number of students selected for the programme increased gradually 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 year Computer Science degrees from the 2002/03A intake to the UCSC.

Computing degree programs 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 Science in Computer Science intake through the UGC as internal students, Information Systems under Bachelor 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.

Currently Based on students' performance and preference of first two years, a selected number of students will be able to follow a four year degree course leading to either the degree in Bachelor of Science Honours in Computer Science [B.Sc.(Hons) in Computer Science] or the degree in Bachelor of Science Honours in Software Engineering [B.Sc. (Hons) in Software Engineering]. Students for the first Software Engineering batch will be selected from the 2013 B.CS. intake in 2015.

### *Computer Science Degree Awarding Criteria*

Students admitted to this stream will follow a full computer science programme of three years leading to the degree in Bachelor of Science in Computer Science (B.Sc. in Computer Science). Based on their performance 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 [BSc.(Hons) in Computer Science] or the degree in Bachelor of Science Honours in Software Engineering [B.Sc. (Hons) in Software Engineering].

In order to be entitled to the three year (B.Sc. in CS) degree a student has to complete a minimum of 60 Academic Credits in the first two years and at least 26 Academic Credits in the third year, along with the completion of the third year Industrial Placement and a minimum GPA of 2.00. In addition to that the student has to complete a number of Enhancement Credit Value equivalents prescribed in respect of each year. A student shall not be entitled to the award of the degree unless he/she has completed the above mentioned requirements within six academic years.

To follow a four year honours degree program, limited number of students will be selected at the end of the second academic year, based on the students' performance and the preference. A student should have a minimum GPA of 2.75 in each of the first and the second academic years in order to be eligible to apply for a four year degree program.

For a student to be entitled to a four year honours degree a student has to complete a minimum of 30 Academic Credits in each of the first two academic years, a minimum of 26 Academic Credits in the third academic year and a minimum of 30 Academic Credits in the fourth academic year and the third year Industrial Placement/Industrial Project with a minimum GPA of 2.5. In addition to that the student has to complete the number of Enhancement Credit Value equivalents prescribed in respect of each year and should have a grade not inferior to a C for the fourth year Individual Project. A student shall not be entitled to the award of the degree unless he/she has completed the above mentioned requirements within six academic years.

### *Computer Science Degree Stream*

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

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

### *Year 1: Semester I*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
SCS 1101	Data Structures and Algorithms I	X	2	1	3
SCS 1102	Programming I	X	2	1	3
SCS 1103	Database I	X	2	1	3
SCS 1104	Mathematical Methods I	X	2	-	2

SCS 1105	Computer Systems	X	2	-	2
SCS 1106	Laboratory I	X	1	1	2
ENH 1101	Enhancement I	X	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>16</b>

*Year 1: Semester II*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
SCS 1107	Software Engineering I	X	2	-	2
SCS 1108	Data Structures and Algorithms II	X	2	-	2
SCS 1109	Programming II	X	2	1	3
SCS 1110	Discrete Mathematics	X	2	-	2
SCS 1111	Mathematical Methods II	X	2	-	2
SCS 1112	Foundations of Computer Science	X	2	-	2
SCS 1113	Statistics	X	2	-	2
ENH 1102	Enhancement II	X	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>16</b>

*Year 2: Semester I*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
SCS 2101	Data Structures and Algorithms III	X	2	-	2
SCS 2102	Group project I	X *	-	4	4
SCS 2103	Software Engineering II	X	2	-	2
SCS 2104	Programming III	X	2	1	3
SCS 2105	Computer Networks I	X	2	1	3
<b>Total Number of Credits for the Semester</b>					<b>14</b>

*Year 2: Semester II*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
SCS 2106	Operating Systems I	X	2	1	3
SCS 2107	Mathematical Methods III	X	2	-	2
SCS 2108	Programming IV	X	2	1	3
SCS 2109	Database II	X	2	-	2
SCS 2110	Programming Language Concepts	X	2	-	2
SCS 2111	Laboratory II	X	1	1	2

SCS 2112	Automata Theory	X	2	-	2
ENH 2101	Enhancement III	X	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>17</b>

### *Year 3: Semester I*

Course Code	Course Name	BSc (Honours in CS)	BSc (Honours in SE)	BSc (CS)	Credits		Total Credits
					Lecture	Practical	
SCS 3101	Electronics	O	O	O	2	1	3
SCS 3102	Advanced Computer Architecture	O	O	O	1	-	1
SCS 3103	Middleware Architecture	O	X	O	2	1	3
SCS 3105	Computer Graphics I	O	O	O	2	-	2
SCS 3106	Information System Security	X	X	X	2	-	2
SCS 3107	Software Quality Assurance	O	X	X	2	-	2
SCS 3108	Software Project Management	O	X	X	2	-	2
SCS 3109	Human Computer Interaction	O	X	O	2	1	3
SCS 3110	Systems and Network Administration	O	O	O	2	1	3

SCS 3111	Compiler Theory	X	O	O	2	-	2
SCS 3112	Advanced Web Development	O	O	O	2	1	3
SCS 3113	Game Development	O	O	O	1	1	2
SCS 3114	Management	O	O	O	2	-	2
SCS 3115	Professional Practice	X	X	X	2	-	2
SCS 3116	Research Methods	X	O	-	-	2	2
SCS 3117	Group project II	-	-	X	-	3	3
SCS 3118	Graph Theory	X	O	O	1	-	1
SCS 3119	Software Engineering III	O	X	O	2	-	2
SCS 3120	Machine Learning and Neural Computing	X	O	O	2	-	2
<b>Total Number of Credits for the Semester</b>							<b>42</b>

*Year 3: Semester II*

Course Code	Course Name	BSc (Honours in CS)	BSc (Honours in SE)	BSc (CS)	Credits	
					Lecture	Practical
ENH 3101	Industry Placement /Industrial Project	X	X	X	-	8
<b>Total Number of Credits for the Semester</b>						<b>8</b>

*Year 4: Semester I*

Course Code	Course Name	BSc (Honours in CS)	BSc (Honours in SE)	Credits		Total Credits
				Lecture	Practical	
SCS 4101	Society, Cyber Security and Legal Aspects of IT	O	O	1	-	1
SCS 4104	Data Analytics	O	O	2	1	3
SCS 4105	Computer Networks II	O	O	2	-	2
SCS 4106	Computer Graphics II	O	O	2	1	3
SCS 4107	Operating Systems II	X	O	2	-	2
SCS 4110	Parallel Computing	O	O	2	1	3
SCS 4116	Image Processing & Computer Vision	O	O	2	-	2
SCS 4119	Formal Methods and Software Verification	X	X	2	-	2
SCS 4120	Software Engineering IV	O	X	2	1	3
SCS 4121	Data Structures and Algorithms IV	O	O	2	-	2
SCS 4122	Research Seminar	X *	O	-	2	2
SCS 4123	Final Year Project in Software Engineering	-	X *	-	8	8
SCS 4124	Final Year Project in Computer Science	X *	-	-	8	8
<b>Total Number of Credits for the Semester</b>						<b>41</b>

*Year 4: Semester II*

Course Code	Course Name	BSc (Honours in CS)	BSc (Honours in SE))	Credits		Total Credits
				Lecture	Practical	
SCS 4103	Database III	O	X	2	1	3
SCS 4108	Theory of Computation	X	O	2	-	2
SCS 4109	Distributed Systems	O	O	2	-	2
SCS 4111	Intelligent Systems	O	O	2	-	2
SCS 4113	Natural Language Processing	O	O	2	1	3
SCS 4114	Natural Algorithms	O	O	2	-	2
SCS 4115	Computational Biology	O	-	2	1	3
SCS 4117	Embedded Systems	O	O	2	1	3
SCS 4118	Robotics	O	O	1	1	2
SCS 4125	Logic Programming	O	O	2	-	2
SCS 4126	Advanced Topics in Mathematics	O	O	1	-	1
ENH 4101	Enhancement IV	X	X	1	-	1
<b>Total Number of Credits for the Semester</b>						<b>26</b>



### *Medals And Awards For Computer Science*

These are several awarded at the Annual Convocation for graduates with respect to degree programmes.

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

### *Computer Science Course Descriptions*

Following sections include brief descriptions of each course taught for the 1<sup>st</sup> and 2<sup>nd</sup> academic years.

#### *Year 1 Courses*

##### **SCS1101 – Data Structures and Algorithms I**

Data Structures and Algorithms I introduces different data structures used in programming such as lists, stacks, queues, several types of linked lists and graphs and their applications and implementation. Also related with the data structures discussed algorithms such as Bubble sort, linear insertion and Selection sort are explained.

##### **SCS1102 – Programming I**

Programming I course offers the basics of programming concepts including the console input/outputs, control structures such as conditions, loops, recursion, string manipulation, functional programming and Lambda functions. Used programming languages are DrRacket and Python.

##### **SCS1103 – Database I**

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

##### **SCS1104 – Mathematical Methods I**

Mathematical Methods I is the introduction to the concepts of calculus including differential equations. Real numbers, real functions, algebra of limits and algebra of derivatives, Mean value theorem, solution of Laplace's equation and related theories are discussed further.

##### **SCS1105 – Computer Systems**

Computer Systems introduces the history of the computer systems, along with the knowledge of how the computer works starting from the data representation, basic logic circuit design to the CPU cycles and memory.

##### **SCS1106 – Laboratory I**

Laboratory I gives the laboratory exposure to use an operating system (Ubuntu Linux). The student will gain practical experience in handling the operating system through the graphical user interface as well as the

command line interface. Additionally the installation of packages, file system understanding and changing permissions will be covered.

### **ENH1101- Enhancement I (Communication Skills)**

The aim of this course module is to enhance the student's communication skills in general. Attention will be given to accurate pronunciation, active listening and responding. The correct use of English grammar including nouns, verbs, conjunctions and writing skills are also focused on. Students can gain knowledge on how to write applications, bio-data, resumes and professional letters.

### **SCS1107 - Software Engineering I**

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

### **SCS1108 - Data Structures and Algorithms II**

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

### **SCS1109 - Programming II**

Programming II discusses functions further, as well as arrays, pointers, file handling, advanced I/O and C language pre-processor. The course module places a strong emphasis on the development of the practical programming skills. Object Oriented programming is also first introduced here.

### **SCS1110 - Discrete Mathematics**

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

### **SCS1111- Mathematical Methods II**

Mathematical Methods II introduces topics such as vectors, matrices, matrix algebra, determinants, Eigenvalues and Eigenvectors and Euclidean spaces etc.

### **SCS1112 – Foundations of Computer Science**

This course module introduces the historic origins of computational models, mathematical theory that has led the establishment of computer science. It will discuss theory on algorithmic problem solving, types of problems, models of computing such as instruction driven, data driven, basic automata theory and Logic and AI.

### **SCS1113 – Statistics**

The Statistics course offers theory background on probability, axioms and measure of probability, Bayes theorem as well as Variance, Standard normal distribution, binomial distributions etc. The course is offered from the Statistics Department of the University of Colombo Science Faculty.

### **ENH1102 – Enhancement II (Humanities)**

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

## *Year 2 Courses*

### **SCS2101 Data Structures and Algorithms III**

This is an advanced course in data structures and algorithms which is built on the fundamentals introduced in SCS 1101 and SCS 1108 to provide in-depth knowledge to design, use, analyze and proving the correctness of algorithms using different techniques. The major areas covered include string matching, solving recurrences, dynamic programming, greedy algorithms and linear programming.

### **SCS2102 Group Project I**

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

### **SCS2103 Software Engineering II**

This is an advanced course in Software Engineering which is based on Software Engineering I module and provides an understanding of Object-oriented Analysis and Design concepts and applying them to solve problems. The main topics are conceptual modelling, advanced use case modelling, UML diagrams, use case realizations, OOAD (Object Oriented Analysis and Design), automated tools and technology, software design patterns, comparison of software development processes and advanced software engineering.

### **SCS2104 Programming III**

The course aims to provide an exposure to programming by requiring the students to programme problems. It enables students to use object-oriented programming and interacting databases both individually and as teams. Its main topics covered include introduction to Java programming, objects and classes, encapsulation, inheritance, polymorphism, arrays and vectors, error handling, Input/Output, threads and multiprocessing, networking with threads and databases.

### **SCS2105 Computer Networks I**

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

**SCS2106 Operating Systems I**

The course provide an understanding of entire process within Operating Systems. It covers overview of Operating Systems, Operating System principles, concurrency, scheduling and dispatch, memory management, security and protection, virtual machines, device management and file systems.

**SCS2107 Mathematical Methods III**

The course covers the requirement of mathematics for the degree program. It mainly aims to give an understanding of group theory, number theory and numerical methods. The major topics include the definite integral of continuous functions, sequences, convergence, boundedness, definition of groups, polynomials, integral domains and fields.

**SCS2108 Programming IV**

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

**SCS2109 Database II**

The course aims to provide a knowledge in advanced database concepts such as access control, transaction processing, indexing, mapping objects to relational database and managing big data. The topics are access control, transaction management, serializability, transaction management in SQL (Structured Query Language), indexing using SQL, stored procedure triggers and NoSQL.

**SCS2110 Programming Language Concepts**

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

### **SCS2111 Laboratory II**

The course designed to enhance the data analysis knowledge by enable students to understand the data and use an appropriate analysis method to meet an objective under consideration. The major areas covered in the course are descriptive statistics, estimation theory and testing, regression analysis and correlation and multivariate data analysis.

### **SCS2112 Automata Theory**

The course mainly focus on determining a language's place in the Chomsky hierarchy and to convert among equivalently powerful notations for a language. The areas covered are Chomsky hierarchy, sets and languages, context-free languages and the halting problem.

### **ENH2101 Enhancement III**

This non-technical enhancement course is designed to improve the professional skills and soft skills of students. It enables students to engage in activities and lessons to improve soft skills such as Spoken English, communication skills, presentation skills, leadership skills, negotiation skills. The course specially concerns in providing CV (Curriculum Vitae)writing skills and interview facing skills to the students. Moreover the topics covered include stress management, problems solving, personal effectiveness, conflict resolution, corporate culture, team building and time management.

## *Year 3 Courses*

### **SCS3101 Electronics**

This course constitutes two parts. Part I covers fundamental topics in analogue and digital electronics such as theories in DC and AC circuits and techniques used in circuit modeling and analysis. Part II gives a hands-on experience on physical computing / microcontroller programming using the Arduino platform. The course requires students to do laboratory practical.

### **SCS3102 Advanced Computer Architecture**

Processor architectures range from processors on mobile phones to smart card based ones like raspberry pi, to multi-core based personal computers

and servers to massive clusters hosting Google/Amazon virtualised services. Each processor is optimised to the environment in which it works: both from an OS point and application point of view. The course examines the architectural features that are desirable to support such a range of domains, operating systems and applications.

### **SCS3103 Middleware Architecture**

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

### **SCS3105 Computer Graphics I**

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

### **SCS3106 Information System Security**

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

### **SCS3107 Software Quality Assurance**

This course provides a student an understanding in software quality factors and software quality assurance components in a project life cycle. It also provides an introduction to software testing, various test strategies and test automation. In addition to that it provides a knowledge in various quality management standards.

### **SCS3108 Software Project Management**

This course unit covers the following topics: Introduction to project management, Project selection, Approach selection, Project planning, Risk management, Resource allocation, Effort estimation, Optimizing the



network, Financial management, Project monitoring and control, Project termination, Communication skills Quality management , Configuration management, Contract management, Human resource management

### **SCS3109 Human Computer Interaction**

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

### **SCS3110 Systems and Network Administration**

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

### **SCS3111 Compiler Theory**

The course discusses contemporary techniques in implementation of programming language translators and provides in depth knowledge of different methods and techniques used to translate a programme written in a high-level language into a programme in low-level language which is more suited for machines. Lexical and syntax analysis are demonstrated using Flex and Bison as tools. The course further expands into describing topics such as symbol tables, memory organization, type checking, and optimization.

### **SCS3112 Advanced Web Development**

The course discusses and analyses contemporary web development techniques and emerging technologies. The course expands on implementation techniques for web solutions that fully address a problem. At the end of the course the students are expected to be able to identify optimal tools such as frameworks for development of such a solution by analysing and reviewing the given problem.

**SCS3113 Game Development**

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

**SCS3114 Management**

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

**SCS3115 Professional Practice**

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

**SCS3116 Research Methods**

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

### **SCS3117 Group project II**

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

### **SCS3118 Graph Theory**

Under this course the following topics will be discussed. Introduction to graphs, Multigraphs, Directed graphs and Weighted graphs, Trees and distance, Network Models, Planar Graphs, Graph Coloring, Isomorphic and Homomorphic graphs, k- connected graphs, Representing graphs in computer memory.

### **SCS3119 Software Engineering III**

This course majorly discusses topics such as software architectural styles, design patterns, software quality attributes, design quality, and secure design. While complementing the materials already covered in SE I and SE II, this module focus on the forces and influences in architecting and designing software.

### **SCS3120 Machine Learning and Neural Computing**

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

### **ENH3101 Industry Placement /Industrial Project**

The Industry Placement provides the much needed industry exposure for the students, which is an essential part in education in order to meet Industry standards. The Industrial Training programme is scheduled for a period of 5-6 months which improves their professionalism to make them ready for the industry.

Students are placed in various sectors of the industry in which they will be working as interns. Students are allowed to choose a list of fields of interest at the beginning of the programme, allowing them to work in a preferred area. The Internship programme produces quality graduates in the fields of Computer Science (CS) and Information and Systems (IS).

### **INFORMATION SYSTEMS DEGREE PROGRAMME**

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

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

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

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

## Information Systems Degree Awarding Criteria

Under the Information Systems stream, UCSC offers a three year Degree and an Honours Degree (four year) which are known as Bachelor of Science in Information Systems and Bachelor of Science Honours in Information Systems respectively. Apart from achieving the above stated learning outcomes, in the fourth year more emphasis will be placed on learning the process of doing research.

The selection for the Honours Degree shall take place at the end of the second year and the selections are based on the student performance. A student should have a minimum GPA of 2.75 at the end of the second academic year in order to be eligible to apply for the Honours Degree programme. A limited number of students will be selected to read the Honours Degree, while others are subject to finish the degree in three years.

## Information Systems Degree Programme

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

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

### Year 1: Semester I

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
IS 1001	Programming and Problem Solving	X	2	1	3
IS 1002	Computer Systems	X	2	1	3
IS 1003	Information Systems Concepts	X	2	-	2

IS 1004	Applications Laboratory	X	1	1	2
IS 1005	Introduction to Management	X	2	-	2
IS 1006	Discrete Mathematics I	X	1	-	1
IS 1007	Fundamentals of Economics	X	2	-	2
EN 1001	Enhancement I	X	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>16</b>

*Year 1: Semester II*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
IS 1008	Financial Accounting	X	2	1	3
IS 1009	Business Communication	X	2	-	2
IS 1010	Database Management	X	2	1	3
IS 1011	Systems Analysis and Design	X	2	1	3
IS 1012	Discrete Mathematics II	X	1	-	1
IS 1013	Organizational Behaviour	X	2	-	2
IS 1014	Computing and Society	X	1	-	1
EN 1002	Enhancement II	X	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>16</b>

*Year 2: Semester I*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
IS 2001	Software Engineering	X	2	-	2
IS 2002	Group Project I	X*	-	4	4

IS 2003	Marketing	X	2	-	2
IS 2004	Web Application Development	X	2	1	3
IS 2005	Business Statistics	X	2	1	3
IS 2006	Business Process Management	X	2	-	2
EN 2001	Industrial Practices	X*	-	2	2
<b>Total Number of Credits for the Semester</b>					<b>18</b>

*Year 2: Semester II*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
IS 2007	IT Project Management	X	1	1	2
IS 2008	Information Systems Management	X	2	-	2
IS 2009	Information Systems Security	X	2	1	3
IS 2010	IT Procurement Management	X	2	-	2
IS 2011	Computer Networks	X	2	1	3
IS 2012	eBusiness Strategy	X	2	-	2
EN 2002	Enhancement III	X	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>15</b>

*Year 3: Semester I*

Course Code	Course Name	Mode		Credits		Total Credits
		BSc (IS)	BSc (Honours in IS)	Lecture	Practical	
IS 3001	Enterprise Resource Planning Systems	X	X	2	-	2
IS 3002	Human Computer Interaction	X	X	2	1	3
IS 3003	Software Quality Assurance	X	X	2	-	2
IS 3004	Strategic Management	O	O	2	-	2
IS 3005	Professional Practice	X	X	2	-	2
IS 3006	Interactive Media Design	O	O	2	1	3
IS 3007	Contingency Planning and Risk Management	X	X	2	-	2
IS 3008	Middleware Architecture	O	O	2	1	3
IS 3009	Systems & Network Administration	O	O	2	1	3
IS 3010	Research Methods	-	X	-	2	2
IS 3011	Operations Research	O	O	2	-	2
IS 3012	Game Development	O	O	1	1	2
IS 3013	Group Project II	X	-	-	3	3
IS 3014	Enterprise Architecture	X	X	2	-	2
IS 3015	Advanced Web Development	O	O	2	1	3
IS 3016	Computer Graphics I	O	O	2	-	2



IS 3017	Machine Learning and Neural Computing	O	O	2	-	2
IS 3018	E-Learning and Instructional Design	O	O	2	1	3
<b>Total Number of Credits for the Semester</b>						<b>43</b>

### *Year 3: Semester II*

Course Code	Course Name	Mode		Credits		Total Credits
		BSc (IS)	BSc (Honours in IS)	Lecture	Practical	
EN 3001	Industrial Placement/Industrial Project	X	X	-	8	8
<b>Total Number of Credits for the Semester</b>						<b>8</b>

### *Year 4: Semester I*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
IS 4001	Final Year Project in Information Systems	X *	-	8	8
IS 4002	Community Informatics	O	2	-	2
IS 4003	Data Analytics	O	2	1	3
IS 4004	Research Seminar	X	-	2	2
IS 4005	Advanced Concepts in Software Design and Development	O	2	1	3
IS 4006	Advanced Database Management	O	2	1	3

IS 4007	Society, Cyber security and Legal aspects of IT	O	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>22</b>

*Year 4: Semester II*

Course Code	Course Name	Mode	Credits		Total Credits
			Lecture	Practical	
IS 4008	Intelligent Systems	O	2	-	2
IS 4009	Enterprise Applications	O	2	-	2
IS 4010	Business Intelligence Systems	O	2	-	2
IS 4011	Computational Biology	O	2	1	3
IS 4012	Geographical Information Systems	O	1	1	2
IS 4013	Computer Forensics	O	2	-	2
IS 4014	IS Innovation and New Technologies	O	2	-	2
EN 4001	Enhancement IV	X	1	-	1
<b>Total Number of Credits for the Semester</b>					<b>16</b>

### *Medals And Awards For Information Systems*

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

	<b>Candidates</b>	<b>Name of the Award</b>
<b>Best performance (Highest GPA)</b>	3 <sup>rd</sup> Year Graduates	<i>Zebra Technologies Excellence Award</i>
	4 <sup>th</sup> Year Graduates	<i>IFS Academic Excellence Award</i>
<b>Best Industrial Training (Awarded for Best Result at Industrial Training in 3rd Year)</b>	3 <sup>rd</sup> /4 <sup>th</sup> Year Graduates	<i>David Peiris Group Gold Medal</i>
<b>Best Final year Project/Research</b>	4 <sup>th</sup> Year Graduates	<i>Sampath Bank Award</i>
<b>Most Outstanding Graduate of the UCSC (Combined award for CS and IS)</b>	4 <sup>th</sup> Year Graduates	<i>Prof. V K Samaranyake Award</i>

## *Information Systems Course Descriptions*

### *Year 1 Courses*

#### **IS1001 Programming and Problem Solving**

In this subject student will learn an overview and history of programming languages. They will be introduced to programme design, development approaches, Object-oriented, procedural, declarative, rapid application, Techniques for modelling programme structures algorithms, flow charts, pseudo codes and hand traces. Further Programming concepts, variables, literals, primitive data types, expressions, procedures, Functions, parameters, Operators and operations, decision logic selection, simple selection, multiple selection, looping, break, continue sub procedures, passing parameters, coding, unit testing, control structure, sequential conditional, recursion and problem solving application will be discussed throughout the course.

#### **IS1002 Computer Systems**

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

#### **IS1003 Information Systems Concepts**

At the end of this course students will be able to describe the components of a computer based information system as well as functions of individual components and describe how organizations are using Information Systems to improve operational efficiency; decision making and competitive advantage. The course will consist of Introduction to Information Systems, Introduction to components of a Computer-Based Information Systems and functions, Role of Information Systems in Organisations, Different Types of Information Systems, Introduction to Systems Development and introduction to Security, Privacy and Ethical Issues with respect to Information Systems.

### **IS1004 Applications Laboratory**

On successful completion of this course, a student should be able to Navigate the Linux environment using the command line, Explain how to set permissions using the command line, Create and modify directory structures on Linux, Create an HTML page using the vi/vim editor, Explain how to install Linux and configure the hardware and to Create documents and charts with an Office application.

### **IS1005 Introduction to Management**

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

### **IS1006 Discrete Mathematics I**

After successful completion of this course students will be able to apply basic mathematical and statistical concepts to real-world situations and illustrate mathematical intuition and abstract reasoning. The topics of Introduction to Numbers and Arithmetic, Introduction to Basic Algebra, Solving Equations, Fundamentals of Measurements, Introduction to Ratios and Proportions, Introduction to Percentages and Interest Rates and Indices and Logarithms will discussed throughout the course.

### **IS1007 Fundamentals of Economics**

After successful completion of this course students should be able to comprehend and relate core economic concepts such as opportunity cost, the role of the market, different market structures, and the connections between economic agents and economic activities. The course content will consist with topics of Demand, Supply and Equilibrium, Consumer and Producer Surplus and Government Intervention, The Theory of Consumer Behaviour, The Theory of Production and Cost of Production, Market

Structures and Optimization, Macroeconomic Problems, Introduction to Exchange Rate Determination and Introduction to Balance of Payment.

### **EN1001 Enhancement I (Communication Skills)**

This course is designed to provide student with applied knowledge and skills that will help them live a healthy lifestyle in university, enhance personal and academic performance, reduce stress, manage time and finances, develop effective communication and other relation skills and foster a positive self-concept.

### **IS1008 Financial Accounting**

After successful completion of this course students should be able to discuss the framework of accounting and the concepts, principles, and procedures, Interpret main financial statements and their advantages and limitations, Analyze financial statements to make financial decisions and Prepare financial statements using computer based accounting packages. The course structure will be consisting with topics of basic principle introductions.

### **IS1009 Business Communication**

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

### **IS1010 Database Management**

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

### **IS1011 Systems Analysis and Design**

After successful completion of this course students should be able to Describe fundamental concepts and trends that provide the context of Systems Analysis and Design methods and to apply the techniques practically to analyze and design an information system, Describe Object

Oriented Analysis and Design concepts and apply them to solve problems and Prepare Object Oriented Analysis and Design documents for a given problem using Unified Modelling Language.

### **IS1012 Discrete Mathematics II**

The course content will be consist with the topics of Introduction to Sets, Logic and Truth tables, Relations and Functions, Techniques of Counting, Fundamentals of Statistics, Introduction to Probability, Introduction to Differentiation and Introduction to Integration.

### **IS1013 Organizational Behaviour**

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

### **IS1014 Computing and Society**

On completion of this course student will be able to explain how computing is used in society, explain the effect of computing on issues of privacy, freedom of speech, crime and work, describe how computing has brought challenges to intellectual property, critically review evaluation and controlling of technology, failures and risks with respect to computing in society and analyse ethics and responsibilities which need to be considered with the use of computing in society.

### **EN1002 Enhancement II (Humanities)**

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

## *Year 2 Courses*

### **IS2001 Software Engineering**

IS2001 provides a broad understanding of the software engineering process, concepts, the systematic development and management of software projects. This course covers the modules of software design process models; requirements engineering; design principles; coding practices; testing strategies; software maintenance and evolution; software project management and fundamentals of software quality assurance.

### **IS2002 Group Project I**

IS2002 improves students' practical knowledge in software engineering; developing skills required for software development by carrying out activities in the stages of software development life cycle. Simultaneously it covers training students in technical writing/documentation skills related to software development, and enhancing their soft skills like positive attitude, good communication skills, time management abilities, problem solving skills, acting as a team player and flexibility/adaptability. Moreover students are supposed to present, demonstrate and defend on their working software solution as a group as well as an individual. Throughout this one year project, students are required to focus on system design within the first semester and system development in the second semester

### **IS2003 Marketing**

IS2003 focuses on providing introduction to marketing and its concepts. The students can obtain knowledge on marketing theories as well as the new digital marketing methods and practices. This assists in developing a marketing plan. Further, the course describes the consumer and organizational buying behaviour methods and Customer Relationship Management which enhance the marketing of an organization.

### **IS2004 Web Application Development**

IS2004 mainly covers the web application development techniques; client-side (HTML, JavaScript, CSS) and server-side programming (PHP, MySQL database connection) improving students' skills and project-based experience needed for web design and development careers using a variety of strategies and tools. Further it intends to make students aware on World Wide Web (WWW), HTML editors for website development, solution stacks (LAMP, XAMP and WAMP), 3-tier architecture, web servers,



website hosting and Internet Service Providers (ISP), website legal issues, Content Management Systems (CMS), installation and configuration.

### **IS2005 Business Statistics**

IS2005 concentrates on the practice of statistics and through this course students will develop: a mature awareness of the nature and value of statistics, including its ability to draw meaningful conclusions in the face of uncertainty; interest and aptitude in applying this area of mathematics to issues from many areas of human inquiry; the ability to perform accurate calculations and evaluations using tools and techniques from probability, descriptive statistics, statistical estimation, statistical distribution, inferential statistics, correlation, and regression; a sound, critical approach to interpreting statistics, including an awareness of both the legitimate uses and possible misuses of statistical information; an ethical perspective concerning the practice of statistics; facility with one or more statistical software package; and proficiency in the art of clearly presenting mathematical information, in both written and oral form.

### **IS2006 Business Process Management**

Students following IS2006, are expected to understand different approaches to quality improvements, different phases in Business Process Management (BPM) life cycle and the role and potential of IT to support business process management. Further this course assists students to identify weaknesses in a given business process and apply best practices in order to improve that particular process. Moreover during the course, the students will get an opportunity to get familiar in business process modeling using existing modeling tools.

### **EN2001 Industrial Practices**

EN2001 assist students to understand how business processes work in the real environment and provides them much needed industry exposure which is essential to produce quality IS graduates to meet industry standards. Students will be taken to selected organisations during this course in order to gain an understanding of different business processes in these organisations. This course is offered throughout the year.

### **IS2007 IT Project Management**

IS2007 covers the modules of introduction to project management by defining the characteristics of a project and life cycle of an IT project;

identifying and planning activities and understanding activity planning objectives and methods (Activity On Node Networks, Activity on Arrow Networks); importance of Software effort estimation (SEE) and how to estimate effort in a given scenario using SEE techniques; managing risks in IT projects-steps In risk management process; types of risks and risk planning; nature of resources in IT projects and how to schedule and allocate resources; how to effectively monitor and control a project and importance of ensuring software quality and methods to adopt.

### **IS2008 Information Systems Management**

This course aims to broaden the students' understanding of the role of information systems and technology (IS/T) in businesses around the world. The course covers the modules of IS strategic alignment, IT/IS investment evaluation and performance evaluation, IS leadership and human resource management, acquiring IT architecture, IS resources and capabilities and using IS/IT governance frameworks. During the course, the students will get an opportunity interact with IT professionals with specialist knowledge in the field. The students will learn by actively engaging in activities in both physical and virtual learning environments.

### **IS2009 Information Systems Security**

IS2009 facilitates students providing them the ability to describe the nature of security risk in a business and its content; compare and apply several models for security risk assessment; facilitate a risk assessment process and gain consensus on risk-based decisions; incorporate risk assessment into an it security plan and describe various protection measures including cryptographic approaches covering main course modules; security goals, cryptography, social engineering and risk assessment methodologies and techniques.

### **IS2010 IT Procurement Management**

IS2010 covers the modules of public procurement; IT procurement management; procurement categories (goods, works, services, consultancy and information system); methods of selection of goods and services; methods of selection of information systems; methods of selection of consultancy; difference between methods of selection; Invitation for Bids (IFB); Expression of Interest (EOI) and Request for Proposal (RFP); Terms of References (TOR); contract management and e-Government procurement.

### **IS2011 Computer Networks**

IS2011 facilitates students providing them the ability to explain the principles underlying the layered systems architectures and their application to computers networks; describe the functionality and the role of different hardware and software components used in networks; and apply the core concepts underlying IP networks to solve simple network design problems, including IP subnetting covering the modules of types of networks, core network components, TCP/IP model, physical layer: wired and wireless connectivity, data link layer: Ethernet, network layer: IP, IP addressing and routing, transport layer: TCP, application layer: core Internet application protocols, network security and security devices, the Internet as a key networking platform and network device configuration.

### **IS2012 eBusiness Strategy**

IS2012 provides a sound understanding of the applications and technologies in e-Business, and familiarizes the student with the concepts in e-Business, the Business applications, marketing on the web, the new revenue models, legal issues related to B2C (Business to Consumer) and B2B (Business to Business) applications. Further it prepares students with the skills needed to work in any e-Business environment and to decide on strategic business decisions related to e-Business. While making the students understand ethics and professional issues in an e-Business environment it prepares them to work in an e-Business environment in the global market. Moreover this course is supposed to enhance the ability of students to take a company through the e-Business Transformation process.

### **EN2002 Enhancement III**

EN2002 focuses on improving the professionalism of undergraduates preparing them for a suitable career with proper guidance. This course mainly covers the modules of enhancing communication skills, presentation skills and leadership skills; stress management; problem solving; personal effectiveness; conflict resolution; corporate culture; team building; time management; enhancing negotiation skills, language skills (spoken English), CV writing skills and interview facing skills.

### *Year 3 Courses*

#### **IS 3001 Enterprise Resource Planning Systems**

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

#### **IS 3002 Human Computer Interaction**

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

#### **IS 3003 Software Quality Assurance**

This course provides a student an understanding in software quality factors and software quality assurance components in a project life cycle. It also provides an introduction to software testing, various test strategies and test automation. In addition to that it provides a knowledge in various quality management standards

#### **IS 3004 Strategic Management**

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

### **IS 3005 Professional Practice**

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

### **IS 3006 Interactive Media Design**

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

### **IS3007 Contingency Planning and Risk Management**

IS 3007 develops a facet of soft skills needed to address information systems assurance. The body of knowledge needed, stems from the emphasis by the top management in organizations on information systems security. The exposure given through practical and theoretic means strives to provide the expertise needed in terms of technical knowhow coupled with understating of business needs to influence a business decision in driving information systems security and assurance.

### **IS 3008 Middleware Architecture**

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

### **IS 3009 Systems & Network Administration**

The course introduces the technical operational tasks of a system and network administrator through both lectures and practical sessions. The course covers topics such as Linux/Unix systems, Apache configuration,

DNS configuration, web caching, shell scripting, and systems administration automation.

### **IS 3010 Research Methods**

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

### **IS3011 Operations Research**

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

### **IS 3012 Game Development**

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

### **IS 3013 Group Project II**

Third year group project is a mandatory course for those who follow 3 year degree programme in both CS and IS streams. The objectives of the course are to Improve the students' knowledge and to develop skills required for the software development by carrying out activities in the stages of software development lifecycle (SDLC), Develop the relevant system documentation and user documentation of the software project assigned in all stages of SDLC, Present, demonstrate and defend the working software

system of the project as a group as well as an individual contributor and the Demonstrate it as a completed software product ready for deployment.

### **IS3014 Enterprise Architecture**

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

### **IS 3015 Advanced Web Development**

The course discusses and analyses contemporary web development techniques and emerging technologies. The course expands on implementation techniques for web solutions that fully address a problem. At the end of the course the students are expected to be able to identify optimal tools such as frameworks for development of such a solution by analysing and reviewing the given problem.

### **IS 3016 Computer Graphics I**

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

### **IS 3017 Machine Learning and Neural Computing**

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

data mining, autonomous navigation, bioinformatics, speech recognition, and text and web data processing.

### **IS3018 E-Learning and Instructional Design**

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

### **ENH3101 Industry Placement /Industrial Project**

The Industry Placement provides the much needed industry exposure for the students, which is an essential part in education in order to meet Industry standards. The Industrial Training programme is scheduled for a period of 5-6 months which improves their professionalism to make them ready for the industry.

Students are placed in various sectors of the industry in which they will be working as interns. Students are allowed to choose a list of fields of interest at the beginning of the programme, allowing them to work in a preferred area. The Internship programme produces quality graduates in the fields of Computer Science (CS) and Information and Systems (IS).





# RULES, REGULATIONS AND ETHICS



## RULES, REGULATIONS AND ETHICS

### ETHICS

#### Student Discipline

The UCSC expects its student community to be well disciplined. Resources and facilities provided are liable to be withdrawn, if they are found to be misused. Storing of unauthorized material, hacking, email, spamming or software piracy is strictly prohibited in the Labs. Disciplinary action will be taken according to the UCSC regulations on such matters. Where necessary, such instances will be reported to law enforcement agencies. Students violating examination rules will be punished separately. These punishments include cancellation of exam results and suspend from academic work for specified period.

Unethical and Illegal Actions within the University Premises:

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

Entering visitors without permission into the university, hostels, other restricted places

## Ragging

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

## Disciplinary Actions

If any student breaks the rules in the disciplinary actions or ragging, those will be punished according to the procedures. 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 offense. Last academic year several students were warned for violating university regulations and they were warned in front of their parents.

## RULES AND REGULATIONS

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

### Registration for the Optional Courses

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

## Examination Procedure

### Rules to be followed in Examination

1. Students have to be **present** at the Examination Hall at least 15 minutes before starting the paper, but can't enter the hall until Supervisor gives permission.
2. Students won't be **admitted** to the Examination Hall after the first half-an-hour of the examination. Those who finish answering early, can leave only after the first half-an-hour and before last 15 minutes.
3. After entering the hall, students should go to the **seat** assigned to them and cannot change it without Supervisor permission.
4. Students must have their **Student Identity Card (SIdC)** and **Admission Card** for each paper. If students fail to bring their SIdC, they have to sign a declaration and produce the SIdC to the Senior Assistant Registrar/Examinations & Registration next day. If a student loses their SIdC, they can obtain a duplicate Identity Card from Senior Assistant Registrar for Examination.
5. **Admission Cards** are signed in front of the Supervisor/Invigilator when a student sits for a paper.
6. Students have to bring their own pens, ink or any other approved equipment and **stationery**.
7. **Examination stationery** (ie. Writing paper, graph paper, etc.) will be supplied and only these papers can be used at the Examination. Answer books supplied to the students can't be torn or mutilated. All materials supplied, whether used or unused, have to be left behind and cannot be removed from the examination halls.
8. Students are prohibited to have any notes, formulae or any other **unauthorized material** with them during the examination. Books, handbags etc. which students have brought with him/her should be kept at a place shown by the Supervisor/Invigilator.
9. Every student has to enter their **Index Number** on the answer book and on every extra sheet. A student who writes another students index number on their answer sheet, can be considered as having attempted to cheat. The Supervisor/Invigilator has the authority to check the

answer scripts of the student. An answer script that bears no Index Number or an Index Number which cannot be identified, might be rejected. Students can't write their names on the answer book.

10. Students are under the **authority** of the Supervisor and have to carry out their and invigilators instructions throughout the exam.
11. Absolute **silence** has to be maintained in the Examination hall and around it. A student cannot talk or to have any dealings with anyone other than the Supervisor/Invigilator. If a student needs to draw the attention of Supervisor/Invigilator they can raise their hand. A student can be excluded from the examination hall for causing disturbance.
12. After starting the exam, students cannot **leave** Examination hall even temporarily. In case of an emergency, the Supervisor/ Invigilator will grant them permission under constant surveillance.
13. Students have to **stop writing** immediately when Supervisor/Invigilator orders. If this instruction is not followed the Supervisor/Invigilator has the authority to make a statement on the answer book.
14. All calculations and **rough work** will be done only on given paper. Such work should not be done on admission cards, timetables, question papers or on any other paper. Any student who disregards these instructions can be considered as having written notes with the intention of copying.
15. Any answer or part of the answer which is not to be considered for the purpose of assessment, will have to be neatly crossed out. If the same question has been attempted in more than one place the answers that are to be disregarded has to be neatly crossed out.
16. Every student has to hand over the **answer scripts** personally to the Supervisor/Invigilator or remain in their seat until it is collected. They cannot hand over their answer scripts to an attendant, a minor employee or another student.
17. After **handing** over the paper, students cannot have it back.
18. Students cannot **remove** answer scripts from the Examination hall.

19. Students cannot **copy** from any material or from the answer scripts of another student. Nor can they help another student or get help from another student.
20. Impersonating students at the examination is not allowed.
21. The Supervisor/Invigilator can request a student to make a statement in writing due to an incident during the examination, and such statement will have to be signed by the student. Students cannot refuse to make such a statement or to sign it.
22. Every student who registers for an examination will be considered to have sat 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 submits medical certificate prior to the start of the examination or within 7 working days after the exam.
23. If a student can't present themselves for any section of an exam, they will have to notify it to the Director/UCSC immediately. This should be confirmed in writing with support document within 48 hours by registered post.
24. A student who withdraws or absent himself/herself from the examination will not be eligible for Honours at the next examination unless the senate decides otherwise.
25. Students can't sit examination, if they have exhausted the number for that examination, unless they are granted special permission to do so by the senate.

### Examination Offences

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

Some Examples of past punishments:

- Plagiarized content in an assignment worth less than 20% of course work - zero marks for the assignment
- Plagiarized content in an assignment worth more than 20% of course work - zero marks for entire assignment component
- Keeping unauthorised material during an examination - paper cancelled if content not relevant to the subject matter of the examination
- Keeping unauthorised material during an examination - all papers of that semester examination cancelled if content relevant to the subject matter of the examination
- Keeping unauthorised material using university property (including writing on admission card) - all papers of that semester examination cancelled and cannot sit for any examinations for one further year

### Examination Offences and Punishments

1. Examination offences can be classified as follows:
  - (a) Possession of unauthorized documents or removal of examination stationery.
  - (b) Disorderly conduct.
  - (c) Obtaining or attempting to obtain improper assistance or cheating or attempting to cheat.
  - (d) Impersonation.
  - (e) Aiding and abetting the commission of any of these offences.
  - (f) Violation of any of the requirements or conditions stipulated in Part I.
2. There shall be an Examination Disciplinary Committee to inquire into and make recommendations (including punishments) regarding examination offences.
3. In all cases of examination offences, the Supervisor will take action and forward his report to the Director/UCSC.
4. Having a prior knowledge of question paper is an examination offence.
5. If students possess unauthorized material at an examination hall, it will be presumed that they have used it until the contrary is proved by them.



6. In cases of disorderly conduct the Supervisor will in the first instance warn the student, and if the student persists in disorderly conduct, the Supervisor may exclude the student from the examination hall and issue him/her a letter cancelling their candidature from the examination.
7. In all other cases of examination offences, the Supervisor will take over the unauthorized documents and will obtain a statement from the student and write his report on the matter.
8. A student who is guilty of an examination offence is liable to following punishments.
  - (a) Removal of their name from the pass list.
  - (b) Cancellation of their candidature from whole or part of the examination
  - (c) Suspension from any University examination
  - (d) Suspension from the University for a period
9. Any student found helping to commit an examination offence will receive the same punishment as the offender.

### **End semester Examinations and Continuous Evaluations**

End semester examinations for a particular module, are conducted in the form of a written paper and continuous evaluations (assignments). Continuous evaluations can consist of a combination of reports, presentations, oral examinations and practical examinations. It should also be noted that there can be certain modules which do not have an end semester written examination (i.e. IS 2002 Group Project I, EN 2001 Industrial Practices, EN 3001 Industrial Placement/Industrial Project)

All examinations are conducted and completed within the given semester except for courses such as IS 2002 Group Project I, IS 3013 Group Project II. The duration of the theory examinations, practical and oral examinations are determined by the board of study of internal degree programs. The duration of each examination and the rubric of the examination (i.e. final marks calculations with respect to assignments and final course exam/evaluation) are informed during the respective semester.

## Eligibility Requirements to Sit for End Semester Examinations

The main requirement in order to be eligible to sit for the end semester exam is to be enrolled in the course at the beginning of the semester. Since all the courses offered in first and second years are compulsory, students need not specifically enrol for those courses. But since optional courses are offered in 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 if attendance at lectures is compulsory (“**Students are strictly advised to maintain 80% attendance at the lectures**”)
- attendance to laboratory classes
- submission of assignments at the appropriate time

## Absence

Students who are unable to appear for a theory and/or practical component of an examination due to medical reasons should submit a Medical Certificate issued by the Chief Medical Officer (CMO)/University Medical Officer (UMO) of the University of Colombo or a valid Medical Certificate recommended by the CMO/UMO to the senior assistant registrar at the examinations branch.

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

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

(1)

(a) A student who suffers from an acceptable medical condition (illness, accident, etc.), during the period of an 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 together with a copy of the letter addressed to the Director/UCSC informing about such medical condition(s), should be forwarded to the Registrar/Examinations of the UCSC along with the attached (relevant) application form within seven days from the last date of such recommended leave.

(2)

(a)In case of a student who resides outside Colombo city limits and who finds it difficult to report to the CMO/ UMO due to seriousness of the illness, should seek treatment from the nearest government medical institution/hospital.

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

(i)All medical certificates other than those issued by the CMO/UMO together with a copy of the letter addressed to the Director/UCSC informing about such medical condition(s), should be forwarded to the CMO/UMO along with the attached (relevant) application form. These should then be submitted to the Deputy Registrar/Examinations of the UCSC with the recommendation/ observation of the CMO/UMO within seven days from the last date of such recommended leave.

(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
- (c) Medical certificate issued by a private medical practitioner will only be accepted in the case of leave for less than five days;
- (d) 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***

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

### ***Travelling Overseas***

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

### ***Grade and GPV Requirements for Passing a Course***

A student obtaining a grade below C (GPV below 2.00) may re-sit the course examination (if available) for the purpose of improving the grade. In the event of a student obtaining a lower grade while repeating, he/she is entitled to the previous grade. However, in calculating the award of a class in the final degree, maximum contribution from a repeated course is considered to be a C grade. Repeat candidates must register for courses they wish to repeat at the beginning of the academic year or soon after the results are released.

### Criteria for completion of a course

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

- If he/she has received a grade of “C” or above
- If he/she has completed the assessments of that course successfully
- If he/she has fulfilled the attendance requirement predefined at the beginning of the course.

A student is considered to have completed an Enhancement course if and only if he/she has fulfilled the prescribed requirements of attendance and any other course activities.

### Requirements for Graduation/Completion of Degree

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

- Completed a minimum of 90 credits
- Completed a minimum of 60 Academic Credits in the first two years and at least 22 academic credits in the third year
- Completed the number of Enhancement Credit Value Equivalents prescribed in respect of each year
- Obtained a minimum GPA of 2.00
- Completed the third year Industrial Placement/Industrial Project
- Completed the relevant requirements within six Academic Years
- Complete the relevant requirements within six academic Years

### Requirements for completion of a fourth year degree

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

- completed a minimum of 120 credits
- completed a minimum of 30 academic credits in each of the first and the second academic years, a minimum of 22 academic credits in the third academic year and a minimum number of 30 academic credits in the fourth academic year
- completed the number of enhancement credit value equivalents prescribed in respect of each year
- obtained a minimum GPA of 2.50
- completed the third year Industrial Placement/Industrial Project

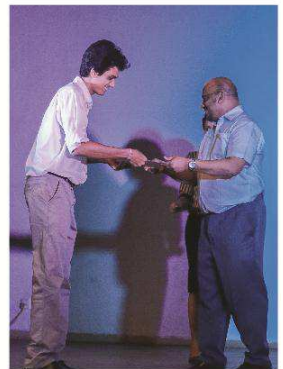
- obtained a grade not inferior to a C for the fourth year research project
- completed the relevant requirements within six Academic Years

### **Effective Date of the Degree**

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



# OTHER ACTIVITIES AT UCSC





## OTHER ACTIVITIES AT UCSC

### POSTGRADUATE STUDIES

#### Masters Degrees

UCSC conducts Masters Degrees in Computer Science (MCS), Information Technology (MIT) and Information Security (MIS). MCS is a specialization degree for Computer Science and IT degree holders whereas MIT is a postgraduate degree for graduates in non-computing disciplines. MIT has two sub programmes allowing candidates to specialize in multimedia or e-learning streams. MIS offers mid-career opportunities for those working in the areas of Information Technology, Information System Audit and Information Security.

*For more details visit the web site:*

<http://www.ucsc.cmb.ac.lk/pg>

#### Research Degrees – MPhil / PhD Programme

UCSC has several active research groups including wireless networks, distributed systems, natural languages, cryptographic systems, graphics and image processing, GIS databases, e-learning and allowing capable researchers to work on appropriate and cutting edge technologies. Most of the research groups funded by foreign agencies, industry, National Science Foundation (NSF) and National Research Council (NRC). Those who have honors degree or masters degree could apply for research degrees at any time.

*For more details visit the web site:*

<http://www.ucsc.cmb.ac.lk/pg>

## EXTERNAL STUDIES

### Bachelor of Information Technology (BIT)

BIT is a three year degree program conducted by UCSC for students with three passes in the G.C.E. (A/L) examination in one sitting. Diploma in Information Technology (DIT), Higher Diploma in Information Technology (HDIT), Bachelor of Information Technology degree (BIT) will be awarded on successful completion of the first, second and third years respectively.

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

## SHORT TERM COURSES

The following short term courses are conducted by Computing Services Centre (CSC) of the UCSC.

- Computer Aided Drafting Using AutoCAD
- Java Application Development using JavaSE
- Advanced Java Application Development using JavaEE
- Linux Systems and Networking Administration
- Advanced Multimedia Web Design and Development
- Dynamic Web Application Development with PHP & MYSQL

For more details visit the website: <http://www.ucsc.cmb.ac.lk/training>

## RESEARCH GROUPS

UCSC has established following research groups under wide areas of interest.

For more details visit the website: <http://www.ucsc.cmb.ac.lk/research-groups>

- 3D Graphics and Virtual Reality Research Group  
<http://ucsc.lk/node/100#overlay-context=node/82>

- Bioinformatics and Computational Biology (BCB) Research Group  
<http://www.ucsc.cmb.ac.lk/research-groups/bcb>
- Distributed and Parallel Computing Group  
<http://ucsc.lk/node/102#overlay-context=node/82>
- eHealth Group  
<http://ucsc.lk/node/103#overlay-context=node/82>
- e-Learning Research Group  
<http://ucsc.lk/node/104#overlay-context=node/82>
- Game Based Learning Group  
<http://ucsc.lk/node/105#overlay-context=node/82>
- Geographic Information System (GIS) Research Group  
<http://ucsc.lk/node/107#overlay-context=node/82>
- Information Systems Security Group  
<http://ucsc.lk/node/108#overlay-context=node/82>
- Language Technology Research Laboratory  
<http://ucsc.lk/node/109#overlay-context=node/82>
- Modeling & Simulation Group  
<http://www.ucsc.cmb.ac.lk/node/357>
- Networking and Systems Research Group  
<http://www.ucsc.cmb.ac.lk/node/356>
- Social Life Networks (SLN)  
<http://www.ucsc.cmb.ac.lk/research-groups/sln>
- Sustainable Computing Research (ScoRe) Group  
<http://ucsc.lk/node/297#overlay-context=node/80>
- Wireless Ad Hoc Sensor Networks Group  
<http://ucsc.lk/node/298#overlay-context=node/299>

# STAFF OF THE UCSC



## STAFF OF THE UCSC

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## **APPENDIX A: FORMS OF RAGGING AND THE PUNISHMENTS**

### **Forms of ragging:**

- Any person who whilst committing ragging causes sexual harassment or grievous hurt to any student or a member of staff.
- Any person who within or outside an educational institution threatens verbally or in writing to cause injury to any person, reputation or property of any student or a member of a staff of any higher education institution or to a person, reputation or property some other person in whom the victim is interested with the intention of causing fear in the victim or of compelling the victim to do any other act which the victim is legally not required to do or to omit to do any act which the victim is entitled to do.
- Any person who does any act by which the personal liberty and the freedom of movement of any student or a member of staff of an education institution; or other person within such educational institution or any premises under the management and control of such educational institution, is restrained without lawful justification and for the purpose forcing such student, member of the staff or person to take particular course of action.
- Any person who unlawfully obstructs any student or a member of the staff of an educational institution, in such a manner as to prevent such students or member of staff from proceeding in any direction in which such student or member of staff has right to proceed.
- Any person who unlawfully restrains any student or a member of staff of an education institution in such a manner as to prevent such student or a member of the staff from proceeding beyond certain circumscribing limits.

- Any person who without lawful excuse, occupies by force, any premises of or under the management or control of, an education institution.
- Any person who causes mischief in respect of any property of or under the management or control of an education institution.

**The summarized punishments for ragging described under the Act include:**

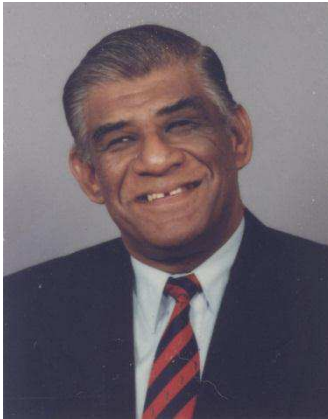
- After the individual is found guilty, the punishment for ragging within or outside of the university premises is two years' rigorous imprisonment.
- In addition, the court can award compensation to the victim.
- Where ragging leads to sexual harassment or grievous hurt, the punishment is increased to ten years' imprisonment and an award of compensation. The latter offence is generally non-liable.
- The punishment for anyone who acts with the intention threatens to cause injury to the person, reputation or property of any student or threatens to cause injury to a person known to the student is rigorous imprisonment for no more than five years.
- Acts of criminal intimidation, wrongful restraint and unlawful confinement committed by any person against any student carry a maximum imprisonment period of seven years.
- Anyone forcefully confining an individual would face the same punishment.
- If any person forcibly occupies any premises of an educational institution, that person is guilty of an offence. Such person

could be imprisoned for no less than ten years and no more than twenty years of imprisonment. In accordance with the Act, a fine can also be imposed.

- In addition, the court can, depending on the gravity of the offence, order the expulsion of a student from an educational institution if that person is found guilty of any of the offences contained in the Act.
- If anyone is charged or is under suspicion of sexual harassment or grievous injuries due to ragging as stated in Section 2(2) in the Act or, if it leads to confinement or restraint of another's freedom of movement, as noted in Section 4, this is a non-bailable offence.
- Other than the punishment codes within this act, those of 1994 No.22 on harassment, extreme and torture or insults add to this.

## **APPENDIX B: APPRECIATION OF PROF. V. K. SAMARANAYAKE**

**An appreciation of the founder Director of the UCSC  
Vidya Jyothi Professor V. K. SAMARANAYAKE  
(1939 – 2007)**



Vanniarachchige Kithsiri Samaranyake 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.Samaranyake 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. Samaranyake 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 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- He was appointed as Chairman of the Computer and Information Technology Council of Sri Lanka (CINTEC), which he served for 12 years. 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). Through his great foresight, to date, Sri Lanka has been able to secure 3 Gold, 5 Silver and 13 Bronze medals at successive IOI's with a record of never returning without a medal since 1994

- 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 organizing the IT industry at large by forming associations for Computer Training Organizations (ACTOS), for the Software Industry (SLASI), and for the Computer Vendors (SLCVA). With foresight he also created the umbrella organization for these associations in the form of the Federation of IT Industry Associations (FITIA) which recently hosted the largest ICT event in Sri Lanka – the ASOCIO ICT Summit. He has also been involved with the well known ICT Trade Exhibition organization, INFOTEL whose Chairmanship he has held from 1997. INFOTEL has in turn been the major funding organization for many industry and human resource development efforts in the field of ICT.
- In 1984 he had his first major breakthrough with the full backing of the then Chancellor, Dr. P. R. Anthonis and Vice Chancellor Prof. Stanley Wijesundera in the form of a substantial JICA grant from the Government of Japan. Almost simultaneously, the UNDP provided some much needed research funding to build up Academic Faculty in Computer Science at the University of Colombo. Starting with the Statistical Unit and 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 which provides an ultimately scalable mechanism for affordable ICT education in a way that incorporates the private sector – a feat no other degree programme has been designed to do. 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 in an era where commercialism is threatening the quality of education.

- Prof. Samaranayake’s involvement in the scientific community has been no less impressive with the Sri Lanka Association for the Advancement of Science (SLAAS) electing him to the office of General President in 1994 and the National Academy of Sciences of Sri Lanka electing him as a Fellow of the Academy, its Vice President and finally its President for 1998-99.
- His quest for capacity building in ICT human resources can most clearly be seen in his single handed contribution in 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 also involves huge risks – that of aiding in the brain drain. This is where Prof. Samaranayake’s broadness of vision and almost unreasonable trust, especially in the case of training Faculty in the University, is most clearly seen. Commencing with the meager funding resources extended by donors in the 1970’s in 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's characteristic skill at excelling in multiple tasks simultaneously is also demonstrated by his continuing involvement in research, being named a Fellow of the Kennedy School of Government at Harvard University, USA in 2001, Research Fellow at the National Centre for Digital Government at Harvard University, USA in 2003 and the impending appointment as Visiting Fellow in the Digital Vision Programme at Stanford University, USA in 2005. A particularly high point of this role was when he simultaneously chaired two International Conferences while playing a key role in the whole of the Government declared Information Technology Week in December 2004. He also continued as Chairman of the International Information Technology Conference till his untimely demise.

## **APPENDIX C: MILESTONES in the pioneering efforts in Computing of the University of Colombo**

- 1967** Teaching in Computing began at then University of Ceylon, Colombo
- 1968** Establishment of the Statistical Unit
- 1974** Establishment of the Statistical Consultancy and Data Processing Service
- 1980** Establishment of Computer Centre
- 1985** Establishment of the Department of Statistics and Computer Science (DSCS)
- 1986** Introduction of the first ever Postgraduate Degree in Computing in Sri Lanka
- 1987** Establishment of the Institute of Computer Technology (ICT) (Supported by JICA)
- 1989** Introduction of the first ever M.Sc. Degree in Computer Science (Supported by UNDP)
- 1989** Occupation of the Computer Science Building Complex
- 1992** Commencement of Third Country Training Programs (TCTP) (Supported by JICA)
- 1997** Director ICT Presented with JICA President's Award for International Co-orporation
- 1998** Commencement of Graduate Training Programme
- 1999** ICT Presented with JICA President's award
- 2000** Introduction of the Bachelor of information Technology (BIT) External Degree
- 2001** Commissioning of Campus Wide Fiber Network (Supported by Sida)
- 2001** Establishment of the Department of Computer Science (DCS) by splitting DSCS
- 2002** Establishment of the Advanced Media Technology Centre (ADMTC) (Supported by JICA)

- 2002** Establishment of the UCSC by merging the ICT & DCS
- 2002** Commencement of Advanced M.Sc. (Research based) and Master of Information Technology
- 2002** Implementation of Virtual Learning Environment for BIT (External Degree) using Software System called The Education
- 2004** Introduction of the ICT degree programme for students following any of the streams at GCE A/L
- 2004** Implementation of Virtual Learning Environment for Internal Undergraduates using Moodle
- 2005** Implementation of Virtual Learning Environment for all UCSC Students
- 2010** Commencement of Master of Science in Information Security Degree Programme
- 2011** Establishment of the Center for Digital Forensic
- 2012** Commencement of Masters in Bioinformatics jointly with IBMBB
- 2012** Software Engineering Specialization was added to the Computer Science Degree Programme
- 2012** Changing the name of BICT Degree Programme in to Information System after the Curriculum Revision of BICT.
- 2013** Started Student Exchange Programme with Umea University, Sweden

