

Undergraduate Guidebook



2017-2018



Faculty of Natural Sciences
The Open University of Sri Lanka



The Open University of Sri Lanka

Faculty of Natural Sciences

Undergraduate Guidebook 2017 - 2018

Phone: 011-2822738, 011-2881258 (Dean/Natural Sciences)

011-2881634 (Dept. of Botany)

011-2881450 (Dept. of Chemistry)

011-2881225 (Dept. Computer Science)

011-2881309 (Dept. of Mathematics)

011-2881459 (Dept. of Physics)

011-2881488 (Dept. of Zoology)

011-2881000 (University-hunting line)

Fax: 011-2436858 (University)

011-2822738 (Faculty)

011-2853930 (RES)

011-2856203 (RES)

E mail: deannsc@ou.ac.lk

Web: www.ou.ac.lk/science

Postal Address: P.O. Box 21, Nawala, Nugegoda

Programmes / Courses of Study Offered By the Faculty of Natural Sciences, OUSL

Programmes/Courses described in this Handbook

Bachelor of Science Degree

Bachelor of Science Special Degree

Diploma in Science

Other Programmes/Courses

M.Sc. in Environmental Sciences (Inter - faculty Programme)

M.Sc. in Medical Entomology and Applied Parasitology

Bachelor of Education (Natural Sciences) (Faculty of Education)

Diploma in Microbiology (Blended Online Programme)

Diploma in Environmental Science

Diploma in Natural Resources and Ecotourism

Diploma in Laboratory Technology

Certificate in Laboratory Technology

Certificate in Wildlife Conservation & Management

Stand Alone Courses in Science

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Faculty of Natural Sciences

Mission

**To be innovative in teaching-learning and research
demonstrating leadership in open & distance learning in the fields of Science,
with a commitment to achieve national goals**

Objectives

To develop motivated personnel successful in their academic, career & life-long learning goals

To offer quality programmes informed by current needs and demands

To support the community and the nation through partnerships and public service

To promote research, scholarship and enterprise activities

To increase the outreach of the sciences via open access & distance education



Message from the Dean

Welcome to the Faculty of Natural Sciences.

Prof. L. K. Senaratna
Dean/Faculty of Natural Sciences

Selecting a university and programme of study to suit your requirements is an important decision you make in life. This message intends to help you take the right decision for a bright future in the field of science.

The Faculty of Natural Science has over 30 years of experience delivering a wide range of quality distance learning programmes in a variety of disciplines in the sciences, as part of a qualification or on a stand-alone basis. Whether you want to develop your career path or study for your own personal fulfillment, you can choose from an assortment of programmes at both undergraduate and postgraduate levels, ranging from certificates to diplomas to degrees.

The degrees awarded by the OUSL are given the same recognition as those awarded to students studying face-to-face at other Sri Lankan national universities. The courses on offer are suited to all those who wish to obtain up-to-date knowledge, skills and insight into the various disciplines of science to meet the challenges of today's dynamic, complex and competitive environment.

Our programmes are specially designed to suit those with other commitments such as full-time employment, financial obligations and family commitments. Our unique system of open distance learning, developed over the years, gives you the flexibility to engage in your studies at your own place and at your own pace, at an affordable price.

To date, our Faculty has very successfully educated thousands of individuals throughout the country, using multimedia study material packages of print, audio and visual aids, CD ROMs and online material. Our learner support system will guide you and assist you at every stage of your academic career from your very first day of registration up to completion of the programme.

Going to university is a challenge. Being a distance learner can be even more challenging. Do take note that you will need to be self-motivated and learn to work independently to successfully meet the challenges of studying in the distance mode.

Thank you for your interest in our Faculty. Please go through the information to find out more about us.

We are proud to say that many of our past students hold responsible positions today and are making a valuable contribution to the nation through their work in different fields such as research, teaching and administration both in the state and private sector.

Hope you too will find our courses interesting, motivating and useful, and your learning experience rewarding and enjoyable.

On behalf of our Faculty I wish you good luck in all your future endeavors.

Prof. Lilani K. Senaratna
Dean/Faculty of Natural Sciences.

GENERAL INFORMATION

The University and the Faculty

The Open University of Sri Lanka (OUSL) is the premier Open and Distance learning institution in Sri Lanka where students can pursue their studies through Open and Distance Learning (ODL) methodologies.

Established in 1980, under the Universities Act No. 16 of 1978 and OUSL Ordinance No. 1 of 1990, as amended, the OUSL has the same legal and academic status as any other national University in Sri Lanka. According to the Public Administration Circular No. 16/92, dated 13.03.92, issued by the Ministry of Public Administration, Provincial Councils & Home Affairs, the degrees awarded by The Open University of Sri Lanka are equivalent to degrees awarded by any other University under the purview of the University Grants Commission.

Due to the nature of its teaching methodology and infrastructure, The OUSL is able to serve a large student population spread throughout the country. Currently, there are over 30,000 students studying at the OUSL, who are being served by eight Regional Centres and eighteen Study Centres located around the country (Fig. 1). The Central Campus and the Colombo Regional Centre are situated at Nawala. The other eight Regional Centres are situated at Kandy, Matara, Jaffna, Anuradhapura Batticaloa, Kurunegala, Badulla and Ratnapura.

The academic and the administrative Head of the University is the Vice-Chancellor. The Senate of the University, which is chaired by the

Vice-Chancellor, is the highest body that makes decisions regarding academic matters. The University has five Faculties: Natural Sciences, Engineering Technology, Humanities and Social Sciences, Education and Health Sciences.

The Faculty of Natural Sciences consists of six Departments; Botany, Chemistry, Computer Science Mathematics, Physics and Zoology. The Department of Health Science which was under the Faculty of Natural Sciences was upgraded to a new Faculty of Health Science in 2015. The Faculty is administered under the leadership of the Dean of the Faculty; each Department is under a Head and all Departments are collectively responsible for all academic activities of the Faculty. The Faculty Board of Natural Sciences regulates all academic activities in the Faculty, under the guidance of the Senate of the University.

Studying at OUSL

The distance learning methodology adopted by the OUSL may initially appear as a challenging task for you. However, very soon you will learn that it is a rewarding and enjoyable experience. In addition to gaining subject knowledge and skills, you will be developing many other life skills, including self-organization and time management. Regular lectures, a feature of face-to-face teaching at a conventional university, is minimal at the OUSL. Instead, students learn through carefully prepared study material together with other forms of support that facilitate learning.

The Study Package

The Open University adopts a multimedia system for teaching with a strong emphasis on distance study. The study system supports the students through printed course material, audio-visual aids, discussions, day schools, laboratory/field work, industry visits and web-based learning. Continuous assessments and final examinations are also integral parts of the study system.

Printed course material is the central element in the study package. Improving reading skills is therefore essential to be successful as an OUSL student. Where applicable, you will also be provided with other supportive material applicable to a course, such as study guides, practical guides and audio-visual material, etc.

Printed course material are carefully prepared to suit self-study and independent learning. The printed course material provide the student the subject knowledge of the course. They clearly outline the objectives of the course and what the student will be able to achieve by studying the course. Self-assessment questions and activities included in the course material will enable the learners to continuously assess themselves as they proceed. Printed course material are usually provided at the time of registration for a programme/course.

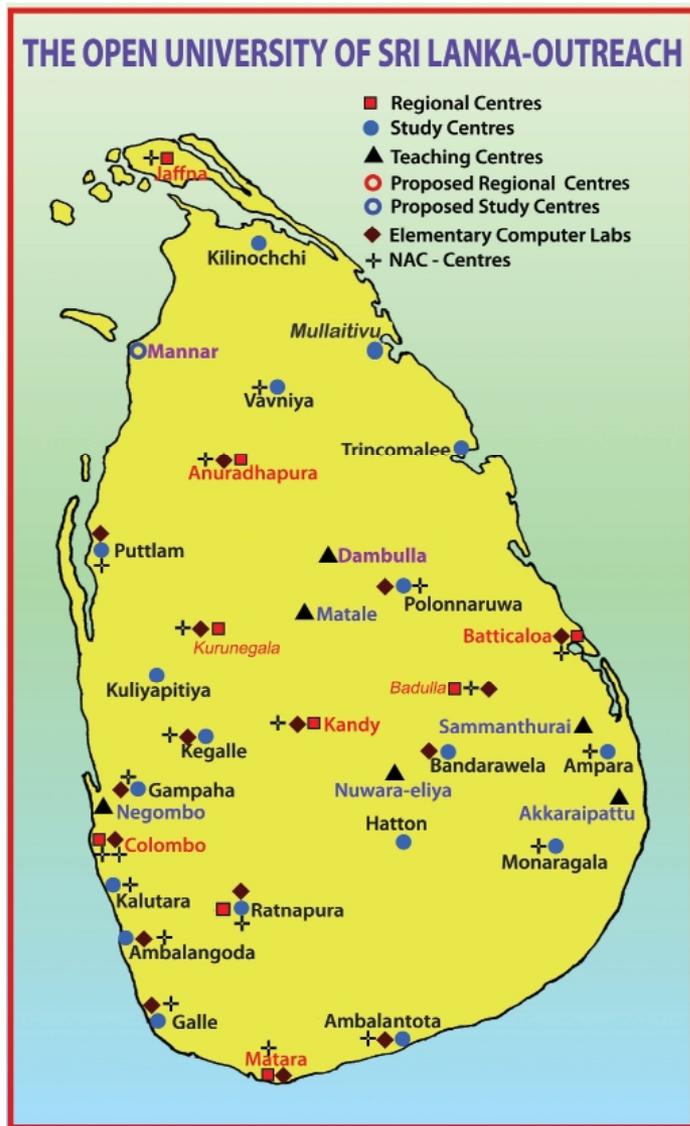


Figure 01

Centre	Code	Address (Telephone)
The Open University Regional Centres (OURC)		
Colombo	WP10	OURC, Nawala, Nugegoda (011-2853930)
Jaffna	NP40	OURC, Browns Road, Kokuvil, Jaffna (021-2223374)
Kandy	CP20	OURC, Polgolla, Kandy (081-2494083 - 081-2494084)
Matara	SP30	OURC, Nupe, Matara (041-2222943)
Anuradhapura	NC50	OURC, Jayanthi Mawatha (Depot Area), Anuradhapura (025-2222871)
Batticaloa	EP60	OURC, 23, New Road, Batticaloa (065-2222264)
Badulla	UP80	OURC, 08, Bandaranayaka Mw, Badulla, (055-2228842)
Kurunegala	NW70	OURC, Negombo Rd, (Nissanka Mw Junction), Malkaduwawa, Kurunegala (037-2223473)
Ratnapura	SG90	Hiddellana, Ratnapura (045-2228660)
The Open University Study Centres (OUSC)		
Ambalangoda	SP31	80/1, Polwatte Road, Halwatura Ambalangoda (091-2258585)
Ambalanthota	SP33	Rajasaranagama Road, Lunama South, Ambalanthota (047-2225533)
Ampara	EP61	Inginiyagala Road, Samapura, Ampara. (063-2222052)
Bandarawela	UP81	St. Thomas Road, Wewatenna, Bandarawela (057-2222820)
Galle	SP32	Labuduwa, Galle (091-2223784)
Gampaha	WP11	Gampaha Road, Miriswatte, Mudungoda. (033-2234571/033-2234572)
Hatton	CP21	Thondaman Vocational Training Centre, Hatton (051-2225139)
Kalutara	WP12	66/2, Nagoda Road, Kalutara (034-2223399)
Kegalle	SG91	Kumaratunge Munidasa Mawatha, Kegalle (035-2222501)
Moneragala	UP82	Technical College Junction, Sirigala, Potuvil Road, Moneragala (055-2277395)
Polonnaruwa	NC51	24 th Mile Post Bendiwewa Jayanthipura, Polonnaruwa (027-2225776)
Puttalam	NW71	1/137, Colombo Road, Puttalam (032-2266822)
Vavuniya	NP41	366, Kandy Road, Thekkawaththai, Vavuniya (024-2222995)
Killinochchi	NP42	155 th Mile Post, Kandy Road, Killinochchi (021-2283970)
Trincomalee	EP62	26/A, Post Office Rd, Trincomalee (026-2222088)
Kuliyapitiya	NW72	Technical College, Kuliyapitiya, (037-2281181, 037-2281271)
Mullaitiv	NP43	Aathiparasakthy Ariviyal College, Ward No. 04, Irranaipalai Veethy, Puthukkudiyiruppu, Mullaithiv.

OUSL Vocabulary

Once you become a student of the OUSL, you need to be familiar with the OUSL terminology. It is important that you understand these terms clearly and be vigilant of these, since most are related to your performance in studies.

A Programme of Study consists of a combination of compulsory and optional courses, which leads to a Certificate, Advanced Certificate, Diploma, Degree or a Postgraduate Degree. For example, the Bachelor of Science Degree Programme is a programme of study which leads to the B.Sc Degree.

A Stand Alone Course is a course which can be considered as a separate entity. These courses can be offered by any person who wishes to upgrade the knowledge in a particular subject area, without registering for a regular programme of study, such as a Degree/Certificate Programme. For example, a person who is interested in learning Natural Products Chemistry can register only for that course, as a stand alone course. Many courses of the Degree Programmes are offered as stand alone courses.

Continuing Education Courses are offered for students registered for regular programmes of study who wish to widen their knowledge in areas of their choice. These include support courses, such as Mathematics, English, Computer literacy and Motivation and Study habits. A student can offer a limited number of continuing education courses, over and above the maximum workload allowed during an academic year.

Foundation Courses in OUSL

are offered to those who lack academic qualifications equivalent to that of G.C.E (A/Levels). Thus, these are particularly suited for students who lack direct entry requirements for the Degree Programme.

Credit Rating

Programmes as well as courses carry a credit rating. The 'credit rating' is the expression used in the OUSL to denote the "academic value" of a course/programme. Please note that the word 'credit' does NOT imply any measure of academic performance at an examination such as a Credit pass at GCE Ordinary/Advanced Level Examination. The credit rating gives a measure of the time expected to be spent on studying the course. At the OUSL, one credit is about 50 notional hours of study time. The time specified for a course takes into account all aspects of work involved, including reading and understanding course material, face-to-face- sessions, continuous assessments, final examinations, consultation of reference material and practical classes.

Based on the SLQF recommendation, from 2017/2018 the credit rating of a Certificate will be 15 credits, a Diploma 30 credits and Undergraduate degrees 90 credits and 120 credits depending on the three or four year programme.

The credit rating of courses also vary (Table 1). The minimum credit rating of courses presently offered by the Faculty of Natural Sciences is 3. Average total time expected to be spent on a 3

credit course is around 150 hours. In actual study time, this would mean a student is expected to spend 6 hrs per week on average, for a 3 credit course that is offered during one semester (24 weeks).

Table 1: Credit rating

Credit rating	2	3	5	6	9	15	30
Average study hours	100	150	250	300	450	750	1500

The maximum workload a student may undertake in an academic year is 30 credits. A student may register for a maximum of two programmes in the Open University (one credit is considered equivalent to 50 notional Learning hours). However, the maximum workload undertaken between both programmes should be 30 credits. This corresponds approximately to the workload undertaken in an academic year by a full-time student in a conventional University. Many students, who are either employed or with other commitments find it difficult to spend this much of time for their studies and handle this full workload. Students are therefore **strongly advised not to register for more than 24 credits** especially in their first year of study.

Course Code

Each course offered by the Faculty is assigned a course code. This code includes certain components of identification that uniquely identifies the course. The particular subject area/discipline is one component of identification used when assigning course codes. The specific letters assigned to the different areas/disciplines of study are shown in Figure 2.

The course code also informs the programme of study for which the course is offered and the level of study at which it is offered. Courses for undergraduate degrees are offered at Levels 3 to 6, whilst Courses in Foundation are offered at Level 1 & 2. In assigning course codes, the **Programme of study** is identified by a letter and the **level of study** is identified by a digit. For instance, undergraduate courses are identified by the letter **U** and Foundation courses are identified by the letter **F** (Table 2).

Applied Mathematics	AD	Pure Mathematics	PE	Management Studies	MS
Botany	BY	Zoology	ZY	Social Science	DS
Chemistry	CY	Faculty Courses	FN	Language Studies	LE
Computer Science	CS	Legal Studies	LL		
Physics	PH				

Figure 2. Area/Discipline of study

Incorporating all of the above components, each course is assigned a course code consisting of 7 alphanumeric characters. The first three letters indicate the area of discipline and the programme of study. The first digit reflects the level of study, the second digit multiplied by 3 will give the credit rating. The last two digits give a unique serial number for the course. An example of a course code is shown in Figure 3.

Table 2: Programmes/Levels of study

Level	Programme of study					
	Foundation	Certificate	Diploma	Undergraduate	Postgraduate	Stand Alone/ Continuing Education
1	F1	C1				E1
2	F2	C2				E2
3			D3	U3		E3
4			D4	U4		E4
5				U5		E5
6				U6		E6
7					P7	E7
8					P8	E8

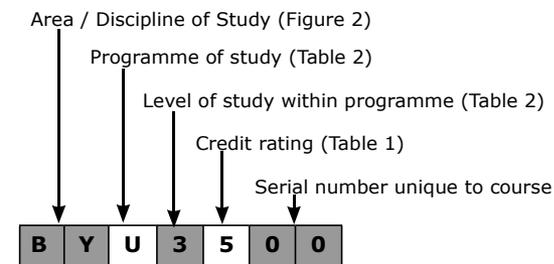


Figure 3. An example of a course code

Deciding on the Workload

In an academic year, students of a regular programme of study may register for courses with a total credit value within a minimum of 8 credits and a maximum of 30 credits.

Students may register simultaneously for up to 2 programmes of study, except for Foundation courses subject to the permitted maximum of 30 credits in total per academic year.

In addition, students may register for continuing education courses up to 8 credits. Students registering for stand alone courses may register for up to 15 credits of courses per academic year.

Students registering for courses with an academic value adding up to 30 credits are reminded that they will have to devote on the average a minimum of 30 hours of study per week for 30 weeks in an academic year. Most students, even if they are unemployed, are unable to devote this amount of time. Registering for a workload that is difficult to cope, will adversely affect the academic performance. Therefore, **students are very strongly advised to initially register for courses with a total academic value not exceeding 24 credits**. Those registering for courses adding up to less than 30 credits may devote a pro rata minimum number of hours of study.

Planning and Allocating Time for Studies

The Faculty of Natural Sciences offers courses according to a semester system. Each academic year is divided into two semesters. Activities for many courses are scheduled to fit one semester. However, activities for a few courses are spread through both semesters. Students are expected to carefully plan the studies paying special atten-

tion to the workload and the semester in which the courses are offered.

At registration, students are provided with the activity schedules relevant to the courses they register for. These indicate the dates and times of activities such as day schools, assessment tests, tutorial classes, workshops and practical classes, that the University has planned for each course. It is the responsibility of the student to draw up a suitable time plan to prepare for these activities.

The students are also advised to pay attention to the medium of instruction of the course. Many courses are offered in the English medium only. Thus, it is very important that you pay a keen interest on improving your English knowledge. To prepare the student for this challenge the University offers supportive English courses for which the students are strongly advised to register at the first instance.

Selection of Courses

Subject to the specified prerequisites being fulfilled, a student could simultaneously register for courses at different levels. In the Faculty of Natural Sciences, a student cannot however register for courses in the degree programme (at Levels 3, 4, 5 & 6) simultaneously with courses offered in Foundation.

In most of the programmes offered by the Faculty, there are courses, such as English, Mathematics and ICT skills of which a certain level of competency is required before proceeding to a higher level. Students are strongly advised to offer such prerequisite courses in the first instance.

Support for Learning

Realising the necessity to give a helping hand to students who have entered a new learning environment, the Faculty provides support to the students in a variety of ways.

Personal Tutors

Each student is assigned a personal tutor/counsellor during the pre-registration orientation sessions of some programmes. The Personal Tutor will guide the students and provide greater awareness about the University, the study system and other particulars regarding the programme of study. This facility is available throughout the study period of the student and all students are advised to make best use of this service. Students are also reminded that it is mandatory to get the registration form certified by the Personal Tutor before coming for registration.

The common induction programme StART@ OUSL (Student Academic Readiness Training @ OUSL) has been offered since the academic year 2014/2015 for OUSL students. It consists of three compulsory courses ; English for Academic Purposes (EGAP), Empowering for Independent Learning (EfIL), ICT skills and optional courses to be selected from Soft Skills & Social Harmony second National Language.

EfIL gives an opportunity for the students to become familiar with the practices of OUSL and network among them. The activities in induction are designed to bring out the inner potential of students and motivate them for study.

Motivation and Study Habits courses (PASS)

Over the past years, the Faculty has identified that a large number of students need additional support to study in the distance mode. Motivation and study habits courses are offered with the intention of bridging this gap. In each of these courses there is a series of interactive student help sessions in course material of an associated Level 3 discipline-based course.

Interactive help sessions are conducted approximately every two weeks throughout the 1st and 2nd semesters using peer-assisted learning techniques. These sessions provide an opportunity for the students in developing sound study habits, which are essential to succeed at the OUSL. Also they help sustain the motivation of students throughout the academic year and promote life long learning.

Sufficient induction workshops and student help sessions are conducted in most of the regional centres in parallel so that all students get a chance to attend them. More information will be made available to you at the orientation session.

Students are strongly advised to follow the PASS session attentively.

Day Schools

Day schools are interactive sessions where the student will get the opportunity to meet the respective course teachers to clarify any difficulty they come across in their study material. Attendance at day schools is not compulsory. However, attending a day school well-prepared will immensely help students perform well in the course. Day schools are held at almost all Re-

gional Centres and the students have the option of attending a day school held at a centre of their choice.

Laboratory work/Field work/Projects

Practical work is an integral part of many courses and attendance is compulsory. These sessions are designed to transfer practical skills, experimental methodology, planning, interpretation of data as well as other generic skills. They may take the form of laboratory sessions, mini projects, or industrial/field based experiences.



Laboratory facilities are available at Colombo, Kandy and Matara, Jaffna, Anuradhapura Regional centres. Several practical groups are conducted for courses with practical components and students can select the group they want to attend. Practical guides and tutor support are provided at practical sessions. These sessions reinforce and extend theoretical knowledge, give students hands on experience, and expose them to natural and field situations.

Online Support

In order to give the students additional help and also to familiarise them with modern learning trends and tools, some courses are supplemented with an online component. The online activities could be accessed from home or from the OUSL Computer Centres located at centers specified in Appendix 2 (page 87). Once you register

for a course with an online component, you will be further advised on how to access and use it.

MyOUSL

Through the MyOUSL web portal students may access online moodle courses, personal details, timetables, payment details and submit final examination applications etc. To access MyOUSL, use the link from the OUSL homepage at: **http://www.ou.ac.lk/** OR type: **http://my-ousl.ou.ac.lk/**

User name:[Student ID Number]; Password: [National Identity Number]

Student ID number is given on the Personal Information page of the Record Book. Note this is different from the Registration number).

Library

The OUSL operates a network of libraries comprising the main library at Central Campus and



Regional Centre libraries located at other Regional Centres. In addition, there are small libraries in each of the

Study Centres. The main library is open for students from 8.30 am to 6.30 pm every day including week-ends except on Poya days and University holidays. The Regional Centre libraries are open during working hours everyday, except on Sundays and Mondays.

The main library is well equipped with a substantial collection of books in a wide variety of subjects and many foreign and local journals. The main library also operates a fully equipped Audio Visual Resource Centre (AVRC) with a substantial collection of videos/audios/CDs to supplement print material. The AVRC provides internet facilities for study purposes of students.

In-house photocopying facilities are also available at very nominal rates for the convenience of all library users. The facility of getting inter-library loans of books, journals and video films is also available. The library has copies of past examination papers, which are also available on the University web site. Students are advised to read the library information sheets available at all libraries for more details on the facilities provided and how to make use of them.

Students are also advised to use the libraries carefully.

Regional Educational Services

The University has a network of Regional Centres/Study Centres distributed throughout Sri Lanka (Fig.1). These centres provide facilities for distribution of course material, limited reference facilities at libraries, counselling, day schools and laboratory classes in the science disciplines and face to face teaching.

Computer facilities through elementary computer laboratories are also provided at the regional and study centres at Colombo, Kandy, Matara, Jaffna, Ambalangoda, Anuradhapura, Bandawela, Batticaloa, Kegalle, Kurunegala, Polonnaruwa, Badulla and Ratnapura centres. Limited internet facilities are available at Colombo, Kandy and Matara Regional Centres.

Financial Assistance - Scholarships and Bursaries

The OUSL provides a limited number of bursaries administered by the University and Mahapola Scholarships administered under the Mahapola Trust.

Both the Bursaries and Scholarships are offered under two schemes - merit and need. The main criterion for a merit scholarship is the overall student performance at Final Examinations. Guidelines for the Bursaries and Mahapola Scholarships and further information are available with the Assistant Registrar of the Faculty. Application forms will be available at the Re-registration counters at all Regional Centres or can also be downloaded from www.ou.ac.lk/science. The closing date of applications will be announced in due course.

In addition, University Enhancement Bursaries will be awarded to students who complete the course in the same year of registration.

University Enhancement Bursary

(Effective from Academic Year 2014/2015)

University Enhancement Bursaries are awarded by The Open University of Sri Lanka to motivate the degree level students to complete the courses they have offered in a particular year and complete their degrees at a reasonably shorter period of time. The amount of the scholarship varies based on the number of times the students is successful in meeting the bursary criteria. A student may be awarded a University Enhancement Bursary for a maximum of three times in his/her entire study period. A student who has been awarded either a Mahapola Scholarship or the University Bursary maybe also be entitled for the University Enhancement Bursary.

Eligibility Criteria for Award of University Enhancement Bursary

a) A student is eligible for the award of the University Enhancement Bursary if s/he has

registered for a minimum of 21 credits of courses in the first year of registration at the OUSL and successfully complete all the credits s/he registered for in the same academic year. However, if a student chooses to register for courses more than 21 credits, s/he shall be required to complete even the additional credits they have registered for to become eligible for the bursary.

- b) In the subsequent year/s student shall be required to register for a minimum of 30 credits of courses at the OUSL and successfully complete all the credits s/he registered for in the same academic year. However, if a student chooses to register for credits more than 30 credits, s/he shall be required to complete even the additional credits they have registered for to become eligible for the bursary.
- c) A student who fulfils the requirements given in (a) or (b) for the first time will be eligible for an award of a bursary equivalent to 10% of the tuition fee in the next academic year.
- d) Similarly a student who fulfils the requirements given in (a) or (b) for the second time will be eligible for an award of a bursary equivalent to 20% of the tuition fee in the next academic year.
- e) Likewise a student who fulfils the requirements given in (a) or (b) for the third time will be eligible for an award of a bursary equivalent to 30% of the tuition fee in the next academic year.
- f) The bursary amounts awarded to the students as per (c), (d) and (e) above, would be set aside from the tuition fee for the next academic year.

Duty Leave for Government School Teachers

School teachers following the BSc programme are entitled for 20 days of duty leave per year. Please refer to the Circular No 26/2013 issued by the Ministry of Education (www.moe.gov.lk)

Administrative Divisions Providing Support

Student Affairs Division

The Student Affairs Division located in the administrative building of the Nawala Central Campus is responsible for maintaining all personal and academic records of The Open University students. In case of loss of record books and change of addresses, students should immediately inform the Student Affairs Division. To drop courses in the permitted drop period or obtain studentship, students should contact the Student Affairs Division.

Students should also contact the Student Affairs Division for other matters pertaining to registration of students, such as changes to the medium of study, study centre and civil status. The contact details are: Senior Assistant Registrar (SAR), Student Affairs Division, The Open University of Sri Lanka, P.O. Box 21, Nawala, Nugegoda. Telephone: 011- 2823920/011-2881205.

Examinations Division

Any query regarding examinations should be forwarded to the SAR/ Examinations. When applying for examinations, you have to submit the duly completed application form to the SAR/Examinations. After processing your applications, the Examinations Division will send you relevant online admission forms for sitting examinations prior to the commencement of the final examinations. Students may also request for results sheets and certificates from the Examinations Division by paying a nominal fee. The contact number of the Examinations Division is 011- 2881203 or 011-2881350.

Finance Division

The Finance Division is the administrative branch dealing with student fees. Any queries related to course fees should be forwarded to the Finance Division. The Colombo Regional Centre has a Shroff Counter that is open from 9.00 a.m to 3.00 p.m on week days with a half an hour break from 12.00 noon to 12.30 p.m. Payments for certificates and results sheets can be made at the Shroff Counter.

Other Forms of Student Support and Welfare

Student Counselling

General counselling on non academic student matters is available to all students through the Chief Student Counsellor and six Faculty Student Counsellors. All Students are advised to meet the Faculty Student Counsellors in the first instance.

Faculty Student Counsellors:	
Dr. D. Weerahewa Senior Lecturer Dept. of Botany Tele: 2881634	Dr. J. V. P. Fernando Senior Lecturer Dept. of Physics Telephone: 2881367
Dr. S. R. Hettiarachchi Senior Lecturer Matara Regional Centre Tele: 041 2222943	Dr. R.M.R.P. Ratnayake Senior Lecturer Kandy Regional Centre Tele : 081 2499370
Dr. C. Ranasinghe Senior Lecturer Dept. of Chemistry Tele: 2881444	Dr. W.C.W. Navaratna Senior Lecturer Dept. Mathematics Tele: 2881019
Dr. N.N. Punchihewa Senior Lecturer Dept. of Zoology Tele: 2881446/448	Ms. I.D.I.D Ariyasinghe\ Senior Lecturer Dept. Computer Science Tele: 2881098

Temporary Residential Facilities (TRF)

The University provides temporary residential facilities for a limited number of students for a limited period at Colombo, Kandy and Matara Regional Centres for attending academic activities. The application form to request for this facility needs to be collected from the Senior Assistant Registrar/General Adiministraioin or from the reception desk at the residential facility. The duly completed application form certified by the relevant academic staff member should be submitted and approved prior to using this facility.

Medical Centre

A medical centre is available at the Colombo Regional Centre for the benefit of all staff and students. This centre is located close to the Pre School and is normally open on weekdays except on University holidays and public holidays.

Canteens

Meals and other refreshments can be purchased from the University canteens at reasonable prices. Canteens are available at Nawala both in the Central Campus (near the Administration Block) and the Colombo Regional Centre (next to Block 15). Canteens are also available at the Kandy and Matara Regional Centres. The canteens provide service on all weekdays and weekends except on University holidays.

Facilities for Payment of Vouchers

Payment facilities are available to students at the Shroff Counter in the new CRC Building (adjoining the registration area). You may also make the payments at any Peoples' Bank (the closest branch is at the Nawala Junction).

World University Service (WUS) Book Shop

The OUSL Branch of the WUS runs a small bookshop at Block 9. Students can purchase stationery and other consumable items at reasonable prices from the book shop. Safety Goggles, which is a requirement to work in the Chemistry Laboratory, can also be purchased from the book shop.

Photocopying Facilities

Photocopying facilities are available at the library, Student Union Room and at Natural Sciences Alumni Association photocopy centre at reasonable rates.

Career Guidance Unit

This Unit is located in the new CRC Building at Nawala and conducts activities to help OUSL students and graduates to enhance their career development skills and to optimize employment opportunities available to them.

Co-curricular Activities

Societies/Associations in the Faculty organize many social, cultural, religious and educational activities/functions that students can take part in. Societies such as the Buckyball Society, Bot-

Soc, Spectrum and Zoonet regularly organize guest lectures and other co-curricular activities, to broaden the knowledge and skills of the students.

Faculty Alumni Association

All students of the Faculty are eligible to become members of the Alumni Association after they graduate. It organises activities to promote fellowship among members whilst supporting past and present students and encouraging general interest and well-being of the Faculty/University.

Student Welfare Division

The Student Welfare Division is responsible for coordination and facilitation of activities coming under different units such as student counseling, career guidance, health care, maintenance division and security allowing better networking and efficiency. Some of the specific functions coming under the Student Welfare Division are as follows.

- Selection and approval of students for University, Mahapola and other bursaries
- Review, monitor and evaluate progress of activities carried out by support service units
- Initiate activities to enhance student welfare and cultural renaissance
- Initiate activities to enhance students' social, ethnic cohesion and harmony.
- Create awareness about university student charter and promote students to comply with norms
- Entertain complaints and grievances from students
- Facilitate the management of temporary residential facility

- Coordinate student counseling services
- Facilitate management of common amenities

The Student Welfare Division of The Open University is dedicated to foster an environment where all students feel welcome and respected.

Admission and Registration

Students selected for admission to the different programmes of study offered by the Faculty are notified and will be required to register themselves on a specified date. The first time you register for a programme at the OUSL, you are referred to as a **new registrant**. When you register for courses in the subsequent years, you are called a **re-registrant**.

If a student does not renew his/her registration for 5 consecutive years, the registration to the programme will lapse.

Open Days and Orientation Sessions

To help familiarise new and potential students with the OUSL and its programmes, the Faculty organizes open days, pre-registration and post-registration orientation sessions for some programmes. Prior to registration, students are also sent a package that contains useful information regarding registration for courses. You are strongly advised to carefully read all the information given in this package.

Registering for Courses

Registration and re-registration of students for the B.Sc. degree programme are conducted at all Regional Centres except at Badulla, Kurunegala and Ratnapura. Counsellors are available to advise and help students during the registration process.

Studentship Only

A re-registering student can decide not to offer any courses in a given year. However, in this case it is mandatory that you register under the category of studentship only. Studentship should be obtained within 5 months of the end of the registration period. Beyond this, renewal of registration is permitted only during a registration period, with a financial penalty. It is also important to note that if a student does not renew the studentship for five consecutive years, registration to the programme will lapse.

A student who has obtained studentship will be called for registration for the subsequent academic year. He/She will also be able to sit examinations in courses he/she has obtained eligibility, if any, in previous years.

New students cannot register in the "studentship only" category. If they are not offering any courses in their first year, they are required to apply again as new students in the following year.

Making Changes to Registered Courses

Students who registered for the B.Sc. Degree programme, and wish to change courses are permitted to do so within a specified period known as the 'add/drop period' and the 'drop only period'.

Changes during Add/Drop Period

You are permitted to add or drop courses on the dates assigned for this purpose by completing a form that can be collected from the Assistant Registrar of the Faculty. If you drop courses you had registered for, the relevant course fee will be credited to your account. In making changes to registered courses, the total 30 credit maximum or the 8 credit minimum limit per academic year need to be maintained.

When dropping courses during add/drop period, the course material issued to you should be returned to the Book Centre.

Changes during drop period

After the add/drop period, you are **not permitted to add courses**. However, during the drop period, which runs beyond the add/drop period, you are permitted to drop courses. In this case, the course fee will not be refunded or carried over to the next academic year. It is very important to note that **students who do not sit for continuous assessments/participate in other compulsory academic activities after the drop period will be considered as repeat students for that course**.

Getting Exemptions for Courses

Students may request for specific exemptions from a course based on relevant qualifications they already possess. Applications for claiming such exemptions can be collected from the Assistant Registrar of the Faculty. Duly completed application forms together with proof for such qualifications and relevant course descriptions should be forwarded to the Dean of the Faculty. The Faculty Exemption Committee will assess the qualifications and inform the student if exemptions could be granted. It is the responsibility of the student to claim such exemptions granted at a subsequent registration.

It is important to note that the **marks assigned for a course with an exemption is equivalent to that of a minimum pass grade and a GPV of 2.00**. An exemption processing fee will be charged for each exemption claimed.

Assessment and Evaluation

Evaluation in the **Motivation and Study Habits** courses is based on the attendance for its activities. The final evaluation is reported as pass or fail. What appears below applies to all the other courses.

Continuous Assessments Tests

A student's progress in each course is assessed continuously by means of assignments and/or assessment tests and/or practical tests. The assessment tests could be conventional No Book Tests (NBT) or Open Book Tests (OBT). An Overall continuous Assessment mark termed as **OCAM**, is computed based on marks of assignments/assessment tests/practical tests.

OCAM requirement obtained is valid only for a limited period. After the lapse of this period, you will not have the opportunity to sit the final examination to upgrade RX/C⁻/D⁺/D/E grades. If you need to upgrade such grades, you will be required to re-register for the course once again.

For all students newly enrolling for programmes in and after academic year 2017/18 and for students who enrolled for the B.Sc. programme in and after 2009/10, **OCAM** requirement obtained for courses will be valid for two consecutive years (including the year in which **OCAM** is obtained).

Final Examinations

The Faculty operates a two semester system for its courses in most programmes. The final examination of each course is held at the end of the relevant semester.

Sitting for Final Examination

Students are strongly advised to take into notice that the **OCAM** requirement for a course can be carried forward only up to a limited period of time from the year of obtaining **OCAM**. **Students are therefore strongly advised not to postpone sitting final examinations unless due to unavoidable reasons.**

Students may postpone sitting final examinations under unavoidable circumstances. Medical or other letters/certificates are not requested from students who postpone examinations in this manner. However, the Faculty has observed over the years that the students who postpone sitting the final examinations do not perform well.

Application to sit for the final examinations through MyOUSL

Each semester, students are required to inform the SAR/Exams about the courses they intend to sit final examinations by submitting the duly completed application form for final examinations, online application is a must and student to print their admission card without this student may be denied admission into exam hall. **online through MyOUSL**. prior to the commencing date of the examination period. **It is your responsibility to inquire from the Asst. Registrar/N.Sc. www.ou.ac.lk/science if you do not receive information in time.**

Repeat Students

Any student failing to obtain a valid OCAM for final examination for any particular course will have to re-register for that course in a subsequent year by re-paying the tuition fee. Such a student will be considered as a repeat student for that course. Repeat students will not be eligible

for a grade higher than a minimum pass grade and a GPV of 2.00 for the repeat course.

Students are strongly advised not to register for too many courses which they cannot cope up with and thereby run the risk of becoming repeat students in a subsequent year.

Resit Candidates

Students who have valid OCAM but fail to obtain at least a minimum pass mark at the final examination will be considered as resit candidates. Resit candidates need not re-register for that particular course at the subsequent registration, provided the student is writing the examination before the end of the valid period of OCAM. However, like repeat students, resit students are not given a grade higher than a minimum pass grade at the subsequent attempts of the final examination. Resit candidates are not required to repay any course fee but will have to pay the resit examination fee.

Finance

Fee structure

The fees indicated below are applicable to any student registering for a programme in the Faculty of Natural Sciences.

Registration Fee:	Rs. 400.00
Sports Club Fee:	Rs. 25.00
Facilities Fees:	Rs. 1500.00
Library facilities Fee:	Rs. 100.00
Refundable Lab deposit	Rs. 1100.00
Tuition Fee	Rs. 1900.00 per credit
StART@OUSL Fee	Rs. 7500.00

Vouchers for Payment of Fees

Fees are payable in two instalments. Each student will initially receive a voucher for the first instalment that includes 60% of the Tuition fees. After payment, the University copy of the voucher should be handed over at registration/ re-registration. The voucher for the second instalment that corresponds to the balance of the fees payable after making adjustments for the fees already paid will be sent to you about four months after the registration. After you make this payment, the university copy should be forwarded to the SAR/ Student Affairs without delay. You will need to pay the voucher for the second instalment to receive the second semester course material.

The student copies of the vouchers are for your records. Students should not make any changes to the printed vouchers. Contact the Bursar (011-2881208), if you have any queries.

Awards, Prizes and Scholarships

Outstanding academic achievements of students are well recognized by the Faculty by offering them a number of Awards, Prizes and Scholarships. Some of these are funded by trust funds established by individuals whereas the others are donated either by the Faculty or the various societies in different Departments.

Awards Presented at the Annual Convocation

D. B. Ellepola Gold Medal for Science

This is awarded to the student having the best performance based on all courses considered for

the award of the BSc Degree. It is funded by a trust fund with an original donation from Mr. Chandana Ellepola in memory of his father.

To qualify for the Medal, a student should have:

- satisfied the criteria for the award of the BSc degree, and,
- obtained at least a First Class, and,
- obtained the highest GPA.

A student who has been found guilty of any offence related to examination/disciplinary matter shall not be eligible to receive the Gold Medal.

If more than one student qualifies for the Medal, the number of A grades or higher will be considered to select the winner.

Umarani Coomaraswamy Gold Medal for Excellence in Botany

A Gold Medal and a certificate is presented to the student having the best performance in Botany in the B. Sc. Degree programme. Botanical society of OUSL (BotSoc) established this prize in recognition of the services of Prof. Uma Coomaraswamy, Emeritus Professor of Botany.

The criteria to be adopted for the award of the Gold Medal are as follows:

- a) Satisfies the requirements for the award of the B. Sc. Degree obtaining at least a Second Class Upper Division and,
- b) Obtains at least A grades for 24 credits of Botany courses of the B. Sc. Degree Programme out of a total of 35 credits comprising of 8 credits at Level 3, 12 credits at Level 4 and 15 credits at Level 5.
- c) Obtains the highest GPA that should be greater than 3.30 for the Botany courses adding up to a total of 35 credits as mentioned in (b) above.

Note:

- For the students who have offered more than 15 credits of Botany courses at Level 5 as specified above, the best grades adding up to 15 credits shall be considered.
- A student who has been found guilty of any examination offenses or offenses related to any disciplinary matters shall not be eligible for the Gold Medal.
- In the case of more than one student qualifying for the Gold Medal, the student having highest GPA for the B. Sc. Degree shall be considered.

Nalini Ratnasiri Gold Medal for Excellence in Zoology

A Gold Medal and cash award is presented to the student having the best performance in Zoology in the BSc Degree programme. It is funded by an original donation from the ZooNet of OUSL. To qualify for the Gold Medal, a student should have:

- a) satisfied the criteria for the award of the B.Sc. degree, and,
- b) registered and obtained at least B⁺ grades for a total of 35 credits of Zoology courses, including 8 credits at Level 3, 12 credits at Level 4 and 15 credits at Level 5/6, and
- c) minimum A grade for the ZYU5608 - Zoology Project, and,
- d) obtained at least GPA 3.70 for the Zoology courses mentioned in (b) above, and,
- e) obtained the highest GPA in the courses mentioned in (b) above.

J.N.Oleap Fernando Gold Medal for Excellence in Chemistry

The Buckyball Society established this prize in recognition of the service of Prof. J.N.Oleap Fernando, former Professor of Chemistry. It is awarded to the student having the best performance in all Chemistry courses offered by Department of Chemistry with exceptional performance related to Physical Chemistry component related Courses at Level 3, Level 4 and Level 5. The award will carry a Gold medal, a certificate and a cash prize.

The student satisfying the following conditions will be awarded the J. N. Oleap Fernando Gold Medal with effect from 2017/2018 academic year.

- satisfied the criteria for the award of the B.Sc degree and
- obtained at least B⁻ grades in all Chemistry courses offered by the Department of Chemistry at Level 3 and Level 4, and,
- obtained at least B⁻ grades in at least 18 credits of Chemistry courses at Level 5 [including Concepts in Spectroscopy (CYU5301) but excluding Literature Project in Chemistry (CYU5310) and Research Project in Chemistry (CYU5611)], and,
- obtained at least A⁻ in the Basic Principles of Chemistry II (CYU3201) at Level 3 and Concepts in Chemistry (CYU4301) at Level 4, and,
- obtained the highest weighted average mark (of not less than 65%) in the Chemistry courses referred to in (b) and (c) above.
- In the event there are two or more students satisfying the above requirements (a), (b), (c), (d) and (e) then the student with the highest number of A grades in the Chemistry courses referred to in (b) and (c) above will be considered to award the Gold Medal.

In computing the weighted average mark for the students who have followed more than 18 credits of courses at Level 5, then the credits (courses) which carry best of such marks will be considered.

Faculty of Natural Sciences Prizes

The Faculty of Natural Sciences prizes funded by the Faculty Prize Fund (established from donations of teaching staff in the Faculty) are awarded in each of the disciplines in Applied Mathematics, Botany, Chemistry, Physics, Computer Science, Pure Mathematics and Zoology at the B.Sc. final examination to a student who has attained the following:

- satisfied the criteria for the award of the BSc degree, and,
- registered and obtained at least C grades in the relevant discipline at Levels 3, 4 and 5/6 as defined in the schedule below, and,
- obtained at least 3.30 GPA in the defined courses of the relevant discipline and,
- obtained the highest GPA in the defined courses of the relevant discipline.

A student who has been found guilty of any offence related to examination/ disciplinary matter shall not be eligible for a prize.

If more than one student qualifies for a particular prize based on above criteria, the winner will be selected considering the number of A grades or higher amongst defined courses.

Table

Discipline	No. of credits at each Level		
	Level 3	Level 4	Level 5/6
Botany	08	12	12
Chemistry	08	12	15
Computer Sc.*	08	12	15
Pure maths	08	12	15
Applied maths	08	12	15
Physics	08	12	12
Zoology	08	12	15

* including at least a grade A grade for Project in Computer Science.

Notes:

- For students who have offered more than the required course units as specified above, the courses in which the performance is best will be considered.
- Highest mark to be considered for any repeat course/resit examination will be 40% or GPV of 2.00 irrespective of the actual marks obtained by student.

Awards Presented at Faculty Awards Ceremony

Nalini Ratnasiri Scholarship for BSc Degree Students

The scholarship is funded by a donation initially made by Prof. B. Ratnasiri, Professor Emeritus of Zoology. An annual scholarship to the value of Rs. 5000/- is awarded to the student who obtains the highest GPA from among those who satisfy the following criteria:

- a) Sat for final examinations of courses adding up to the required 30 credits at Level 3 within a maximum of 03 academic years from first registration, and have registered up to at least 08 credits in the academic year of computation,
- b) No E grades within courses considered in (a)
- c) Have obtained at least B⁻ grades in courses adding up to 25 credits (excluding LEE3410, CYE3200 and CSE3213) at Level 3 and,
- d) A GPA of at least 3.30 with at least B⁺ grades for a minimum of 12 credits in the courses mentioned in (c)

If two or more students qualify based on the above criteria, the student who has the highest number of better grades will be awarded the scholarship.

The above-amended criteria will be effective from the Academic Year 20017/18.

A recipient of the scholarship in a previous academic year will not be considered again.

Kandiah Memorial Scholarship Award

Funds for this scholarship are donated by Prof. Umarany Coomaraswamy, Professor Emeritus/ Botany, in memory of her parents Mr. & Mrs. K. Kandiah. This scholarship will award cash Rs. 8000/-.

A student will qualify to be considered for the scholarship for a particular academic year* if he/she has the following requirements at the time of selection:

- a. Registration for all courses at Level 3 adding up to a total of thirty (30) credits inclusive of Botany as one of the main disciplines.
- b. Completion of registration for the 12 credits of Botany courses at Level 4.
- c. Minimum of C grades and a Grade Point

Average (GPA) of 2.70 for courses adding up to 24 credits at Level 3 (inclusive of a minimum of B- grade for the Botany courses at Level 3 and exclusive of LEE3410 and CYE3200).

- d. An annual income as specified.**

* Those qualifying for the requirements at an earlier registration will not be eligible for the scholarship.

** The level of income should be less than Rs.200,000.00 per year.

The student who has obtained the highest GPA for (27) credits at Level 3 with less than the stipulated income level will be awarded the scholarship.

If more than one student qualifies in any one academic year, it will be shared equally by all.

Buckyball Award for Excellence in Chemistry

Buckyball Society of the Department of Chemistry makes an annual award to each of the Chemistry courses in Levels 3-5 except for CYU3302, CYU4302, CYU5310 and CYU5611. In each course, it is awarded to the student who has secured the highest GPV and an A grade. Each award will carry a certificate and a cash prize. The award will be given to the following course units with effect from academic year 2017/2018 based on the following criteria.

CYU3300,	CYU3201,	CYE3200,	CYU4300,
CYU4301,	CYU4303,	CYU5300,	CYU5301,
CYU5302,	CYU5303,	CYU5304,	CYU5306,
CYU5307,	CYU5308,	CYU5309,	CYU5312,
CYU5313			

The student/s satisfying the following conditions will be awarded the Buckyball Award for Excellence in Chemistry

- (a) obtained an A grade or above in the relevant course unit in the year of first registration

- (b) in the event of two or more students obtaining A grade or above then the highest overall raw mark (RM) of the relevant course unit will be considered for the award.

- (c) in the event there are two or more students satisfying the above requirements (a) and (b), the award will be shared equally.

C-60 Scholarship for the Best Performance in Chemistry at Level 3 and Level 4

Three scholarships will be awarded by the Buckyball Society of the Department of Chemistry based on the performance in all Chemistry courses available at Levels 3 and 4. A student who is a supplicant for the Degree in the year of receiving the scholarship is not eligible for the consideration. Each scholarship will carry a certificate and a cash award.

The student/s satisfying the following conditions will be awarded the C-60 Scholarship/s with effect from 2017/2018 academic year.

- (a) obtained at least a C grade in the following courses offered by the department at Level 3 and Level 4 [Basic Principles of Chemistry I (CYU3300), Basic Principles of Chemistry II (CYU3201), Basic Practical Chemistry CYU(3302), Inorganic Chemistry (CYU4300), Concepts in Chemistry (CYU4301), Practical Chemistry II (CYU4302) and Organic Chemistry I (CYU4303)], and,
- (b) fulfilled the criterion (a) above in the year of first registration ,and,
- (c) obtained an overall GPA of 3.00 or more in the above referred courses CYU3300, CYU3201, CYU3302, CYU4300, CYU4301, CYU4302 and CYU4303.

- (d) in the event there are two or more students satisfying the above requirements (a), (b) and (c) then the highest GPA will be considered to award C-60 Scholarship.

Buckyball Science Award for the best Level 3 student

This award, presented by the Buckyball Society is offered to the student with the best performance in three science based disciplines at Level 3 including Chemistry. A student would be eligible for consideration for the award only at the first instance of completing the courses.

The student satisfying the following conditions will be awarded Buckyball Science Award for the best Level 3 student with effect from 2017/2018 academic year.

- (a) obtained at least C grade in all the courses offered by the student in all three science disciplines including Chemistry as a discipline at Level 3, and,
- (b) obtained at least 60% marks as overall weighted average for all the courses referred in (a), and,
- (c) fulfilled the criteria(a) and (b) above in the year of first registration
- (d) In the event there are two or more students satisfying the above requirements (a), (b) and (c) then the highest weighted overall average marks will be considered.
- (e) In the event there are two or more students satisfying the above requirements (a), (b), (c) and (d), then the award will be shared equally.

Professor GMKB Gunaherath Award for Organic Chemistry

This is awarded to the student with the best performance in all Chemistry courses offered by the Department of Chemistry with the exceptional performance in Organic Chemistry courses at Levels 4 and level 5. The award will carry a certificate and a cash prize. Based on the following criteria the award will be given from academic year 2017/2018.

The student satisfying the following conditions will be awarded the Professor G. M. K. B. Gunaherath Award for Organic Chemistry with effect from 2017/2018 academic year.

- (a) obtained at least B⁻ grades in all Chemistry courses offered by the Department of Chemistry at Level 3 and Level 4, and,
- (b) obtained at least 70% marks as weighted average for the following Organic Chemistry courses Organic Chemistry I (CYU4303) and Organic Chemistry II (CYU5303) securing a minimum B⁺ grade in each of these two courses CYU4303 and CYU5303, and,
- (c) In the event there are two or more students satisfying the above requirements (a) and (b) then the highest weighted average marks of Organic Chemistry I (CYU4303) and Organic Chemistry II (CYU5303) will be considered to award the winner.
- (d) In the event there are two or more students satisfying the above requirements (a), (b) and (c), then the award will be shared equally between them.

Professor JN Oleap Fernando Scholarship

The Buckyball Society of the Department of Chemistry is awarded to the student based on the performance in all Chemistry courses available at Levels 3 and 4. And the above requirements should be fulfilled in the year of first registration of the courses. Candidate should have a GPA of 3.70 or more in the above courses. The winner of the Professor JN Oleap Fernando Scholarship will not be eligible for the C-60 scholarship.

Zoonet Awards for Best Performance in Zoology Courses

The Zoonet of OUSL presents annual awards for courses offered by the Department of Zoology. In each course, it is awarded to the student who sits the final examination of the course in the same academic year of obtaining OCAM requirement and secures the highest Overall Mark with an Overall A Grade. The award will carry a certificate and a cash prize.

Spectrum Awards for Best Performance in Physics Courses.

The Spectrum of OUSL presents annual awards for courses offered by the Department of Physics. In each course, it is awarded to the student who sits the final examination of the course in the same academic year of obtaining OCAM requirement and secures the highest Overall Mark with an Overall A Grade. The award will carry a certificate and a cash prize.

BotSoc-OUSL Awards for Botany

The Botanical Society of the OUSL awards certificate of best performance together with a cash award to the students who secure highest overall marks with at least an 'A grade' in the following subjects offered by the Department of Botany. To qualify for this award, student should sit for the final examination in the same academic year in which OCAM requirement is obtained.

BYU3500, BYU3301, BYU4300, BYU4301, BYU4302, BYU4303, BYU5301, BYU5304

Dean's List Awards

Criteria are as follows:

1. Completed the final examinations with a minimum of 21 credits (out of the total registered), with a Grade Point Average* of 3.70 or better,
2. Completed the final examinations of the 21 credits considered in (a) above, in the year of obtaining eligibility to sit final examination,
3. Obtained C grades or above for any credits completed at the final examinations of the relevant academic year (including final examinations of courses sat over and above the minimum 21 credits considered), with no resits or repeats among the completed credits,
4. No F Grades permitted among the total registered courses in the relevant academic year; RX grades are permitted, and,
5. No disciplinary action should have been taken against the candidate.

* Grade Point Average will be the weighted mean of the best Grade Point Values a student earns by completing final examinations of 21 credits in the relevant academic year (one/two semesters).

When considering the performance, only the regular courses of the programme will be considered (Continuing education courses are excluded).

Special Benefits to students

- The Dean's List Placement will be noted on the Student's Transcript.
- Each student placed on the Dean's List will receive a Letter of Commendation from the Dean of the Faculty of Natural Sciences
- A scholarship to the value of 15 credits (tuition fees as relevant to the programme) will be awarded by the University to students placed high on the Dean's List.

The Dean's List of the relevant academic year will be computed for each undergraduate Programme of Study after all final examination results of the particular academic year are released.





Principal Officers of the Faculty of Natural Sciences



Prof. L.K. Senaratna
Dean/Faculty of Natural Sciences



Dr. H.L.D. Weerahewa
Head/Botany



Ms. M.N.K.de Zoysa
Head/Chemistry



Mr. Duminda de Silva
Head/Computer Science



Ms. M.A.P. de Silva
Head/Mathematics



Prof. V.P.S. Perera
Head/Physics



Dr. N.N. Punchihewa
Head/Zoology



Dr. S.R. Hettiarachchi
Faculty coordinator MRC



Ms. S. Thulasi
Faculty Coordinator (JRC)



Ms. K.C. Weerakoon
Faculty Coordinator/KRC



Ms. E.P.I. Premaratne
Assistant Registrar

Department of Botany

Welcome to the Department of Botany!

Botany is the scientific study of plants. Plants include a wide range of living organisms from the smallest bacteria to the largest living things - the giant sequoia trees. The discipline of Botany covers a range of fields - diversity of plants, their taxonomy, genetics, physiology and many more, and also the interaction among plants and their well being.

Studying Botany will not only enhance your knowledge about plants, but will also open up many employment opportunities once you acquire theory and practical knowledge on fields of Botany that have applications in many industries.

The Department offers opportunities in research on many fields of Botany for those students who are interested in strengthening their analytical and interpreting skills, by conducting a research study under the supervision of a senior academic. In addition, the staff is also engaged in Open and Distance Learning research in order to improve the quality of its products. Department is also offering B.Sc. Special Degree in Botany

The Department is very enthusiastic in sharing its knowledge with you to achieve your targets in your future endeavours. To further facilitate this task, the department offers many other Programmes such as Diploma in Microbiology, Diploma in Environmental Science, Diploma in Plant Tissue Culture Techniques and short courses postharvest handling of fruits and vegetable and plant breeding providing on the job training.

The Department would like to have student interactions through Bot-Soc - OUSL; a society initiated by the Botany staff to enhance interactions and appreciate the outstanding students through scholarships.

Hope you will have a enjoyable and rewarding experience studying Botany!



Further information is available at
www.ou.ac.lk/science/botany

Department of Botany,
Science & Technology Building
Phone:011-2881134 Fax: 011-2822738

Academic & Academic Support Staff - Department of Botany



Dr. H.L. Darshani Weerahewa
Senior Lecturer (Head)

BSc (Peradeniya)
Ph.D. (Peradeniya)

011 2881134
hlwee@ou.ac.lk
hdbot@ou.ac.lk



Prof. L.K. Senaratna
Professor in Botany (Dean)

BSc (Colombo)
M.Phil.(OUSL)
C.I. Biol. (SL)

011 2881275
lksen@ou.ac.lk



Prof. S.R. Weerakoon
Professor in Botany

BSc(Colombo)
Ph.D.(Western Australia)
C.I. Biol.(SL)
F.I. Biol.(SL)

011 2881383
shyamaweerakoon@gmail.com
srwee@ou.ac.lk



Dr. L.K.R.R. Jayakody
Senior Lecturer

BSc (Colombo)
Ph.D. (Lancaster)
M.I. Biol. (SL)

011 2881005
ramanijayakody@yahoo.com



Dr. T. K. Weerasinghe
Senior Lecturer

BSc (Kelaniya)
Ph.D.(Kelaniya)
M.I. Biol. (SL)

011 2881456
tkwee@ou.ac.lk



Dr. P.W.H.K.P. Daulagala
Senior Lecturer - Kandy RC

BSc (Peradeniya)
Ph.D. (Aberdeen)
M.I.Biol. (SL)

081 2494495-7
pdaulagala@yahoo.com
pwdan@ou.ac.lk



Dr. K.O.L.C. Karunanayake
Senior Lecturer

BSc (Peradeniya)
Ph.D. (Peradeniya)

011 2881269
kokar@ou.ac.lk



Dr. S. Somaratne
Senior Lecturer

BSc (Kelaniya)
M.Phil.(OUSL)
Ph.D. (OUSL)
M.I.Biol(SL), C.I. Biol. (SL)
F.I. Biol (SL)

011 2881269
ssoma@ou.ac.lk
ssomasenviratne@gmail.com



Dr. K.A.J.M. Kurupparachchi
Senior Lecturer

BSc;M.Sc.(Sri Jayawardenapura)
PG. Dip. Ed. (OUSL)
Ph.D. (OUSL)
M.Ed. (OUSL); M.I.Biol. (SL)
C.I. Biol (SL); F.I. Biol (SL)

011 2881095
kajmkuruppu@gmail.com



Dr. S.A.D.P. Senadheera
Senior Lecturer

BSc (Colombo)
PG. Dip. IT (Kelaniya)
Ph.D. (Colombo)

011 2881003
spsen@ou.ac.lk



Dr. K.A.R.S.Perera
Senior Lecturer

BSc (OUSL),
M.Sc (Sri Jayawardenapura)
Ph.D. (Kelaniya)
PG Dip.Distance Education (IGNOU)
M.I. Biol. (SL)
C.I. Biol. (SL)

kaper@ou.ac.lk
roshanperera@yahoo.com



Ms. Y.A.S. Samithri
Senior Lecturer MRC

BSc (Peradeniya)
M.Phil.(Peradeniya)

s_samithri@yahoo.co.uk



Ms. P.P.D.C. Perera
Lecturer

BSc (Colombo)
M.Sc. (Colombo)
M.I.Biol. (SL)

011 2881452
ppper@ou.ac.lk



Ms. K.I.C. Amarasinghe
Lecturer (Probationary)

BSc(Colombo)
P.G.Dip.(Tissue Culture)(Colombo);
P.G. Dip. (OUSL)
M.Sc.(Tissue Culture)(Colombo);
M.I.Biol. (SL)

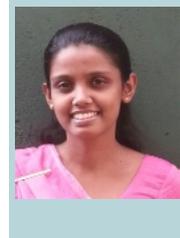
011 2881269
indraniama@yahoo.com



Dr. L.D. Kumarage
Lecturer KRC

BSc(Peradeniya)
Ph.D. (Edinburgh)

lakmini_kumarage@yahoo.com



S.M.M.P.K. Seneviratne
Probationary Lecturer

BSc (Peradeniya),
M.Sc.(Peradeniya),

On Leave

Department of Chemistry

Chemistry is generally referred to as the central science because, diverse fields of study such as Biology, Agriculture, Engineering and Geology share an essential tie to it. It is an extremely practical science and has been very influential in its impact on our daily life.

The Department of Chemistry offers basic courses in Chemistry as well as those in advanced topics covering both fundamental and applied areas of the discipline. It is hoped that the knowledge and skills gained through these courses will prepare students well for the competitive world of work.

In addition to the undergraduate courses, the Department is interested in offering Short courses and Certificate courses in specialized fields such as Food Science.

The Department provides opportunities for the students to engage in research, both at the undergraduate and postgraduate levels in theoretical and applied areas of Chemistry. In order to improve the quality of its services to students, the Department is also engaged in Open and Distance Learning research.

The Department encourages students to enrich their knowledge outside the curriculum through the activities of the Buckyball Society; a society formed with the initiative of the Chemistry staff. The Buckyball Society also recognizes outstanding academic achievements of students through a scheme of awards and scholarships.



Further information is available at
www.ou.ac.lk/science/chemistry

Department of Chemistry
Science & Technology Building
Phone: 011-2881371/385

Academic & Academic Support Staff - Department of Chemistry



Ms. M.N.K.de Zoysa
Senior Lecturer (Head)

Graduate Chemist
(Institute of Chemistry, Ceylon)
M.A. (IGNOU); M.Phil. (OUSL)
M.I.Chem.C.; Chartered Chemist

0112 881 450
mnzoy@ou.ac.lk



Prof. G.M.K.B. Gunaherath
Senior Professor of Chemistry
(DVC)

BSc; Ph.D. (Peradeniya)
F.I.Chem.C.; Chartered Chem-
ist

0112 881 322
kbgun@ou.ac.lk



Prof. K. S. D. Perera
Senior Professor in Chemistry

BSc (Sri Jayawardenepura)
Ph.D. (Belfast) F.I.Chem. C.

0112 881 414
ksper@ou.ac.lk



Prof. S. S. Iqbal
Professor in Chemistry

BSc (Colombo)
Ph.D. (Birmingham)
M.I.Chem.C.; Chartered Chemist,

0112 881 490
ssiqb@ou.ac.lk



Prof. R.U. Tantrigoda,
Associate
Professor in Chemistry

BSc (Sri Jayawardenapura)
M.Phil. (Ruhuna)
M.I.Chem.C.; Chartered Chemist

0112 881 404
rutan@ou.ac.lk



Dr. Gunadya Bandarage
Senior Lecturer

BSc (Colombo)
Ph.D. (Alberta); F.I.Chem.C.;
Chartered Chemist; MIP
(SL); Chartered Physicist

0112 881 324
gband@ou.ac.lk



Mr. M.R.M. Haniffa
Senior Lecturer

BSc (Colombo)
M.Sc. (Hawaii);
M.I.Chem.C.; Chartered Chemist

0112 881 026
razeen56@yahoo.com



Dr. S.R. Hettiarachchi
Senior Lecturer (MRC)

BSc (Ruhuna); Ph.D. (Maine)
M.I.Chem.C.; Chartered Chemist

0412 222943
srhet@ou.ac.lk



Dr. R. Senthilnity
Senior Lecturer

BSc (Jaffna);
M.Phil. (Jaffna)
Ph.D. (Colombo);
SEDA (Birmingham)
F. I.Chem. C.; Chartered
Chemist
0112881444



Dr. R.M.R.P. Ratnayake
Senior Lecturer (KRC)

BSc; Ph.D. (Peradeniya)

0812 499370
rurat@ou.ac.lk



Ms. M. Thayaparan
Senior Lecturer

BSc (Jaffna);
M.Phil. (OUSL)
M.I.Chem.C.

0112 881 304
mthay@ou.ac.lk



Ms. M.D.J.S. Saparamadu
Senior Lecturer

BSc (Colombo); M.Sc. (Colombo)
M.Phil. (Colombo)
M.I.Chem.C.

0112 881 629
mdsap@ou.ac.lk



Dr. C. Ranasinghe
Senior Lecturer

BSc; M.Phil (Peradeniya);
Ph.D. (Sri Jayawardenapura)
M.I.Chem.C.; Chartered Chemist

0112 881 444
crana@ou.ac.lk



Dr. D. T. Abeysinghe
Senior Lecturer

B. Sc. (Kelaniya)
M.Sc. (Colombo)
Ph.D. (Iowa)

dtabe@ou.ac.lk



Dr. D.D.D.H. Alwis
Senior Lecturer

BSc (Sri Jayawardenapura)
Graduate Chemist
(Institute of Chemistry, Ceylon)
M.I.Chem.C.
Ph.D. (Sri Jayawardenapura)

ddalw@ou.ac.lk



Mr. D.R. Kulatunge
Lecturer

BSc (Peradeniya)
M.Sc. (Colombo)

0112 881 371
drkul@ou.ac.lk



Mr. A.S. Dikkumbura
Lecturer (Probationary)
(KRC)

BSc (Sri Jayawardenapura)
M.I.Chem.C.

on leave
wowsamee@gmail.com



Ms. D.V.D. Hemalika
Lecturer (Probationary)
(MRC)

BSc (Ruhuna)

on leave
hemamalisl@gmail.com



Ms. S. Thulasi
Lecturer (Probationary)
(JRC)

B.Sc (Jaffna)
M.Phil. (Peradeniya)

021-2223374
thsri@ou.ac.lk

Department of Computer Science

We are happy to announce the establishment of the Department of Computer Science as the sixth department of the faculty of Natural Sciences, to contribute the B.Sc degree programme by offering computer Science as the seventh discipline. Our department is located in the third floor of the Science and Technology building, of the Colombo Regional Center.

We have 20 years of experience in offering Computer Science discipline under the Department of Mathematics and Computer Science. It is open for any student who satisfies the qualification to enter the B.Sc. Degree Programme, regardless of whether they have offered courses from the Bio Science or the Physical Science streams of the Advanced/Foundation level. The aim of the courses offered to the B.Sc degree programme is to develop competent personnel who are capable of assuming positions in the fields of Computer Science and Information Technology. In addition, we offer certificate programmes, tailor made training programmes and short courses in computer application and networking, mainly to cater the user requirements.

To enhance the practical knowledge in Computer Science the department has a modern well equipped computer science laboratory and a digital computer laboratory in the Colombo Regional Center. A computer science laboratory is also located at the Kandy Regional Center.

With the Department of Computer Science you will have the opportunity to enhance your knowledge, skills towards to computer science and information technology with the passion of life-long learning.

[www.ou.ac.lk/science/Computer Science](http://www.ou.ac.lk/science/Computer%20Science)
Department of Computer Science
Science & Technology Building
Phone: 011-2881225/098



Academic & Academic Support Staff - Computer Science



Mr. Duminda de Silva
Senior Lecturer (Head)

B.Sc. (Colombo)
M.Sc. (AIT)

0112881225
duminda@ou.ac.lk



Ms. I.D.I.D. Ariyasingha
Senior Lecturer

*B.Sc. (Sri Jayewardene-
pura)*
*M. Phil. (Sri Jayewarde-
nepura)*

0112881098
iresha@ou.ac.lk



Ms. W.C. Uduwela
Senior Lecturer

B.Sc. (Kelaniya)
M.Phil(Kelaniya)

0112881098
wasana@ou.ac.lk



Eng. C.S. Welivita
Senior Lecturer (KRC)

B.Sc (Hons) Eng (Peradeniya)
AM(IESL),
M.PhilEng(peradeniya)

0112881098
081 2499370-2
chathurika@ou.ac.lk



Ms. S.N. Dissanayake
Lecturer

B.Sc. (OUSL);
M.Phil (OUSL)

0112881098
sndis@ou.ac.lk



Ms. G.M.C.S Megasooriya
Lecturer

B.Sc (Peradeniya)
M.Sc (Peradeniya)

cmegasooriya@yahoo.com



Mr. M. Punchimudiyanse
Lecturer (Probationary)

B.Sc. (Colombo)
M.Sc (Moratuwa)

0112881098
malinda@ou.ac.lk



Ms. H. M.L.N.K. Herath
Lecturer (Probationary) (KRC)

B.Sc. (Peradeniya)
M.Phil (Peradeniya)

081 2499370-2
lakminiherath0@gmail.com

Department of Mathematics

Mathematics is said to be the queen of sciences. Also it is said to be the language of sciences. The necessity of Mathematics in science is emerging. Mathematics is all around us, in everything we do in our daily lives, including mobile devices, architecture, art, money, engineering and even sports. Mathematics provides logical thinking and analytical skills which are indeed needed to solve the real life problems.

The Department of Mathematics welcomes students who wish to follow undergraduate courses in the areas of Pure Mathematics, Applied Mathematics and Statistics. The Department guides students to become independent learners that enables them to pursue lifelong learning as per the mission of the University. Our courses are well written in self-learner friendly manner and are designed in such a way that they will widen the horizons in the fields of Pure and Applied Mathematics.

Special degrees are also offered by the Department in the disciplines of Mathematics, Applied Mathematics and Statistics for the students who perform well in Level 3 and Level 4.

In addition, the Department offers stand-alone courses in the areas of Applied Mathematics and Pure Mathematics, to cater to those who wish to enhance knowledge in the areas of their choice without registering for a regular degree programme. Also Department renders services by providing statistical assistance to the Faculty. Further, it engages in interdisciplinary activities such as offering Mathematics and Statistics courses to other Faculties at the OUSL and for the other Universities.

Research opportunities are also available in the areas of Mathematics leading to higher degrees.

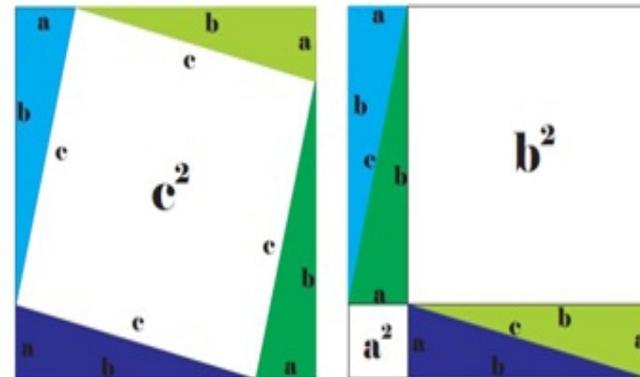
Further information is available at
www.ou.ac.lk/science/maths

Department of Mathematics

Science & Technology Building

Phone: 011-2881309

Fax: 011-2806577, Attn.Maths



$$c^2 = a^2 + b^2$$



Academic & Academic Support Staff - Mathematics



Ms. M.A.P. de Silva
Senior Lecturer (Head)

B.Sc. (Kelaniya)
M.Phil (OUSL)

0112881309
mades@ou.ac.lk



Dr. W. C. W. Navaratna
Senior Lecturer

B.Sc. (Colombo)
PG Dip. in Appl. Stat (Colombo)
M.Sc.; Ph.D. (Simon Fraser)

0112881019
wceper@ou.ac.lk



Dr. J.N. Senadheera
Senior Lecturer

B.Sc. (Colombo)
Ph.D (North Texas, USA)

0112881443
jayantha.senadheera@gmail.com



Mr. U. Angammana
Lecturer (KRC)

B.Sc. (Peradeniya)
M.Sc (Sri Jayawardenapura)

udayaanga@gmail.com



Mr. K.A.S.N. Fernando
Lecturer

B.Sc. (Kelaniya)
PG Dip. in Appl. Stat. (Colombo)
M.Sc (Colombo)

0112881443
kafer@ou.ac.lk



Ms. K.D.V.F. Siriwardane
Lecturer

B.Sc. (Sri Jayawardenapura)
PGD in Education (OUSL)
M.Sc (Sri Jayawardenapura)
M.Phil (Sri Jayawardenapura)

0112881443
kdsir@ou.ac.lk



Mr. S.R. Gnanaprasam
Senior Lecturer

B.Sc. : M.Sc. (Peradeniya)
M.Sc. (Moratuwa)

0112881443
srgna@ou.ac.lk



Ms. N.A.M.R. Senaviratna
Lecturer (Probationary)

B.Sc. (Sri Jayawardenapura)

0112881443
nasen@ou.ac.lk



Ms. H. O.W. Peiris
Lecturer (Probationary)

B.Sc. (Sri Jayawardenapura)

0112881443
oshivida@yahoo.com
(on leave)



Dr. W.P.T.M. Wickramaarachchi
Lecturer (Probationary)

B.Sc. (Colombo)
Ph.D (Colombo)

wptharindu86uoc@gmail.com



Ms. N.H.E. Hasanthika
Lecturer (Probationary)

B.Sc. (Ruhuna)
M.Phil (Kelaniya)

erandhasanthika@yahoo.com



Mr. C. Halwatura
Senior Educational Assistant

B.Sc. (Colombo)

0112881443
mbinara@yahoo.com



Mr. B.P.K. Senarath
Educational Assistant Grade I

B.Sc. (Ruhuna)

bp_senarath@yahoo.com

Department of Physics

Physics is perhaps the most basic of all sciences. Understanding the principles of Physics and the laws of nature gives you an enhanced insight into the world around you. All modern science and technology is underpinned by Physics. The goal of Physics is to discover the unrevealed secrets in nature that extends from minute elementary particles to the massive galaxies with the knowledge of physical laws and mathematics for sustainable development.

Physics courses are prepared not only for a career in Physics, but also for many other fields as well. In fact, the Physics Department has made a concerted effort to make its core requirements more flexible, offering a variety of courses for different programs of study that satisfy the major requirements. Department also offers some interdisciplinary courses that attracts even biological science students. Essentials of geology and Fundamentals of geophysics are also taught by the Department of Physics. Study of rocks, minerals and its geological and geophysical applications is its main focus. Department has been active in undergraduate and postgraduate researches in the fields of electronics, novel semiconductor materials, exploration geophysics and applications in geology. The Department also conducts a Certificate in Applied Electronics. Further, plans are underway to conduct a Certificate in Applied Earth Sciences. Students are encouraged to explore multidisciplinary programs in Physics.

Further information is available at

www.ou.ac.lk/science/physics

Department of Physics Office, M17, Science & Technology Building (Left wing)

Phone : 011-2881242, 2881489

Fax : 011-2822739

Laboratories: Block 8 - 011-2881445; Block 20: 011-2881268

Research Lab: 0112881637



Academic & Academic Support Staff - Department of Physics



Prof. V. P. S. Perera
Professor in Physics
(Head)

*B.Sc.; M.Phil ;
Ph.D. (Colombo)
F.I.P.(SL);*

011 2881088 Ext. 588
vpper@ou.ac.lk



Prof. J.C.N. Rajendra
Professor in Physics

*BSc(Jaffna)
D.Phil.(Sussex);
CPhys MInstP, MIPSL*

0112 881096 Ext. 596
jcraj@ou.ac.lk



Prof. G.W.A. R. Fernando
Professor in Geology

*B.Sc.; M.Phil (Peradeniya)
Ph.D. (Mainz, Germany)*

011 2881451 Ext. 451
gwfer@ou.ac.lk



Dr. G.K. R. Senadheera
Senior Lecturer (KRC)

B.Sc : Ph.D.(Peradeniya)

0812-499370-2
gkrsena@yahoo.com



Dr. J.V. P. Fernando
Senior Lecturer

*BSc, M.Phil (Colombo)
M.I.P (SL) Chartered Physicist*

011 2881367
vijanaka@yahoo.co.uk



Mr. N. Karthikeyan
Senior Lecturer

*BSc;M.Sc.;M.Phil. (Madras)
M.I.P.(SL)
Chartered Physicist*

nkart@ou.ac.lk



Dr. H.K. W. IJayawardana
Senior Lecturer

*BSc, MPhil,
Ph.D. (Colombo)*

011 2881267



Ms. D. R. Abeydeera
Lecturer

*BSc (Sri Jayawardenapura)
P.G. Dip.Stat.P.G. Dip.Ed.(OUSL)
M.Sc.(Colombo);*

011 2881242
deepara58@yahoo.com



Ms. K.R. Dissanayake
Lecturer

*BSc (Colombo);
PG Dip. Ed. (OUSL);
M.Sc. (Colombo)*

0112 881268
rupikadissa@gmail.com



Ms. K.N. Bandara
Lecturer

*BSc(Colombo)
P.G. Dip.Ed.(OUSL)
M.Sc. (PGIA)*

011 2881242
nayanadham_699@yahoo.com



Ms. R. D. Hettiarachchi
Lecturer

*BSc(Colombo);
P.G.Dip.Stat.;
M.Sc. (Colombo)*

011 2881242
damayanthi_1958@yahoo.co.uk
rdhet@ou.ac.lk



Mr. D.L.N. Jayatillake
Lecturer

*BSc (Colombo)
M.Sc. (Colombo)*

011 2881242
dliay@ou.ac.lk



Ms. N.U.S. Yapa
Lecturer (Probationary)

BSc : M.Phil. (Ruhuna)

uthpala@phy.ruh.ac.lk



Mr. G.D. Illeperuma
Lecturer (Probationary)

*BSc, (Colombo)
B.T.I, M.I.P (SL)*

011 28812426

Department of Zoology

Zoology is the study of animal life. It is central to our understanding of the world and encompasses a fascinating body of knowledge ranging from molecules to populations and to their interactions with the environment.

Our Department strives to disseminate knowledge in the discipline by contributing to a variety of academic programmes, including the BSc Degree, B.Sc. Special Degree, Diploma in Laboratory Technology, the PG Dip/MSc in Environmental Science. We also offer a Certificate in Wildlife Conservation & Management, Diploma in Natural Resources and Ecotourism. Courses offered for these programmes aim to provide understanding in the core areas of Zoology and in its applications. Students are also provided with a range of transferable skills through activities such as laboratory and fieldwork, teamwork, oral presentations, information retrieval and report writing.

Research within our Department presently focuses on wildlife conservation, animal diversity and abundance studies, control of pests, molecular phylogenetics and aquatic pollution. Students get opportunities to engage in research studies at undergraduate and postgraduate levels.

We encourage co-curricular activities through the ZooNet of OUSL, a student-staff society, which organises regular guest lectures, educational trips, mini projects, etc. ZooNet also gives awards annually, in recognition of academic excellence and other achievements of students.

The overall training provided by our Department prepares students for postgraduate studies and for diverse careers in academic & research institutions, biomedical, aquatic, wildlife or environment related sectors

Further information is available at:
www.ou.ac.lk/science/zoology
Department of Zoology
Phone: 011-2881090/2881270
Fax: 011-2822738



Academic & Academic Support Staff - Department of Zoology



Dr. N.N. Punchihewa
Senior Lecturer (Head)
BSc (Sri Jayewardenapura)
M.Phil. (OUSL); Ph.D
PG.Dip. Education (OUSL)
PG.Dip. Envi Health (Massey NZ)
M.I. Biol(SL); C.Biol(SL)
F Biol(SL)
 0112881446/488
 nnpun@ou.ac.lk



Ms. E.A.D. N. D. Edirisinghe
Senior Lecturer
BSc (Kelaniya)
M.Phil. (OUSL)
M.I. Biol(SL)
 0112881029/529
 nedir@ou.ac.lk



Prof. H.T. R. Jayasooriya
Prof. of Zoology
BSc :M.Sc. (Colombo)
Ph.D. (London)
 0112881292
 htjay@ou.ac.lk



Prof. G. Ranawaka
Prof. in Zoology
BSc (Colombo)
Ph.D. (London); DIC.
 0112881455
 grana@ou.ac.lk



Dr. U.K.G.K. Padmalal
Senior Lecturer
BSc; M.Sc. (Colombo)
Ph.D. (Tohoku, Japan)
M.I. Biol(SL); C. Biol (SL)
 0112881475
 ukpad@ou.ac.lk



Dr. S. Wijesekera
Senior Lecturer (KRC)
BSc (Peradeniya)
Ph.D. (Colombo)
 0812499370-2 Ext:118
 subadraw@yahoo.com



Dr. N. Nilakarawasam
Senior Lecturer
BSc (Colombo)
Ph.D. (Stirling)
M.I. Biol(SL)
 0112881018
 nnila@ou.ac.lk



Dr. W.V. J. Perera
Senior Lecturer
BSc (Sri Jayewardenapura)
M.Phil. (Sri Jayewardenapura)
Ph.D. (Colombo)
M.I. Biol(SL); C. Biol(SL)
 0112881436
 wvper@ou.ac.lk



Dr. K.H. Jayawardena
Senior Lecturer
BSc (Kelaniya)
M.Phil. (Colombo)
Ph.D. (Colombo)
M.I. Biol(SL)
 0112881312
 khjay@ou.ac.lk



Dr. I.K. Rajapakse
Senior Lecturer
BSc (Colombo)
M.Sc. (Colombo)
Ph.D (OUSL)
 0112881277
 ikraj@ou.ac.lk



Ms. K.C. Weerakoon
Senior Lecturer
BSc : M.Phil. (Peradeniya)
 kcwee@ou.ac.lk



Mr. P.J. Jude
Senior lecturer
BSc (Jaffna)
M.Phil (Jaffna)
 0112881446
 pjjud@ou.ac.lk



Ms. W.A.Y. Chandrani
Senior Lecturer
BSc (Sri Jayewardenapura)
M.Sc. (Colombo); M.Phil. (OUSL)
PG Dip. Education (OUSL)
M.I. Biol(SL)
 0112881446/090
 wacha@ou.ac.lk



Dr. D.D.G.L. Dahanayaka
Senior Lecturer
BSc : M.Phil. (Kelaniya)
Ph.D. (Ibaraki, Japan)
M.I. Biol (SL)



Dr. U.A. Jayawardena
Senior Lecturer
BSc : M.Phil. (Peradeniya)
Ph.D (Colombo)
 uajay@ou.ac.lk



Dr. C.D. Jayasinghe
Lecturer
BSc (Colombo)
M.Sc. (Osaka Japan)
Ph.D. (Colombo)
 0112881446/090
 cdjay@ou.ac.lk



Mr. T.S.P Fernando
Lecturer (Probationary)
BSc : M.Phil. (Colombo)
M.I. Biol (SL)
 saminda@ou.ac.lk

PROGRAMMES OF STUDY

Bachelor of Science Degree Programme

Aims and Objectives

The BSc Degree programme is designed to contribute towards raising the general educational standards of the public by providing an opportunity for higher education in Science. The specific objectives are to:

- provide an opportunity for persons to obtain a Science Degree and thereby improve their promotional/career prospects
- enable, particularly those in employment, late developers and those who could not avail themselves of higher education at the end of their secondary school career, to obtain a degree
- enable any person to pursue a degree course in Science in their own time at an affordable cost
- combine courses within and outside the Faculty to suit his/her interest or job requirements

Academic Admission requirements

Minimum of 3 passes at the GCE (A/L) examination from among the Science subjects, Applied Mathematics, Biology, Botany, Chemistry, Combined Mathematics, Higher Mathematics, Mathematics, Physics, Pure Mathematics, and Zoology in any number of sittings. Appendix 1 records equivalent qualifications that will enable exemptions for entry into Level 3 of the programme.

Duration

Requires a minimum period of three academic years to complete the programme.

Learning Outcomes

Upon successful completion of the BSc Degree programme, a graduate is expected to have:

- acquired an understanding of the theoretical and applied knowledge of the respective disciplines in Science
- acquired relevant practical skills to complement and support subject-based theoretical knowledge
- developed the ability to conduct scientific investigations and proceed to undertake research studies at higher levels
- gained a range of critical, analytical, transferable and personal skills
- obtained broader knowledge on areas outside the subject combinations in Science through open electives
- changed from a dependent learner to an independent learner and developed an interest in life-long learning

Programme Structure

The BSc programme offers courses at Levels (L) 3, 4 and 5/6, equivalent to the 1st, 2nd, and 3rd/4th years of the BSc Degree Programme of a conventional University.

Medium of Instruction

Instruction, including course material at Level 3 are available in English, Sinhala and Tamil, except for those course material in the disciplines of Computer Science, Pure & Applied Maths and a few others offered by other Departments. Instruction at Levels 4 and 5 is available only in the English medium.

Workload

For the BSc Degree, a student requires to take discipline-based courses and open electives adding up to a total of 90 credits. Those without exempting qualifications are also required to register for English, Mathematics and ICT skills. A student can register only for a maximum total of 30 credits at regular courses per academic year. However, students are strongly advised not to register for the maximum number of credits, particularly at Level 3.

Award of the BSc Degree

The BSc degree is conferred according to the OUSL Rules and Regulations. Those who wish to be considered for the award of the degree need to apply to the SAR/Examinations Division before the stipulated deadline using the prescribed application form available with the Asst. Registrar/Natural Science or download from the website: www.ou.ac.lk/science. to be considered for the award.

BSc Degree Programme - NS1 Structure

The BSc Degree programme is of 90 credits and offers a combination of discipline-based courses, open electives and continuing education courses at Levels (L) 3, 4 and 5/6.

Level 3 - Register within the maximum of 30 credits

Admission requirements

At least 3 passes or exemption in approved Science subjects in GCE A/L or Foundation Level, in any number of sittings, including the specified prerequisites in the relevant disciplines of choice.

Level 3 courses

Discipline-based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU3301	3	Organization of Cells and Plant Biochemistry	Pass in Botany/Biology in G.C.E. A/L or Foundation in Science/Foundation Courses
BYU3500	5	Diversity of Plants	
Chemistry			
CYU3300	3	Basic Principles of Chemistry I	Pass in Chemistry in G.C.E. A/L / Foundation in Science / Foundation Courses or equivalent
CYU3201	2	Basic Principles of Chemistry II	
CYU3202	3	Basic Practical Chemistry	
Physics			
PHU3300	3	Basic General and Thermal Physics	Pass in Physics in G.C.E. A/L or Foundation in Science/Foundation Courses
PHU3301	3	Basic Electromagnetism	
PHU3202	2	Waves in Physics	
Zoology			
ZYU3500	5	Animal Life and Diversity	Pass in Zoology/Biology in G.C.E. A/L or Foundation in Science/ Foundation Courses
ZYU3301	3	Biogeography	
Computer Science			
CSU3315	3	Fundamentals of Computers	03 A/Level Passes in Science subjects or in Foundation in Science
CSU3316	3	Introduction to Computer Programming	
CSU3302	3	Data Structures & Algorithms	CPU1140/CSU3315 + CPU1141/CSU3316 (Pass/Valid OCAM/CR)
Applied Mathematics			
ADU3300	3	Vector Algebra	Pass in Applied Mathematics/ Combined Mathematics/ Higher Mathematics in G.C.E. A/L or Foundation in Science/ Foundation Courses
ADU3201	2	Basic Statistics	
ADU3302	3	Differential Equations	
Pure Mathematics			
PEU3300	3	Mathematical Logic and Mathematical Proofs	Pass in Pure Mathematics/Combined Mathematics/ Higher Mathematics/Mathematics in G.C.E. A/L or Foundation in Science/Foundation Courses
PEU3301	3	Foundations of Mathematics	PEU3300 (Pass/ Valid OCAM/CR) or PUU1140 (EL or Pass)
PEU3202	2	Vector Spaces	PEU3300 + PEU3301 (Pass/ Valid OCAM/CR) or PUU1141 (EL or Pass)

Compulsory requirements

Choose a minimum of 30 credits with at least 6 credits from the compulsory open electives and 8 credits each from the three chosen disciplines. If not exempted, offer LEE3410, FDE3020, CYE3200.

Open Elective Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
LLU3261	2	Understanding Law	
MSU3208	2	Managing Your Work and People	
DSU3298	2	Introduction to Sri Lankan Society	
FNU3200	2	Ethics in Science & Technology	
ADU3218	2	Basic Statistics	For Mathematics Students, not offering Applied Mathematics {i.e., it is mutually exclusive with ADU3201}
FNU3201	2	Communication Skills	

Continuing Education Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
CYE3200	2	Mathematics for Chemistry and Biology	
LEE3410	4	English for General Academic Purposes (EGAP)	
CSE3213	2	ICT Skills	
FDE3020	0	Empowering for Independent Learning (EfiL)	

Note :

Students may select any three of the above open elective courses to fulfil the 6 credit requirement specified in the Rules.

Level 4 – Register within the maximum of 30 credits

Admission requirements

Pass/exemption/valid OCAM/concurrent registration in the 30 credits of specified compulsory course requirement at L3 and Pass/exemption/concurrent registration in LEE3410 and exemption/valid OCAM in CYE3200 (for students offering Chemistry, Botany or Zoology). Pass in FDE3020

Compulsory Requirements

Select a minimum of 30 credits comprising 12 credits each from the major disciplines and 6 credits from the 3rd discipline offered at L3.

Level 4 courses

Discipline based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU4300	3	Plant Physiology	BYU3301 (Pass/CR/valid OCAM) BOU1101 (EL) and pass in EDE3001
BYU4301	3	Genetics and Evolution	BYU3500 (Pass/CR/valid OCAM) BOU1200 (EL) and pass in EDE3001
BYU4302	3	Systematics of Higher Plants and Animals	BYU3500 (Pass/CR/valid OCAM) BOU1200 (EL or CR) and pass in EDE3001
BYU4303	3	Principles of Microbiology	BYU3500 (Pass/CR/valid OCAM) BOU1200 (EL or CR) and pass in EDE3001
Chemistry			
CYU4300	3	Inorganic Chemistry	(CYU3300 + CYU3201) Grade D or above/ Valid OCAM/OR
CYU4301	3	Concepts in Chemistry	CMU1220 Grade D or above/EL OR CHU1221 Grade D or above OR equivalent
CYU4303	3	Organic Chemistry I	CYU3302 Grade D or above Valid OCAM/OR CMU1121 Grade D or above/EL AND (CYU4301+CYU4303) Grade D or above/Valid or OCAM/CR OR (CYU4301+CMU2221 Grade D or above/EL OR (CMU2220+CYU4303) Grade D or above/EL/valid OCAM/CR OR equivalent
CYU4302	3	Practical Chemistry II	
Physics			
PHU4300	3	Modern Physics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302 + PHU4103
PHU4301	3	Electronics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302
PHU4302	3	Optics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302 + PHU4103
PHU4303	3	Mathematical Methods for Physics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302
Zoology			
ZYU4300	3	Animal Form and Function	ZYU3500 (Pass / * Valid OCAM or CR)
ZYU4301	3	Ecology	
ZYU4302	3	Animal Development	
ZYU4303	3	Animal Behaviour	

Computer Science			
CSU4302	3	System Analysis & Software Engineering	(CPU1140/CSU3315 + CPU1141/CSU3316 + CPU1142/CSU3302)(Pass/Valid OCAM/CR)
CSU4315	3	Database Management Systems	
CSU4616	6	Object Oriented Programming using C++ and Java	
Applied Mathematics			
ADU4300	3	Statistical Distribution Theory	ADU3201 (Pass/ Valid OCAM/ CR) or APU1141 (EL or Pass)
ADU4301 **A	3	Newtonian Mechanics I	{ADU3300 (Pass/ Valid OCAM/ CR) + ADU 3302 (Pass/ Valid OCAM)} or (APU1140 + APU1142) (EL or Pass)
ADU4302	3	Vector Calculus	ADU3300 (Pass/ Valid OCAM) or APU1140 (EL or Pass)
ADU4303 **A	3	Applied Linear Algebra and Differential Equations	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL or Pass)
Pure Mathematics			
PEU4300 **M	3	Real Analysis I	(PEU3300 + PEU3301) (Pass/ Valid OCAM) or (PUU1140+PUU1141) (EL or Pass)
PEU4301	3	Real Analysis II	PEU4300 (Pass/ Valid OCAM/ CR) PUU2140 (EL or Pass)
PEU4302 **M	3	Linear Algebra	PEU3202 (Pass/ Valid OCAM) PUU1142 (EL or Pass)
PEU4303	3	Group Theory I	PEU3301 (Pass/ Valid OCAM/ CR) (PUU1140+PUU1141) (EL or Pass)
PEU4315	3	Continuous Functions	PUU1140+PUU1141 (EL or Pass)
PEU4316	3	Differentiable Functions	PUU2141 (EL or Pass) or PUU4315 (CR)

Level 5 – Register within the maximum of 30 credits

Admission requirements

Pass/exemption/valid OCAM/concurrent registration in the 30 credits each of specified compulsory course requirement at L3 & L4 and pass in LEE3410

Level 5 courses

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU5300*	3	Environmental and Applied Microbiology	BYU4303 Pass / valid OCAM BOU2103 (EL)/Pass
BYU5301*	3	Plant Pathology	BYU4303 Pass/Valid OCAM BOU2103 (EL)
BYU5302	3	Plant Growth and Development	BYU4300 Pass / valid OCAM BOU2200 (EL)
BYU5303	3	Plants and Man	BYU3500 Pass BOU1200 (EL)
BYU5304*	3	Soils and Plant Growth	BYU3500 Pass / valid OCAM / BOU1200 (EL)/Pass
BYU5305	3	Literature Review in Botany	Limited Registration
BYU5306*	3	Plant Breeding	BYU4301 Pass/ CR /valid OCAM BOU2101 (EL)
BYU5308	3	Postharvest Technology of Fresh Produce	BYU4300 Valid OCAM BOU2200 (EL)
BYU5610	6	Research Project in Botany (General Degree)	Limited registration
* Compulsory for Honours Degree students			
Chemistry			
CYU5300	3	Organometallic Chemistry *	Pass in CYU4300 / CMU2122 EL
CYU5301	3	Concepts in Spectroscopy *	CYU4301-pass/valid OCAM/Re-reg/CMU2220 EL
CYU5302	3	Analytical Chemistry *	Pass in CYU3300 + CYU3201+CYU3302 or Pass in CMU1220 and CMU1121
CYU5303	3	Organic Chemistry II *	Pass in CYU4303+CYU4302/CMU2221 EL
CYU5304	3	Chemistry of Biomolecules *	Pass in CYU4303 /CMU2221 EL
#CYU5305	3	Natural Product Chemistry	CYU5304 (CR)/Valid OCAM or /CMU3124 EL
CYU5306	3	Biochemistry	CYU5304 (CR)/ Valid OCAM or CMU3124 EL
CYU5307	3	Chemical aspects of Food Industry	CYU5304 (CR) /Valid OCAM or CMU3124 EL
CYU5308	3	Instrumental Methods of Chemical Analysis *	CYU5302 (CR)/Valid OCAM or CMU3123 EL
CYU5309	3	Environmental Chemistry	Pass in CYU3300 + CYU3201 or pass in CMU1220
CYU5310	3	Literature Project in Chemistry **	12 credits in L4 + limited registration
CYU5611	6	Research Project in Chemistry **	registration

Compulsory Requirements

Select a maximum of 30 credits from L5 at least 21 credits of discipline based courses with minimum of 6 credits each from two main disciplines chosen at Level 04.

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
#CYU5312	3	Industrial Chemistry I **	Pass in CYU3300 + CYU3201 or pass in CMU1220
#CYU5313	3	Polymer Chemistry **	Pass in CYU3300 + CYU3201 or pass in CMU1220
CYU5614	6	Physical Chemistry II *^	
CYU5615	6	Advanced Organic Chemistry *^	
**For General degree students only *Compulsory for Honours degree ^Only for Honours degree # Not offered this year			
Physics			
PHU5300*	3	Nuclear & Particle Physics	CR/Valid OCAM/Pass in PHU3302 + PHU4300
PHU5301*	3	Practical Physics	CR/Valid OCAM/Pass in PHU4301 + PHU5303
PHU5302	3	Atmospheric Physics	
PHU5303*	3	Data Acquisition and Signal Processing	CR/Valid OCAM/Pass in PHU4301
PHU5304	3	Biophysics	
PHU5305	3	Essentials of Geology	
PHU5306	3	Applied Geology	CR/Valid OCAM/Pass in PHU5305
PHU5307	3	Medical Physics	
PHU5308	3	Fundamentals of Geophysics	CR/Valid OCAM/Pass in PHU5305
PHU5309	3	Literature Survey Project in Physics	
PHU5610	6	Research Project in Physics	Limited Registration
PHU5311	3	Astronomy	
PHU5312*	3	Solid State Physics	CR/Valid OCAM/Pass in PHU4300 + PHU4303
PHU5313*	3	Advanced Electromagnetism	CR/Valid OCAM/Pass in PHU4303
PHU5314*	3	Thermodynamics	CR/Valid OCAM/Pass in PHU4303
PHU5315	3	Renewable Energy Sources	

Level 5 Courses, contd.

Course Code	Credit Rating	Course Title	Pre-Requisites
Zoology			
ZYU5300	3	Aquatic Biology	
ZYU5301	3	Fish Biology and Fishery Management	
ZYU5302	3	Conservation & Management of Biodiversity	
ZYU5304	3	Parasitology	
ZYU5305	3	Human Biology	
ZYU5306	3	Entomology	
ZYU5307	3	Mammalian Biology	
ZYU5608	6	Zoology Project	ZYU5313 (CR); only for General Degree
ZYU5309	3	Paleobiology	
ZYU5310	3	Evolutionary Biology	BOU2101 Valid OCAM or Pass (Only for special degree students)
ZYU5311	3	Literature Review in Zoology	Only for special degree students
ZYU5313	3	Research Methodology	For Special Degree students and General degree students registered - for ZYU5608
Computer Science			
CSU5300 #	3	IT Project Management	{(CPU1140/CSU3315 + CPU1141/CSU3316 + CPU1142/CSU3302)(Pass/ Valid OCAM/CR) + (CPU2140/CSU4302 + CPU2241/CSU4315 + CPU2242/CSU4616) (Pass/ Valid OCAM/ CR)}
CSU5301 #	3	Software Quality Assurance	
CSU5302 #	3	Web Technologies	
CSU5303 #	3	Management Information Systems	
CSU5304 #	3	Mathematics for Computing	
CSU5305 #	3	Theory of Computing	
CSU5306	3	Digital Computer Fundamentals	
CSU5307	3	Data Communication	
CSU5309	3	Information Security & Cryptography	
CSU5315 #	3	Operating Systems	
CSU5316 #	3	Computer Networks and Security	
CSU5317 #	3	Principles & Techniques of Artificial Intelligence	
CSU5320 #	3	Project in Computer Science	

Applied Mathematics			
ADU5300 *A	3	Linear Programming	For Mathemaics students only
ADU5301 *S45	3	Regression Analysis I	ADU3201 (Pass/ Valid OCAM) or APU1141 (EL)
ADU5302 **A , *M , *A	3	Mathematical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5303	3	Newtonian Mechanics II	ADU4301 (Pass/ Valid OCAM) or APU2142 (EL)
ADU5304 *A	3	Operational Research	ADU5300 (Pass/ Valid OCAM/ CR) only for Applied Mathematics special or general degree or APU3141 (EL)
ADU5305	3	Statistical Inference	ADU4300 (Pass/ Valid OCAM/CR) or APU2140 (EL)
ADU5306	3	Fluid Mechanics	ADU4302 (Pass/ Valid OCAM) or APU2143 (EL) only for Applied Mathematics Special or General degree
ADU5307 *A	3	Numerical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5308	3	Graph Theory	only for Applied Mathematics Special or General degree
ADU5310	3	Time series Analysis	
ADU5314	3	Sampling Techniques	
ADU5311	3	Regression Analysis II	ADU5301 (Pass/ Valid OCAM)only for Statistics Special or General degree
ADU5312	3	Data mining Techniques	only for Statistics Special
ADU5313	3	Generalized Linear Models	only for Statistics Special
ADU5615 *z	3	Project in Mathematics	only for Mathematics General degree (Limited Registration)
Pure Mathematics			
PEU5300 *M	3	Riemann Integration	PEU4301 (Pass/ Valid OCAM) or (PUU2141+PUU2143) (EL)
PEU5301	3	Ring Theory	PEU4303 (Pass/ Valid OCAM) or PUU2144 (EL)
PEU5302	3	Combinatorics	only for Mathematics students
PEU5303 *M	3	Number Theory	PEU3301 (Pass/ Valid OCAM) or PUU1141 (EL)
PEU5304 *MM, *M	3	Introduction to Complex Analysis	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass/ Valid OCAM) (PUU2140+PUU2141+PUU2143) (EL)
PEU5305 *M	3	Complex Analysis I	PEU5304 (Pass/Valid OCAM/CR) or PUU3141 (EL)
PEU5306	3	Introduction to Dynamical Systems	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass / Valid OCAM) (PUU2140+PUU2141) (EL)
PEU5307	3	Cryptography	PEU5303 (Pass/Valid OCAM/ CR)

Open Elective Courses			
Course Codes	Credit Rating	Course Title	Pre-Requisites
ADU5318	3	Bio Statistics (Non-Mathematics Students)	CYE3200 (Pass/ Valid OCAM) or PSE3117 (EL or Pass)
ADU5319	3	Design and Analysis of Experiments	ADU3201/ADU3218/ADU3318/ADU5318 (Pass/ Valid OCAM/ CR) or (APU1141/ PCU1142/PCU1141/PCU3141) (EL)
ADU5320	3	Introduction to MATLAB Software	For Mathematics Students only.
BYU5318	3	Environmental Studies	
PHU5318	3	Electronics for Biology Students	For Non Physics students only

* Compulsory for Physics special Degree

- * **NA** - **For Mathematics students not offering Applied Mathematics**
- * - **Compulsory for the relevant discipline specialization.**
- * **MM** - **Compulsory for students who offer Pure Mathematics as a major discipline.**
- # - **Compulsory for specialization in Information Technology.**
- * **S45** - **Shifted from Level 04 to Level 05.**

- * **A** - **Compulsory for Special Degree in Applied Mathematics.**
- ** **A** - **Compulsory for students who offer Applied Mathematics.**
- ***M** - **Compulsory for Special Degree in Mathematics.**
- ****M** - **Compulsory for students who offer Pure Mathematics.**
- ***NM** - **For Computer Science students not offering Mathematics.**
- ***E** - **Only for students from the Faculty of Engineering Technology**

Evaluation

For all the courses evaluation procedure involves both continuous assessments and final examinations. Overall Continues Assessment Mark (OCAM) to be considered for the final examination of a course, a student should score a minimum of 35% for its continuous assessments, which will be valid for two years. Students are required to answer Level 4 and higher level examinations in English

- i) **Overall Mark :** For each course the overall mark, "Z%" will be computed by a combination of the Continuous Assessment Mark (CAM), "X%" and the Final Examination Mark (FEM), "Y%" as follows.

If $Y \geq 40$ and, then $Z = 0.4 X + 0.6 Y$

If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.

If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of any course offered by the Faculty of Humanities & Social Sciences, except for the course LEE3410:English for General Academic Purposes shall be computed as follows :

If $Y \geq 40$, then $Z = 0.4 X + 0.6 Y$

If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.

If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of the course LEE3410:English for General Academic Purposes shall be determined by the Faculty of Humanities & Social Sciences as follows:

If $Y \geq 40$, then $Z = 0.3 X + 0.7 Y$

If $Y < 40$, then $Z = Y$

- ii) **Overall Grade and Grade Point Value:** For each course, an overall Grade and a Grade Point Value will be awarded based on Z% as shown below.

Range of marks	85-100	70-84	65-69	60-64	55-59	50-54	45-49	40-44	35-39	30-34	20-29	0-19
Overall Grade	A ⁺	A	A ⁻	B ⁺	B	B ⁻	C ⁺	C	C ⁻	D ⁺	D	E
Grade Point Value	4.00	4.00	3.70	3.30	3.00	2.70	2.30	2.00	1.70	1.30	1.00	0.00

A⁺, A, A⁻, B⁺, B, B⁻, C⁺, and C are Pass grades. Students who have not obtained OCAM requirement will be assigned a F Grade and Absentees for a final examination will be assigned a RX Grade

- i) **Grade Point Average (GPA):** GPA is the credit-weighted arithmetic mean of the Grade Point Values obtained by a student for the total of 90 credits. GPA will be calculated to the second decimal point, subject to a maximum of 4.00, as shown in the example below. GPA will determine the Passes and Classes of the BSc degree.

Example: Calculation of the GPA for a student with the following Grades

Overall Grade	No of credits	Credit weighted Grade Point Value
A ⁺	6	6 x 4.00 = 24.00
A	15	15 x 4.00 = 60.00
B	20	20 x 3.00 = 60.00
C	43	43 x 2.00 = 86.00
D	6	6 x 1.00 = 6.00
Total	90	236.00

$$GPA = \frac{\sum c_i g_i}{\sum c_i}$$

c_i : Credit rating of the i^{th} course

g_i : GP value obtained for i^{th} course

$$GPA = \frac{236.00}{90} = 2.62$$

BSc Degree (NS 1 Structure) Award Criteria (90 credits)

The BSc degree will be awarded in accordance with the provisions of the OUSL Regulation and Rule 1.1.1.1(f). An extract of the award criteria is given below. Those who wish to be considered for the award of the degree, should apply on the prescribed form to the SAR/Examinations, before the date stipulated by the Faculty.

Minimum credit requirements	<p>Exemption and/or aquired OCAM requirement in courses adding up to a total of 90 credits comprising:</p> <ul style="list-style-type: none"> • 30 credits at L3 with 8 credits in each of the three chosen disciplines and 6 credits of open electives, • 30 credits at L4 and or higher level with 12 credits in each of the two main disciplines and 6 credits from the remaining discipline chosen at L3, • 21 credits at L5 with at least 6 credits each from the two main disciplines chosen at L4, • Balance 9 credits comprising discipline-based courses remaining at L 4, 5 and or higher and/or, open electives at L 3, 4 and 5 (subject to a maximum total of 15 credits open electives), <p>And</p> <ul style="list-style-type: none"> • Minimum C grade or exemption in CYE3200 for Chemistry and Biology students, • Minimum C grade or exemption in LEE3410. • Complete the relevant requirements within a period of 10 academic years.
Pass	<ul style="list-style-type: none"> • C grades or better in 69 credits (from among the 90 credits above) with at least 21 credits at L3, 18 credits at L4 and 15 credit at L5, • Minimum D grades in the remaining 21 credits, • Minimum GPA of 2.00,
To be awarded a First or Second Class a student needs to fulfil the Pass criteria specified above with criteria specified below:	
Second Class (Lower Division) Honours	<ul style="list-style-type: none"> • C grades or better in 75 credits and at least D grades for the remaining 15 credits of courses, • B grades or better in at least 45 credits, • Minimum GPA of 3.00.
Second Class (Upper Division) Honours	<ul style="list-style-type: none"> • C grades or better in 81 credits and at least D grades for the remaining 9 credits of courses, • B⁺ grades or better in at least 45 credits, • Minimum GPA of 3.30.
First Class Honours	<ul style="list-style-type: none"> • C grades or better in 84 credits and at least D grades in the remaining 6 credits of courses, • A grades or better in 45 credits, • Minimum GPA of 3.70

BSc Degree Programme - Course Fees

The Registration fee and other fees relevant for 2017/2018, are given below.

Registration Fee	-	Rs.	400.00
Sports Club Fee	-	Rs.	25.00
Facilities Fee	-	Rs.	1500.00
Refundable Lab Deposit	-	Rs.	1100.00
Library Facilities Fee	-	Rs.	100.00
Tuition Fees	-	Rs.	1900.00 per credit

Tuition & Practical fees payable are given in the Tables below. Foreign students will be charged four (4) times tuition fees of local students.

Table 8 Tuition Fees

Credit rating	3	9	18	24	30
Fees	Rs.5,700.00	Rs.17,100.00	Rs.34,200.00	Rs.45,600.00	Rs.57,000.00

Table 9 Practical Fees - to be paid only by those students offering the relevant courses.

Course	Fee	Course	Fee	Course	Fee
BYU3500	Rs.500.00	ZYU4300	Rs.500.00	CSU5301	Rs.200.00
CYU3302	Rs.1800.00	ZYU4101	Rs.500.00	CSU5302	Rs.200.00
ZYU3500	Rs.500.00	CSU4302	Rs.200.00	CSU5306	Rs.200.00
CSU3316	Rs.200.00	CSU4315	Rs.200.00	CSU5316	Rs.200.00
CSU3302	Rs.200.00	CSU4616	Rs.200.00	BYU5610	Rs.500.00
BYU4303	Rs.600.00	BYU5300	Rs.600.00	ZYU6303	2000.00
BYU4300	Rs.600.00	BYU5302	Rs.600.00	ZYU6310	2000.00
CYU4302	Rs.2600.00	BYU5308	Rs.600.00	ZYU6605	2000.00
		CYU5302	Rs.1500.00	ZYU6306	2000.00
		CYU5303	Rs.1500.00	FNU6301	2000.00
		CYU5308	Rs.1500.00	ZYU6311	2000.00
		CYU5307	Rs.900.00		

BSc Special Degree Programme (SP1 Structure)

The BSc Special Degree Programme is of 120 credits and offers a combination of discipline-based courses, open electives and continuing education courses as in the BSc (General) Degree programme up to Level 4 and focus more on courses based on a single discipline at Levels 5 and 6.

Admission requirements for Level 5

Eligibility in 60 credits at Levels 3 and 4, completed within 3 years from initial registration; with minimum C grades for the 30 credits at Level 3 and 12 credits of the subject of specialization at Level 4 with minimum GPA of 3.00 for the 42 credits at Levels 3 and 4 in the subject of specialization; minimum of B grades adding up to 15 credits out of a total of 20 credits in the subject of specialization at Levels 3 and 4 taken together and minimum C grade or exemption for the course CYE3200 for students offering courses in one or more of the disciplines of Botany, Chemistry and Zoology at Level 4 and above.

Compulsory Requirements

Select a maximum of 30 credits from L5 or higher level.

Level 5 Courses

Discipline-based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU5300*	3	Environmental and Applied Microbiology	BYU4303 Pass / valid OCAM BOU2103 (FL)
BYU5301*	3	Plant Pathology	BYU4303 Pass/Valid OCAMBOU2103 (FL)/Pass
BYU5302	3	Plant Growth and Development	BYU4300 Pass / valid OCAM /CR BOU2200 (FL)
BYU5303	3	Plants and Man	BYU3500 Pass BOU1200 (FL)
BYU5304*	3	Soils and Plant Growth	BYU3500 Pass / valid OCAM / BOU1200 (FL)/Pass
BYU5305	3	Literature Review in Botany	Limited Registration
BYU5306*	3	Plant Breeding	BYU4301 Pass/ CR /valid OCAM BOU2101 (FL)
BYU5308	3	Postharvest Technology of Fresh Produce	BYU4300 Valid OCAM BOU2200 (FL)
BYU5610	6	Research Project in Botany (General Degree)	Limited registration
* Compulsory for Honours Degree students			
Chemistry			
CYU5300	3	Organometallic Chemistry *	Pass in CYU4300 / CMU2122 EL
CYU5301	3	Concepts in Spectroscopy *	CYU4301-pass/valid OCAM/Re-reg/CMU2220 FL
CYU5302	3	Analytical Chemistry *	Pass in CYU3300 + CYU3201+CYU3302 or Pass in CMU1220 and CMU1121
CYU5303	3	Organic Chemistry II *	Pass in CYU4303+CYU4302/CMU2221 EL
CYU5304	3	Chemistry of Biomolecules *	Pass in CYU4303 /CMU2221 FL
CYU5305	3	Natural Product Chemistry	CYU5304 (CR)/Valid OCAM or /CMU3124 FL
CYU5306	3	Biochemistry	CYU5304 (CR)/ Valid OCAM or CMU3124 FL
CYU5307	3	Chemical aspects of Food Industry	CYU5304 (CR) /Valid OCAM or CMU3124 FL
CYU5308	3	Instrumental Methods of Chemical Analysis *	CYU5302 (CR)/Valid OCAM or CMU3123 FL
CYU5309	3	Environmental Chemistry	Pass in CYU3300 + CYU3201 or pass in CMU1220

Discipline-based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
CYU5310	3	Literature Project in Chemistry **	12 credits in L4 + limited registration
CYU5611	6	Research Project in Chemistry **	
#CYU5312	3	Industrial Chemistry I **	Pass in CYU3300 + CYU3201 or pass in CMU1220
#CYU5313	3	Polymer Chemistry **	Pass in CYU3300 + CYU3201 or pass in CMU1220
CYU5614	6	Physical Chemistry II *^	
CYU5615	6	Advanced Organic Chemistry *^	
**For General degree students only *Compulsory for Honours degree ^Only for Honours degree # Not offered this year			
Physics			
PHU5300*	3	Nuclear & Particle Physics	CR/Valid OCAM/Pass in PHU3302 + PHU4300
PHU5301*	3	Practical Physics	CR/Valid OCAM/Pass in PHU4301 + PHU5303
PHU5302	3	Atmospheric Physics	
PHU5303*	3	Data Acquisition and Signal Processing	CR/Valid OCAM/Pass in PHU4301
PHU5304	3	Biophysics	
PHU5305	3	Essentials of Geology	
PHU5306	3	Applied Geology	CR/Valid OCAM/Pass in PHU5305
PHU5307	3	Medical Physics	
PHU5308	3	Fundamentals of Geophysics	CR/Valid OCAM/Pass in PHU5305
PHU5309	3	Literature Survey Project in Physics	
PHU5610	6	Research Project in Physics	Limited Registration
PHU5311	3	Astronomy	
PHU5312*	3	Solid State Physics	CR/Valid OCAM/Pass in PHU4300 + PHU4303
PHU5313*	3	Advanced Electromagnetism	CR/Valid OCAM/Pass in PHU4303
PHU5314*	3	Thermodynamics	CR/Valid OCAM/Pass in PHU4303
PHU5315	3	Renewable Energy Sources	

Level 5 Courses, contd.

Course Code	Credit Rating	Course Title	Pre-Requisites
Zoology			
ZYU5300	3	Aquatic Biology	
ZYU5301	3	Fish Biology and Fishery Management	
ZYU5302	3	Conservation & Management of Biodiversity	
ZYU5304	3	Parasitology	
ZYU5307	3	Mammalian Biology	
ZYU5608	6	Zoology Project	ZYU5313 (CR); only for General Degree
ZYU5309	3	Paleobiology	
ZYU5310	3	Evolutionary Biology	Only for Special Degree students
ZYU5311	3	Literature review in zoology	Only for Special Degree students
ZYU5313	3	Research Methodology	For Special Degree students and General degree students registered - for ZYU5608
Computer Science			
CSU5300 [#]	3	IT Project Management	{(CPU1140/CSU3315 + CPU1141/CSU3316 + CPU1142/CSU3302)(Pass/ Valid OCAM/CR) + (CPU2140/CSU4302 + CPU2241/CSU4315 + CPU2242/CSU4616) (Pass/ Valid OCAM/ CR)}
CSU5301 [#]	3	Software Quality Assurance	
CSU5302 [#]	3	Web Technologies	
CSU5303 [#]	3	Management Information Systems	
CSU5304 ^{#, *NW}	3	Mathematics for Computing	
CSU5305 [#]	3	Theory of Computing	
CSU5306	3	Digital Computer Fundamentals	
CSU5307	3	Data Communication	
CSU5309	3	Information Security & Cryptography	
CSU5315 [#]	3	Operating Systems	
CSU5316 ^{#, #}	3	Computer Networks and Security	
CSU5317 [#]	3	Principles & Techniques of Artificial Intelligence	
CSU5320 ^{#, #}	3	Project in Computer Science	

Applied Mathematics			
ADU5300 ^{*A}	3	Linear Programming	For Mathemaics students only
ADU5301 ^{*S4S}	3	Regression Analysis I	ADU3201 (Pass/ Valid OCAM) or APU1141 (EL)
ADU5302 ^{**A, *M, *A}	3	Mathematical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5303	3	Newtonian Mechanics II	ADU4301 (Pass/ Valid OCAM) or APU2142 (EL)
ADU5304 ^{*A}	3	Operational Research	ADU5300 (Pass/ Valid OCAM/ CR) only for Applied Mathematics special or general degree or APU3141 (EL)
ADU5305	3	Statistical Inference	ADU4300 (Pass/ Valid OCAM/CR) or APU2140 (EL)
ADU5306	3	Fluid Mechanics	ADU4302 (Pass/ Valid OCAM) or APU2143 (EL) only for Applied Mathematics Special or General degree
ADU5307 ^{*A}	3	Numerical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5308	3	Graph Theory	only for Applied Mathematics Special or General degree
ADU5310	3	Time series Analysis	
ADU5314	3	S a m p l i n g Techniques	
ADU5311	3	Regression Analysis II	ADU5301 (Pass/ Valid OCAM)only for Statistics Special or General degree
ADU5312	3	Data mining Techniques	only for Statistics Special
ADU5313	3	Generalized Linear Models	only for Statistics Special
ADU5615 ^{*Z}	3	Project in Mathematics	only for Mathematics General degree (Limited Registration)
Pure Mathematics			
PEU5300 ^{**M}	3	Riemann Integration	PEU4301 (Pass/ Valid OCAM) or (PUU2141+PUU2143) (EL)
PEU5301	3	Ring Theory	PEU4303 (Pass/ Valid OCAM) or PUU2144 (EL)
PEU5302	3	Combinatorics	only for Mathematics students
PEU5303 ^{**M}	3	Number Theory	PEU3301 (Pass/ Valid OCAM) or PUU1141 (EL)
PEU5304 ^{**MM, **M}	3	Introduction to Complex Analysis	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass/ Valid OCAM) (PUU2140+PUU2141+PUU2143) (EL)
PEU5305 ^{**M}	3	Complex Analysis I	PEU5304 (Pass/Valid OCAM/CR) or PUU3141 (EL)
PEU5306	3	Introduction to Dynamical Systems	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass / Valid OCAM) (PUU2140+PUU2141) (EL)
PEU5307	3	Cryptography	PEU5303 (Pass/Valid OCAM/ CR)
Open Elective Courses			
Course Codes	Credit Rating	Course Title	Pre-Requisites
ADU5318	3	Bio Statistics (Non-Mathematics Students)	CYE3200 (Pass/ Valid OCAM) or PSE3117 (EL or Pass)
ADU5319	3	Design and Analysis of Experiments	ADU3201/ADU3218/ADU3318/ADU5318 (Pass/ Valid OCAM/ CR) or (APU1141/PCU1142/PCU1141/PCU3141) (EL)
ADU5320	3	Introduction to MATLAB Software	For Mathematics Students only.
BYU5318	3	Environmental Studies	
PHU5318	3	Electronics for Biology Students	For Non Physics students only

Admission requirements for Level 6

Pass/valid OCAM/concurrent registration in the 30 credits each of specified compulsory course requirements at L5.

Compulsory Requirements

Select a maximum of 30 credits, minimum 24 credits from subject of specialization.

Level 6 Courses

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU6300*	3	Plant Molecular Biology	
BYU6301	3	Bioinformatics	
BYU6302	3	Biotechnology	
BYU6303*	3	Experimental Design and Biological data Analysis	
BYU6304	3	Integrated Crop Protection	BYU5301 valid OCAM
BYU6305	3	Industrial Microbiology	BYU5300 valid OCAM
BYU6306	3	Molecular Systematics	
BYU6307*	3	Advanced Plant Physiology and Biochemistry	
BYU6308*	3	Advanced Ecology	
BYU6309	3	Soil Biology	
BYU6310	3	Advanced Plant Pathology	
BYU6911*	9	Research Project in Botany(Special Degree)	
BYU6312	3	Plant Virology	
BYU6313*	3	Special Topics in Botany	
Chemistry			
CYU6600	6	Advanced Concepts in Chemistry*^	C grade in CYU4300 + CYU5300
CYU6301	3	Selected topics in Inorganic Chemistry^	C grade in CYU4300
CYU6302	3	Medicinal Chemistry	C grade in CYU 5303+CYU5306
CYU6303	3	Chemistry in Material Science ^	C grade in CYU4301 + CYU5303 + CYU4300
CYU6304	3	Inorganic Spectroscopy & Structural Chemistry^	C grade in CYU4300
CYU6305	3	Concepts in Industrial Chemistry*^	C grades in CYU4300 + CYU4301 + CYU4303
CYU6606	6	Advanced Experimental Chemistry*^	C grade in CYU4302 + CYU5302 + CYU5308
CYU6307	3	Industrial training and Literature seminar*^	C grades in 12 credits L4 Chemistry + CYU6307 CR
CYU6908	9	Research project in Chemistry*^	

*Compulsory for Honours degree

^Only for Honours degree

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Physics			
PHU6300*	3	Advanced Practicals in Physics	CR/Valid OCAM/Pass in PHU4300 + PHU5313
PHU6301*	3	Advanced Solid State Physics	CR/Valid OCAM/Pass in PHU5312
PHU6302*	3	Advanced Quantum Mechanics	CR/Valid OCAM/Pass in PHU4300
PHU6603*	6	Advanced Research Project in Physics	only for Honours Degree students
PHU6304*	3	Advanced Electronics	CR/Valid OCAM/Pass in PHU4301
PHU6305	3	Nanophysics and its Applications	CR/Valid OCAM/Pass in PHU5312
PHU6306*	3	Statistical Physics	CR/Valid OCAM/Pass in PHU4303 + PHU5314
PHU6307	3	Modern Optics	CR/Valid OCAM/Pass in PHU4300 + PHU4302
PHU6308*	3	Classical Mechanics	CR/Valid OCAM/Pass in PHU4303
Zoology			
ZYU6300	3	Management of Insect pests and vector	ZYU5306 (Pass or valid OCAM)
ZYU6301	3	Aquaculture	
ZYU6302	3	Immunology	
ZYU6303	3	Molecular Biology	
ZYU6605*	6	Advanced Laboratory Techniques in Zoology	
ZYU6306	3	Ornithology	
ZYU6908*	9	Research Project in Zoology	ZYU5313(Pass or valid OCAM or CR)
ZYU6309	3	Oceanography and Ocean Resources	
ZYU6310	3	Wild life Management and Conservation	
ZYU6311*	3	Special topics in Zoology	

Level 6 Courses, contd.

Computer Science			
CSU6300	3	Advanced Database Systems	CPU2241/CSU4315 (Pass/ Valid OCAM)
CSU6301	3	Data Mining & Machine Learning	(CPU3140/CSU5304 + CPU3253/CSU5317) (Pass/ Valid OCAM)
CSU6602	6	Computer Graphics and Image Processing	CPU3140/CSU5304 (Pass/ Valid OCAM)
CSU6603	6	Advanced Networking	CPU3245/ CSU5316 (Pass/ Valid OCAM)
CSU6304	3	Computer Architecture	CPU3141/CSU5306 (Pass/ Valid OCAM)
CSU6305	3	Computer Interfacing	CPU3141/CSU5306 (Pass/ Valid OCAM)
CSU6306	3	Selected Topics in Computer Science	CPU1141/CSU3316 (Pass/ Valid OCAM), CPU1142/CSU3302 (Pass/ Valid OCAM)
CSU6607*	6	Research Project in Computer Science	L3 ,L4 and L5 all CS Courses including CSU5320 (Pass) and to be decided in consultation with departmental academic staff, based on the Research project proposal report/ presentation.
Information Technology			
CSU6308	3	Advanced Database Systems	CPU2241/CSU4315 (Pass/ Valid OCAM)
CSU6309	3	Electronic Commerce	(CPU3149/CSU5302 + CPU3148/CSU5303) (Pass/Valid OCAM)
CSU6310	3	Information Systems Management & Professional Ethics	CPU3148/CSU5303 (Pass/ Valid OCAM)
CSU6311	3	Human Computer Interaction	CPU3148/CSU5303 (Pass/ Valid OCAM)
CSU6312	3	Software Architecture and Designing	CPU2140/CSU4302 (Pass/ Valid OCAM)
CSU6313	3	Information Technology Social Aspects & Infrastructure Management	(CPU2140/CSU4302 + CPU3146/CSU5300) (Pass/ Valid OCAM)
CSU6314	3	E- Governance	
CSU6315	3	Management Theories & Practices	
CSU6316	3	Selected Topics in Information Technology	(CPU1141/CSU3316, CPU1142/CSU3302) (Pass/ Valid OCAM)
CSU6617*	6	Research Project in Information Technology	L3 ,L4 and L5 all CS Courses including CSU5320 (Pass) and to be decided in consultation with departmental academic staff, based on the Research project proposal report/ presentation.
Applied Mathematics			
ADU6300	3	Stochastic Processes	
ADU6601	6	Applied Number Theory	PEU5303 (Pass/ Valid OCAM)
ADU6602	6	Statistical Quality Control	
ADU6303	3	Actuarial Mathematics	
ADU6304	3	Computational Mathematics	ADU5307 (Pass/ Valid OCAM) only for Applied Mathematics Special
ADU6305	3	Optimization Theory	ADU5300 (Pass/ Valid OCAM) only for Applied Mathematics Special
ADU6306	3	Mathematical Modelling	
ADU6307	3	Advanced Statistical Distribution Theory	only for statistics Special
ADU6308	3	Survival Analysis	only for statistics Special
ADU6309	3	Medical Statistics	only for statistics Special
ADU6310	6	Multivariate Analysis	only for statistics Special
ADU6611** *A	6	Research Project	Limited Registration only for Mathematics/ Applied Mathematics /statistics Special

Pure Mathematics			
PEU6300*	3	Group Theory II	PEU4303 (Pass) or PUU2144 (Pass) only for Mathematics Special
PEU6601*	6	Point Set Topology	PEU4300 (Pass) + PEU4301 (Pass) or (PUU2140+PUU2141) (Pass) only for Mathematics Special
PEU6602*	6	Measure Theory	PEU5300 (Pass/ Valid OCAM) or PUU3143 (EL) only for Mathematics Special
PEU6303	3	Complex Analysis II	PEU5305 (Pass/ Valid OCAM) or PUU3245 (EL) only for Mathematics Special
PEU6304	3	Functional Analysis	PEU6602 (Pass/ Valid OCAM/ CR) only for Mathematics Special
PEU6305	3	Introduction to Galois Theory	PEU5301 (Pass/ Valid OCAM) or PUU3240 (EL) only for Mathematics Special
PEU6306	3	Advanced Topics in Real Analysis	PEU4300 (Pass) + PEU5300 (Pass/Valid OCAM) or PUU2140 (Pass) + PUU3141 (Pass) only for Mathematics Special

Open Elective Courses			
Course Codes	Credit Rating	Course Title	Pre-Requisites
FNU6300	3	GIS and remote sensing in Natural Resource Management	Only for special degree in any discipline
FNU6301	3	Environmental Degradation Management	
FNU6302	3	Fundamentals of Environmental Impact Assessment	

* Compulsory for Physics special Degree

* **NA** - For Mathematics students not offering Applied Mathematics

* - Compulsory for the relevant discipline specialization.

* **MM** - Compulsory for students who offer Pure Mathematics as a major discipline.

- Compulsory for specialization in Information Technology.

* **S45** - Shifted from Level 04 to Level 05.

* **A** - Compulsory for Special Degree in Applied Mathematics.

** **A** - Compulsory for students who offer Applied Mathematics.

* **M** - Compulsory for Special Degree in Mathematics.

** **M** - Compulsory for students who offer Pure Mathematics.

* **NM** - For Computer Science students not offering Mathematics.

* **E** - Only for students from the Faculty of Engineering Technology

Evaluation

Evaluation procedure involves both overall continuous assessments mark OCAM and final examinations. OCAM (OCAM $\geq 35\%$) obtained in the year of registration will be valid for two years.

- i) Overall Mark :** For each course the overall mark, "Z%" will be computed by a combination of the overall Continuous Assessment Mark (OCAM), "X%" and the Final Examination Mark (FEM), "Y%" as follows.

If $Y \geq 40$ and, then $Z = 0.4 X + 0.6 Y$
 If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.
 If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of any course offered by the Faculty of Humanities & Social Sciences, except for the course LEE3410:English for General Academic Purposes shall be computed as follows :

If $Y \geq 40$, then $Z = 0.4 X + 0.6 Y$
 If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.
 If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of the course LEE3410:English for General Academic Purposes shall be determined by the Faculty of Humanities & Social Sciences as follows:

If $Y \geq 40$, then $Z = 0.3 X + 0.7 Y$
 If $Y < 40$, then $Z = Y$

- ii) Overall Grade and Grade Point Value:** For each course, an overall Grade and a Grade Point Value will be awarded based on Z% as shown below.

Range of Marks	85-100	70-84	65-69	60-64	55-59	50-54	45-49	40-44	35-39	30-34	20-29	0-19
Overall Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	E
Grade Point Value	4.00	4.00	3.70	3.30	3.00	2.70	2.30	2.00	1.70	1.30	1.00	0.00

A+, A, A-, B+, B, B+, C+, and C are Pass grades. Not eligible students will be assigned a F Grade and Absentees for a final examination will be assigned a RX Grade

Range of marks

Grade Point Average (GPA): GPA is the credit-weighted arithmetic mean of the Grade Point Values obtained by a student for the total of 120 credits. GPA will be calculated to the second decimal point, subject to a maximum of 4.00, as shown in below. GPA will determine the Passes and Classes of the BSc degree.

$$GPA = \frac{\sum c_i g_i l_i}{\sum c_i l_i}$$

where c_2 is the credit rating of the i th course, g_2 is the GP value the student has obtained for the i th course, l_i is 2 if the i th course is in either Level 3 or 4, and l_i is 3 if the i th course is in either Level 5 or 6.

BSc Special Degree (SP1 Structure) Award Criteria (120 credits)

For the award of the Bachelor of Science Special degree, a student may be required to complete 120 credits within 06 academic years from his/her initial registration to the BSc Degree Programme. Those who do not complete within the stipulated period, may opt for the Bachelor of Science General Degree, on completing 90 credits and satisfy the requirements for the award.

The BSc Special Degree will be awarded in accordance with the provisions of the OUSL Regulation and Rule 1.1.1.1(f). An extract of the award criteria is given below.

Minimum credit requirements	<p>Exemption and/or acquired OCAM requirement in courses adding up to a total of 120 credits comprising:</p> <ul style="list-style-type: none"> • 30 credits at L3 with 8 credits in each of the three chosen disciplines and 6 credits of open electives, • 30 credits at L4 with 12 credits in each of the two main disciplines and 6 credits from the remaining discipline chosen at L3, • 30 credits at Level 5 comprising minimum 21 credits from the subject of specialization, and, • 30 credits at Level 6 comprising minimum 24 credits from the subject of specialization (or as specified by the department) which shall include at least 6-credit research component (compulsory). • Balance 15 credits from courses at Level 5, 5 & 6 approved by the department concerned subject to a maximum of six credit at Level 4 and Minimum C grade or exemption in CYE3200 for Chemistry and Biology students, Minimum C grade or exemption in LEE3410. Complete the relevant requirements within period of 6 academic year.
Pass	<ul style="list-style-type: none"> • C grades or above for courses adding up to 120 credits, and, • a minimum Grade Point Average of 2.00 in courses adding up to 120 credits as specified
To be awarded a First or Second Class, a student needs to fulfill the Pass criteria specified above with criteria specified below:	
Second Class (Lower Division) Honours	<ul style="list-style-type: none"> • B grades or above in courses adding up to at least 60 credits comprising 39 credits at Levels 5 and 6 (out of a total of 45 credits of the subject of specialization at Levels 5 and 6) taken together, and, • a minimum Grade Point Average of 3.00 in courses adding up to 120 credits as specified.
Second Class (Upper Division) Honours	<ul style="list-style-type: none"> • B+ grades or above in courses adding up to at least 60 credits comprising 39 credits at Levels 5 and 6 (out of a total of 45 credits of the subject of specialization at Levels 5 and 6) taken together, and, • a minimum Grade Point Average of 3.30 in courses adding up to 120 credits as specified.
First Class Honours	<ul style="list-style-type: none"> • A grades or above in courses adding up to at least 60 credits comprising 39 credits at Levels 5 and 6 (out of a total of 45 credits of the subject of specialization at Levels 5 and 6) taken together, and, • a minimum Grade Point Average of 3.70 in courses adding up to 120 credits as specified.

Course Fees

Level 5- Rs. 1900.00

Level 6- Rs. 2400.00

Higher Diploma in Science [(HDip(Sc)] (NS1 Structure)

Students who originally registered for the BSc Degree Programme may exit the programme and opt for a Diploma in Science after the acquisition of 60 credits by applying on the prescribed form to SAR/Examinations, before the stipulated date.

Award Criteria

- i) **For students admitted to the BSc programme NS Structure:** The Diploma in Science will be awarded in accordance with Regulation & Rule 1.1.1.1 (f). An extract of the award criteria is given below.

Minimum credit requirements	<p>Exemption and/or acarid OCAM requirement in courses adding up to a total of 60 credits comprising:</p> <ul style="list-style-type: none"> • 30 credits at L3 with 8 credit in each of the three chosen disciplines and 6 credits of specified open electives, • 30 credits comprising 12 credits at L4 in each of the two main disciplines and 6 credits comprising discipline-based courses remaining at L4, L5 or higher, and/or, open electives at L 3, 4 and 5 • Pass in CYE3200, LEE3401
Pass	<ul style="list-style-type: none"> • C grades or better in 45 credits (from among the 60 credits above) with at least 21 credits at L3, 18 credits at L4, L5, or higher • Minimum D grades in the remaining 15 credits, • Minimum GPA of 2.00, • Complete the relevant requirements within a period of 10 academic years. • Pass in CYE3200, LEE3401

Re-admission to the BSc programme: Diplomates may seek re-admission to the BSc Degree programme with exemptions/credit transfers and shall be required to register for courses to fulfil the requirements for the award of the Degree as specified in the Regulation and Rule 1.1.1.1 (g)

BSc Degree Programme - S1 Structure

The BSc Degree programme is of 90 credits and offers a combination of discipline-based courses, open electives and continuing education courses at Levels (L) 3, 4 and 5

Level 3 - Register within the maximum of 30 credits

Admission requirements

At least 3 passes or exemption in approved Science subjects in GCE A/L or Foundation Level, in any number of sittings, including the specified prerequisites in the relevant disciplines of choice.

Level 3 courses

Discipline-based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU3301	3	Organization of Cells and Plant Biochemistry	Pass in Botany/Biology in G.C.E. A/L or Foundation in Science/Foundation Courses
BYU3500	5	Diversity of Plants	
Chemistry			
CYU3300	3	Basic Principles of Chemistry I	Pass in Chemistry in G.C.E. A/L / Foundation in Science / Foundation Courses or equivalent
CYU3201	2	Basic Principles of Chemistry II	
CYU3302	3	Basic Practical Chemistry	
Physics			
PHU3300	3	Basic General and Thermal Physics	Pass in Physics in G.C.E. A/L or Foundation in Science/Foundation Courses
PHU3301	3	Basic Electromagnetism	
PHU3202	2	Waves in Physics	
Zoology			
ZYU3500	5	Animal Life and Diversity	Pass in Zoology/Biology in G.C.E. A/L or Foundation in Science/ Foundation Courses
ZYU3301	3	Biogeography	
Computer Science			
CSU3200	2	Introduction to Computer Programming	03 A/Level Passes in Science subjects or in Foundation in Science/ Foundation Courses + CSE3213 in stART@OUSL (Pass/CR)
CSU3301	3	Database Design and Implementation	
CSU3302	3	Data Structures and Algorithms	
Applied Mathematics			
ADU3300	3	Vector Algebra	Pass in Applied Mathematics/ Combined Mathematics/ Higher Mathematics in G.C.E. A/L or Foundation in Science/ Foundation Courses
ADU3201	2	Basic Statistics	
ADU3302	3	Differential Equations	

Note :

Students may select any three of the above open elective course units to fulfil the 6 credit requirement specified in the Rule.

Compulsory requirements

Choose a minimum of 30 credits with at least 6 credits from the compulsory open electives and 8 credits each from the three chosen disciplines. If not exempted, offer LEE3410, FDE3020, CYE3200, LSE3213.

Pure Mathematics			
Course Code	Credit Rating	Course Title	Pre-Requisites
PEU3300	3	Mathematical Logic and Mathematical Proofs	Pass in Pure Mathematics/Combined Mathematics/ Higher Mathematics/Mathematics in G.C.E. A/L or Foundation in Science/Foundation Courses
PEU3301	3	Foundations of Mathematics	PEU3300 (Pass/ Valid OCAM/CR)
PEU3202	2	Vector Spaces	PEU3300 + PEU3301 (Pass/ Valid OCAM/CR)

Open Elective Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
LLU3261	2	Understanding Law	
MSU3208	2	Managing Your Work and People	
DSU3298	2	Introduction to Sri Lankan Society	
FNU3200	2	Ethics in Science & Technology	
ADU3218	2	Basic Statistics	For Mathematics Students, not offering Applied Mathematics {i.e., it is mutually exclusive with ADU3201}
FNU3201*CS	2	Communication Skills	

Continuing Education Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
CYE3200	2	Mathematics for Chemistry and Biology	
LEE3410	4	English for General Academic Purposes (EGAP)	
CSE3213	2	ICT Skills	
FDE3020	0	Empowering for Independent Learning (EfiL)	

Level 4 – Register within the maximum of 30 credits

Admission requirements

Pass/exemption/valid OCAM/concurrent registration in the 30 credits of specified compulsory course requirement at L3 and Pass/exemption/concurrent registration in LEE3410 and exemption/valid OCAM in CYE3200 and CSE3213 (for students offering Chemistry, Botany or Zoology). Pass in FDE3020

Level 4 courses

Discipline based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU4300	3	Plant Physiology	BYU3301 (Pass/CR/valid OCAM) BOU1101 (EL) and pass in EDE3001
BYU4301	3	Genetics and Evolution	
BYU4302	3	Systematics of Higher Plants and Animals	BYU3500 (Pass/CR/valid OCAM) BOU1200 (EL) and pass in EDE3001
BYU4303	3	Principles of Microbiology	BYU3500 (Pass/CR/valid OCAM) BOU1200 (EL or CR) and pass in EDE3001
Chemistry			
CYU4300	3	Inorganic Chemistry	
CYU4301	3	Concepts in Chemistry	
CYU4303	3	Organic Chemistry I	(CYU3300 + CYU3201) pass/ Valid OCAM
CYU4302	3	Practical Chemistry II	CYU3302 Pass /Valid OCAM AND (CYU4301+CYU4303) Pass/Valid OCAM
Physics			
PHU4300	3	Modern Physics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302 + PHU4103
PHU4301	3	Electronics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302
PHU4302	3	Optics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302 + PHU4103
PHU4303	3	Mathematical Methods for Physics	CR/Valid OCAM/Pass in PHU3300 + PHU3301 + PHU3302
Zoology			
ZYU4300	3	Animal Form and Function	
ZYU4301	3	Ecology	
ZYU4302	3	Animal Development	
ZYU4303	3	Animal Behaviour	
Computer Science			

Compulsory Requirements

Select a minimum of 30 credits comprising 12 credits each from the major disciplines and 6 credits from the 3rd discipline offered at L3.

CSU4300	3	Operating Systems	(CSU3200 + CSU3301 + CSU3302) (Pass/ Valid OCAM/ CR)
CSU4301	3	Object Oriented Programming	
CSU4302	3	System Analysis & software Engineering	
CSU4303	3	Computer Networks	
Applied Mathematics			
ADU4300	3	Statistical Distribution Theory	ADU3201 (Pass/ Valid OCAM/ CR)
ADU4301 **A	3	Newtonian Mechanics I	{ADU3300 (Pass/ Valid OCAM/ CR) + ADU 3302 (Pass/ Valid OCAM)}
ADU4302	3	Vector Calculus	ADU3300 (Pass/ Valid OCAM)
ADU4303 **A	3	Applied Linear Algebra and Differential Equations	ADU3302 (Pass/ Valid OCAM)
Pure Mathematics			
PEU4300 **M	3	Real Analysis I	(PEU3300 + PEU3301) (Pass/ Valid OCAM)
PEU4301	3	Real Analysis II	PEU4300 (Pass/ Valid OCAM/ CR)
PEU4302 **M	3	Linear Algebra	PEU3202 (Pass/ Valid OCAM)
PEU4303	3	Group Theory I	PEU3301 (Pass/ Valid OCAM/ CR)

Level 5 – Register within the maximum of 30 credits

Admission requirements

Pass/exemption/valid OCAM/concurrent registration in the 30 credits each of specified compulsory course requirement at L3 & L4 and pass in LEE3410, CSE3213 and CYE3200

Level 5 courses

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU5300*	3	Environmental and Applied Microbiology	BYU4303 Pass / valid OCAM BOU2103 (EL)
BYU5301*	3	Plant Pathology	BYU4303 Pass/Valid OCAMBOU2103 (EL)/Pass
BYU5302	3	Plant Growth and Development	BYU4300 Pass / valid OCAM /CR BOU2200 (EL)
BYU5303	3	Plants and Man	BYU3500 Pass BOU1200 (EL)
BYU5304*	3	Soils and Plant Growth	BYU3500 Pass / valid OCAM / BOU1200 (EL)/Pass
BYU5305	3	Literature Review in Botany	Limited Registration
BYU5306*	3	Plant Breeding	BYU4301 Pass/ CR /valid OCAM BOU2101 (EL)
BYU5308	3	Postharvest Technology of Fresh Produce	BYU4300 Valid OCAM BOU2200 (EL)
BYU5610	6	Research Project in Botany (General Degree)	Limited registration
* Compulsory for Special Degree students			
Chemistry			
CYU5300	3	Organometallic Chemistry *	Pass in CYU4300
CYU5301	3	Concepts in Spectroscopy *	CYU4301-pass/valid OCAM/Re-reg
CYU5302	3	Analytical Chemistry *	Pass in CYU3300 + CYU3201+CYU3302
CYU5303	3	Organic Chemistry II *	Pass in CYU4303+CYU4302
CYU5304	3	Chemistry of Biomolecules *	Pass in CYU4303
#CYU5305	3	Natural Product Chemistry	CYU5304 (CR)/Valid OCAM
CYU5306	3	Biochemistry	CYU5304 (CR)/ Valid OCAM
CYU5307	3	Chemical aspects of Food Industry	CYU5304 (CR) /Valid OCAM and pass in CYU3302
CYU5308	3	Instrumental Methods of Chemical Analysis *	CYU5302 (CR)/Valid OCAM
CYU5309	3	Environmental Chemistry	Pass in CYU3300 + CYU3201
CYU5310	3	Literature Project in Chemistry **	12 credits in L4 + limited registration
CYU5611	6	Research Project in Chemistry **	registration
#CYU5312	3	Industrial Chemistry I **	Pass in CYU3300 + CYU3201
#CYU5313	3	Polymer Chemistry **	Pass in CYU3300 + CYU3201
CYU5614	6	Physical Chemistry II *^	
CYU5615	6	Advanced Organic Chemistry *^	

Compulsory Requirements

Select a maximum of 30 credits from L5 or higher level. Minimum of 6 credits or maximum of 18 credits each from a total of 24 credits from two main disciplines and 6 credits from third discipline and/or open electives at L5

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
**For General degree students only *Compulsory for Honours degree ^Only for Honours degree # Not offered this year			
Physics			
PHU5300*	3	Nuclear & Particle Physics	CR/Valid OCAM/Pass in PHU3302 + PHU4300
PHU5301*	3	Practical Physics	CR/Valid OCAM/Pass in PHU4301 + PHU5303
PHU5302	3	Atmospheric Physics	
PHU5303*	3	Data Acquisition and Signal Processing	CR/Valid OCAM/Pass in PHU4301
PHU5304	3	Biophysics	
PHU5305	3	Essentials of Geology	
PHU5306	3	Applied Geology	CR/Valid OCAM/Pass in PHU5305
PHU5307	3	Medical Physics	
PHU5308	3	Fundamentals of Geophysics	CR/Valid OCAM/Pass in PHU5305
PHU5309	3	Literature Survey Project in Physics	
PHU5610	6	Research Project in Physics	Limited Registration
PHU5311	3	Astronomy	
PHU5312*	3	Solid State Physics	CR/Valid OCAM/Pass in PHU4300 + PHU4303
PHU5313*	3	Advanced Electromagnetism	CR/Valid OCAM/Pass in PHU4303
PHU5314*	3	Thermodynamics	CR/Valid OCAM/Pass in PHU4303
PHU5315	3	Renewable Energy Sources	

Level 5 Courses, contd.

Course Code	Credit Rating	Course Title	Pre-Requisites
Zoology			
ZYU5300	3	Aquatic Biology	
ZYU5301	3	Fish Biology and Fishery Management	
ZYU5302	3	Conservation & Management of Biodiversity	
ZYU5304	3	Parasitology	
ZYU5307	3	Mammalian Biology	
ZYU5608	6	Zoology Project	ZYU5313 (CR); only for General Degree
ZYU5309	3	Paleobiology	
ZYU5313	3	Research Methodology	For Special Degree students and General degree students registered for ZYU5608
Computer Science			
CSU5300#	3	IT Project Management	(CSU3200 + CSU3301 + CSU3302) (Pass/ Valid OCAM/ CR) + (CSU4300 + CSU4301 + CSU4302 + CSU4303) (Pass/ Valid OCAM/ CR);
CSU5301#	3	Software Quality Assurance	
CSU5302#	3	Web Technologies	
CSU5303#	3	Management Information Systems	
CSU5304*.*NM	3	Mathematics for Computing	
CSU5305*	3	Theory of Computing	
CSU5306	3	Digital Electronics	
CSU5307	3	Data Communication	
CSU5308*	3	Artificial Intelligence	
CSU5309	3	Information Security & Cryptography	
CSU5320*.*#	3	Project in Computer Science	{{(CSU3200 + CSU3301 + CSU3302) (Pass) + (CSU4300 + CSU4301 + CSU4302 + CSU4303) (Pass)}} and PASS/CR in CSU5300 and PASS/CR in relevant L5 courses to be decided in consultation with prospective academic supervisor.

Open Elective Courses			
Course Codes	Credit Rating	Course Title	Pre-Requisites
ADU5318	3	Bio Statistics (Non-Mathematics Students)	CYE3200 (Pass/ Valid OCAM) or PSE3117 (EL or Pass)
ADU5319	3	Design and Analysis of Experiments	ADU3201/ADU3218/ADU3318/ADU5318 (Pass/ Valid OCAM/ CR) or (APU1141/PCU1142/PCU1141/PCU3141) (EL)
ADU5320	3	Introduction to MATLAB Software	For Mathematics Students only.
BYU5318	3	Environmental Studies	
PHU5318	3	Electronics for Biology Students	For Non Physics students only

Applied Mathematics			
ADU5300 *A	3	Linear Programming	For Mathemaics students only
ADU5301 *S45	3	Regression Analysis I	ADU3201 (Pass/ Valid OCAM) or APU1141 (EL)
ADU5302 ***.*M, *A	3	Mathematical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5303	3	Newtonian Mechanics II	ADU4301 (Pass/ Valid OCAM) or APU2142 (EL)
ADU5304 *A	3	Operational Research	ADU5300 (Pass/ Valid OCAM/ CR) only for Applied Mathematics special or general degree or APU3141 (EL)
ADU5305	3	Statistical Inference	ADU4300 (Pass/ Valid OCAM/CR) or APU2140 (EL)
ADU5306	3	Fluid Mechanics	ADU4302 (Pass/ Valid OCAM) or APU2143 (EL) only for Applied Mathematics Special or General degree
ADU5307 *A	3	Numerical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5308	3	Graph Theory	only for Applied Mathematics Special or General degree
ADU5310	3	Time series Analysis	
ADU5314	3	Sampling Techniques	
ADU5311	3	Regression Analysis II	ADU5301 (Pass/ Valid OCAM)only for Statistics Special or General degree
ADU5312	3	Data mining Techniques	only for Statistics Special
ADU5313	3	Generalized Linear Models	only for Statistics Special
ADU5615 *Z	3	Project in Mathematics	only for Mathematics General degree (Limited Registration)
Pure Mathematics			
PEU5300 *M	3	Riemann Integration	PEU4301 (Pass/ Valid OCAM) or (PUU2141+PUU2143) (EL)
PEU5301	3	Ring Theory	PEU4303 (Pass/ Valid OCAM) or PUU2144 (EL)
PEU5302	3	Combinatorics	only for Mathematics students
PEU5303 *M	3	Number Theory	PEU3301 (Pass/ Valid OCAM) or PUU1141 (EL)
PEU5304 **M, *M	3	Introduction to Complex Analysis	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass/ Valid OCAM) (PUU2140+PUU2141+PUU2143) (EL)
PEU5305 *M	3	Complex Analysis I	PEU5304 (Pass/Valid OCAM/CR) or PUU3141 (EL)
PEU5306	3	Introduction to Dynamical Systems	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass / Valid OCAM) (PUU2140+PUU2141) (EL)
PEU5307	3	Cryptography	PEU5303 (Pass/Valid OCAM/ CR)

Evaluation

For all the courses evaluation procedure involves both continuous assessments and final examinations. Overall Continues Assesment Mark (OCAM) to be considered for the final examination of a course, a student should score a minimum of 35% for its continuous assessments, which will be valid for two years. Students are required to answer Level 4 and higher level examinations in English

- i) **Overall Mark :** For each course the overall mark, "Z%" will be computed by a combination of the Continuous Assessment Mark (CAM), "X%" and the Final Examination Mark (FEM), "Y%" as follows.

If $Y \geq 40$ and, then $Z = 0.4 X + 0.6 Y$
 If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.
 If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of any course offered by the Faculty of Humanities & Social Sciences, except for the course LEE3410:English for General Academic Purposes shall be computed as follows :

If $Y \geq 40$, then $Z = 0.4 X + 0.6 Y$
 If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.
 If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of the course LEE3410:English for General Academic Purposes shall be determined by the Faculty of Humanities & Social Sciences as follows:

If $Y \geq 40$, then $Z = 0.3 X + 0.7 Y$
 If $Y < 40$, then $Z = Y$

- ii) **Overall Grade and Grade Point Value:** For each course, an overall Grade and a Grade Point Value will be awarded based on Z% as shown below.

Range of marks	85-100	70-84	65-69	60-64	55-59	50-54	45-49	40-44	35-39	30-34	20-29	0-19
Overall Grade	A ⁺	A	A ⁻	B ⁺	B	B ⁻	C ⁺	C	C ⁻	D ⁺	D	E
Grade Point Value	4.00	4.00	3.70	3.30	3.00	2.70	2.30	2.00	1.70	1.30	1.00	0.00

A⁺, A, A⁻, B⁺, B, B⁻, C⁺, and C are Pass grades. Not eligible students will be assigned a F Grade and Absentees for a final examination will be assigned a RX Grade

- i) **Grade Point Average (GPA):** GPA is the credit-weighted arithmetic mean of the Grade Point Values obtained by a student for the total of 90 credits. GPA will be calculated to the second decimal point, subject to a maximum of 4.00, as shown in the example below. GPA will determine the Passes and Classes of the BSc degree.

Example: Calculation of the GPA for a student with the following Grades

Overall Grade	No of credits	Credit weighted Grade Point Value
A ⁺	6	6 x 4.00 = 24.00
A	15	15 x 4.00 = 60.00
B	20	20 x 3.00 = 60.00
C	43	43 x 2.00 = 86.00
D	6	6 x 1.00 = 6.00
Total	90	236.00

$$GPA = \frac{\sum c_i g_i}{\sum c_i}$$

c_i : Credit rating of the i^{th} course
 g_i : GP value obtained for i^{th} course

$$GPA = 236.00/90 = 2.62$$

BSc Degree (S1 Structure) Award Criteria (90 credits)

The BSc degree will be awarded in accordance with the provisions of the OUSL Regulation and Rule 1.1.1.1(g). An extract of the award criteria is given below. Those who wish to be considered for the award of the degree, should apply on the prescribed form to the SAR/Examinations Division, before the date stipulated by the Faculty.

Minimum credit requirements	<p>Requirements in courses adding up to a total of 84 credits comprising:</p> <ul style="list-style-type: none"> • 30 credits at L3 with 8 credits in each of the three chosen disciplines and 6 credits of open electives, • 30 credits at L4 with 12 credits in each of the two main disciplines and 6 credits from the remaining discipline chosen at L3, • 24 credits at L5 minimum 6 credits or maximum 18 from the two main disciplines and 06 credit from third discipline and/or open electives at Level 05, • At least D⁺ grades for the remaining 06 credits of courses at Level 05, <p>and</p> <ul style="list-style-type: none"> • Minimum C grade or exemption in CYE3200 for Chemistry and Biology students, • Minimum C grade or exemption in LEE3410. and CSE3213
Pass	<ul style="list-style-type: none"> • C grades or better in 84 credits (from among the 90 credits above) with 30 credits at L3, 30 credits at L4 and 24 credit at L5, • Minimum D⁺ grades in the remaining 6 credits at Level 5 • Minimum GPA of 2.00, • Complete the relevant requirements within a period of 9 academic years.
To be awarded a First or Second Class a student needs to fulfil the Pass criteria specified above with criteria specified below:	
Second Class (Lower Division) Honours	<ul style="list-style-type: none"> • C grades or better in 84 credits and at least D⁺ grades for the remaining 06 credits of courses at Level 5, • B grades or better in at least 45 credits, • Minimum GPA of 3.00.
Second Class (Upper Division) Honours	<ul style="list-style-type: none"> • C grades or better in 84 credits and at least D⁺ grades for the remaining 06 credits of courses at Level 5, • B⁺ grades or better in at least 45 credits, • Minimum GPA of 3.30.
First Class Honours	<ul style="list-style-type: none"> • C grades or better in 84 credits and at least D⁺ grades in the remaining 06 credits of courses at Level 5, • A grades or better in 45 credits, • Minimum GPA of 3.70

BSc Degree Programme - Course Fees

The Registration fee and other fees relevant for 2017/2018, are given below.

Registration Fee	-	Rs.	400.00
Sports Club Fee	-	Rs.	25.00
Facilities Fee	-	Rs.	1500.00
Refundable Lab Deposit	-	Rs.	1100.00
Library Facilities Fee	-	Rs.	100.00
Tuition Fees	-	Rs.	1900.00 per credit

Tuition & Practical fees payable are given in the Tables below. Foreign students will be charged four (4) times tuition fees of local students.

Table 8 Tuition Fees

Credit rating	3	9	18	24	30
Fees	Rs.5,700.00	Rs.17,100.00	Rs.34,200.00	Rs.45,600.00	Rs.57,000.00

Table 9 Practical Fees - to be paid only by those students offering the relevant courses.

Course	Fee	Course	Fee	Course	Fee
BYU3500	Rs.500.00	ZYU4300	Rs.500.00	CSU5301	Rs.200.00
CYU3302	Rs.1800.00	ZYU4101	Rs.500.00	CSU5302	Rs.200.00
ZYU3500	Rs.500.00	CSU4302	Rs.200.00	CSU5306	Rs.200.00
CSU3316	Rs.200.00	CSU4315	Rs.200.00	CSU5316	Rs.200.00
CSU3302	Rs.200.00	CSU4616	Rs.200.00	BYU5610	Rs.500.00
BYU4303	Rs.600.00	BYU5300	Rs.600.00	ZYU6303	2000.00
BYU4300	Rs.600.00	BYU5302	Rs.600.00	ZYU6310	2000.00
CYU4302	Rs.2600.00	BYU5308	Rs.600.00	ZYU6605	2000.00
		CYU5302	Rs.1500.00	ZYU6306	2000.00
		CYU5303	Rs.1500.00	FNU6301	2000.00
		CYU5308	Rs.1500.00	ZYU6311	2000.00
		CYU5307	Rs.900.00		

BSc Special Degree Programme (SS Structure)

The BSc Special Degree Programme is of 120 credits and offers a combination of discipline-based courses, open electives and continuing education courses as in the BSc (General) Degree programme up to Level 4 and focus more on courses based on a single discipline at Levels 5 and 6.

Admission requirements for Level 5

Eligibility in 60 credits at Levels 3 and 4, completed within 3 years from initial registration; with minimum C grades for the 30 credits at Level 3 and 12 credits of the subject of specialization at Level 4 with minimum GPA of 3.00 for the 42 credits at Levels 3 and 4 in the subject of specialization; minimum of B grades adding up to 15 credits out of a total of 20 credits in the subject of specialization at Levels 3 and 4 taken together and minimum C grade or exemption for the course CYE3200 for students offering courses in one or more of the disciplines of Botany, Chemistry and Zoology at Level 4 and above.

Compulsory Requirements

Select a maximum of 30 credits from L5.

Level 5 Courses

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU5300*	3	Environmental and Applied Microbiology	BYU4303 Pass / valid OCAM BOU2103 (FL)
BYU5301*	3	Plant Pathology	BYU4303 Pass/Valid OCAMBOU2103 (FL)/Pass
BYU5302	3	Plant Growth and Development	BYU4300 Pass / valid OCAM /CR BOU2200 (FL)
BYU5303	3	Plants and Man	BYU3500 Pass BOU1200 (EL)
BYU5304*	3	Soils and Plant Growth	BYU3500 Pass / valid OCAM / BOU1200 (FL)/Pass
BYU5305	3	Literature Review in Botany	Limited Registration
BYU5306*	3	Plant Breeding	BYU4301 Pass/ CR /valid OCAM BOU2101 (EL)
BYU5308	3	Postharvest Technology of Fresh Produce	BYU4300 Valid OCAM BOU2200 (EL)
BYU5610	6	Research Project in Botany (General Degree)	Limited registration
* Compulsory for Honours Degree students			
Chemistry			
CYU5300	3	Organometallic Chemistry *	Pass in CYU4300 / CMU1222 EL
CYU5301	3	Concepts in Spectroscopy *	CYU4301-pass/valid OCAM/Re-reg/CMU2220 FL
CYU5302	3	Analytical Chemistry *	Pass in CYU3300 + CYU3201+CYU3302 or Pass in CMU1220 and CMU1121
CYU5303	3	Organic Chemistry II *	Pass in CYU4303+CYU4302/CMU2221 EL
CYU5304	3	Chemistry of Biomolecules *	Pass in CYU4303 /CMU2221 EL
CYU5305	3	Natural Product Chemistry	CYU5304 (CR)/Valid OCAM or /CMU3124 FL
CYU5306	3	Biochemistry	CYU5304 (CR)/ Valid OCAM or CMU3124 FL
CYU5307	3	Chemical aspects of Food Industry	CYU5304 (CR) /Valid OCAM and pass in CYU3302 or CMU3124 FL
CYU5308	3	Instrumental Methods of Chemical Analysis *	CYU5302 (CR)/Valid OCAM or CMU3123 FL
CYU5309	3	Environmental Chemistry	Pass in CYU3300 + CYU3201 or pass in CMU1220
CYU5310	3	Literature Project in Chemistry **	12 credits in L4 + limited registration
CYU5611	6	Research Project in Chemistry **	Pass in CYU3300 + CYU3201 or pass in CMU1220
#CYU5312	3	Industrial Chemistry I **	Pass in CYU3300 + CYU3201 or pass in CMU1220

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
#CYU5313	3	Polymer Chemistry **	Pass in CYU3300 + CYU3201 or pass in CMU1220
CYU5614	6	Physical Chemistry II **^	
CYU5615	6	Advanced Organic Chemistry **^	
**For General degree students only *Compulsory for Honours degree ^Only for Honours degree			
# Not offered this year			
Physics			
PHU5300*	3	Nuclear & Particle Physics	CR/Valid OCAM/Pass in PHU3302 + PHU4300
PHU5301*	3	Practical Physics	CR/Valid OCAM/Pass in PHU4301 + PHU5303
PHU5302	3	Atmospheric Physics	
PHU5303*	3	Data Acquisition and Signal Processing	CR/Valid OCAM/Pass in PHU4301
PHU5304	3	Biophysics	
PHU5305	3	Essentials of Geology	
PHU5306	3	Applied Geology	CR/Valid OCAM/Pass in PHU5305
PHU5307	3	Medical Physics	
PHU5308	3	Fundamentals of Geophysics	CR/Valid OCAM/Pass in PHU5305
PHU5309	3	Literature Survey Project in Physics	
PHU5610	6	Research Project in Physics	Limited Registration
PHU5311	3	Astronomy	
PHU5312*	3	Solid State Physics	CR/Valid OCAM/Pass in PHU4300 + PHU4303
PHU5313*	3	Advanced Electromagnetism	CR/Valid OCAM/Pass in PHU4303
PHU5314*	3	Thermodynamics	CR/Valid OCAM/Pass in PHU4303
PHU5315	3	Renewable Energy Sources	

Level 5 Courses, contd.

Course Code	Credit Rating	Course Title	Pre-Requisites
Zoology			
ZYU5300	3	Aquatic Biology	
ZYU5301	3	Fish Biology and Fishery Management	
ZYU5302	3	Conservation & Management of Biodiversity	
ZYU5304	3	Parasitology	
ZYU5305	3	Human Biology	
ZYU5306	3	Insect Biology	
ZYU5307	3	Mammalian Biology	
ZYU5608	6	Zoology Project	ZYU5313 (CR); only for General Degree
ZYU5309	3	Paleobiology	
ZYU5310	3	Evolutionary Biology	
ZYU5311	3	Literature review in zoology	Only for Special Degree students
ZYU5313	3	Research Methodology	For Special Degree students and General degree students registered - for ZYU5608
Computer Science			
CSU5300#	3	IT Project Management	(CSU3200 + CSU3301 + CSU3302) (Pass/ Valid OCAM/ CR) + (CSU4300 + CSU4301 + CSU4302 + CSU4303) (Pass/ Valid OCAM/ CR);
CSU5301#	3	Software Quality Assurance	
CSU5302#	3	Web Technologies	
CSU5303#	3	Management Information Systems	
CSU5304*,*NM	3	Mathematics for Computing	
CSU5305*	3	Theory of Computing	
CSU5306	3	Digital Electronics	
CSU5307	3	Data Communication	
CSU5308*	3	Artificial Intelligence	
CSU5309	3	Information Security & Cryptography	
CSU5320*,#	3	Project in Computer Science	{{(CSU3200 + CSU3301 + CSU3302) (Pass) + (CSU4300 + CSU4301 + CSU4302 + CSU4303) (Pass)}} and PASS/ CR in CSU5300 and PASS/CR in relevant L5 courses to be decided in consultation with prospective academic supervisor.

Open Elective Courses			
Course Codes	Credit Rating	Course Title	Pre-Requisites
ADU5318	3	Bio Statistics (Non-Mathematics Students)	CYE3200 (Pass/ Valid OCAM) or PSE3117 (EL or Pass)
ADU5319	3	Design and Analysis of Experiments	ADU3201/ADU3218/ADU3318/ADU5318 (Pass/ Valid OCAM/ CR) or (APU1141/ PCU1142/PCU1141/PCU3141) (EL)
ADU5320	3	Introduction to MATLAB Software	For Mathematics Students only.
BYU5318	3	Environmental Studies	
PHU5318	3	Electronics for Biology Students	For Non Physics students only

Applied Mathematics			
ADU5300 *A	3	Linear Programming	For Mathemaics students only
ADU5301 *S45	3	Regression Analysis I	ADU3201 (Pass/ Valid OCAM) or APU1141 (EL)
ADU5302 **A, *M, *A	3	Mathematical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5303	3	Newtonian Mechanics II	ADU4301 (Pass/ Valid OCAM) or APU2142 (EL)
ADU5304 *A	3	Operational Research	ADU5300 (Pass/ Valid OCAM/ CR) only for Applied Mathematics special or general degree or APU3141 (EL)
ADU5305	3	Statistical Inference	ADU4300 (Pass/ Valid OCAM/CR) or APU2140 (EL)
ADU5306	3	Fluid Mechanics	ADU4302 (Pass/ Valid OCAM) or APU2143 (EL) only for Applied Mathematics Special or General degree
ADU5307 *A	3	Numerical Methods	ADU3302 (Pass/ Valid OCAM) or APU1142 (EL)
ADU5308	3	Graph Theory	only for Applied Mathematics Special or General degree
ADU5310	3	Time series Analysis	
ADU5314	3	Sampling Techniques	
ADU5311	3	Regression Analysis II	ADU5301 (Pass/ Valid OCAM)only for Statistics Special or General degree
ADU5312	3	Data mining Techniques	only for Statistics Special
ADU5313	3	Generalized Linear Models	only for Statistics Special
ADU5615 *Z	3	Project in Mathematics	only for Mathematics General degree (Limited Registration)
Pure Mathematics			
PEU5300 **M	3	Riemann Integration	PEU4301 (Pass/ Valid OCAM) or (PUU2141+PUU2143) (EL)
PEU5301	3	Ring Theory	PEU4303 (Pass/ Valid OCAM) or PUU2144 (EL)
PEU5302	3	Combinatorics	only for Mathematics students
PEU5303 **M	3	Number Theory	PEU3301 (Pass/ Valid OCAM) or PUU1141 (EL)
PEU5304 **MM, *M	3	Introduction to Complex Analysis	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass/ Valid OCAM) (PUU2140+PUU2141+PUU2143) (EL)
PEU5305 **M	3	Complex Analysis I	PEU5304 (Pass/Valid OCAM/CR) or PUU3141 (EL)
PEU5306	3	Introduction to Dynamical Systems	PEU4300 (Pass / Valid OCAM) + PEU4301 (Pass / Valid OCAM) (PUU2140+PUU2141) (EL)
PEU5307	3	Cryptography	PEU5303 (Pass/Valid OCAM/ CR)

Admission requirements for Level 6

Valid OCAM/concurrent registration in the 30 credits each of specified compulsory course requirements at L6.

Compulsory Requirements

Select a maximum of 30 credits.

Level 6 Courses

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Botany			
BYU6300*	3	Plant Molecular Biology	
BYU6301	3	Bioinformatics	
BYU6302	3	Biotechnology	
BYU6303*	3	Experimental Design and Biological data Analysis	
BYU6304	3	Integrated Crop Protection	BYU5301 valid OCAM
BYU6305	3	Industrial Microbiology	BYU5300 valid OCAM
BYU6306	3	Molecular Systematics	
BYU6307*	3	Advanced Plant Physiology and Biochemistry	
BYU6308*	3	Advanced Ecology	
BYU6309	3	Soil Biology	
BYU6310	3	Advanced Plant Pathology	
BYU6911*	9	Research Project in Botany(Special Degree)	
BYU6312	3	Plant Virology	
BYU6313*	3	Special Topics in Botany	
Chemistry			
CYU6600	6	Advanced Concepts in Chemistry*^	C grade in CYU4300 + CYU5300
CYU6301	3	Selected topics in Inorganic Chemistry^	C grade in CYU4300
CYU6302	3	Medicinal Chemistry	C grade in CYU 5306
CYU6303	3	Chemistry in Material Science ^	C grade in CYU4301 + CYU5303 + CYU4300
CYU6304	3	Inorganic Spectroscopy & Structural Chemistry^	C grade in CYU4300
CYU6305	3	Concepts in Industrial Chemistry*^	C grades in CYU4300 + CYU4301 + CYU4303
CYU6606	6	Advanced Experimental Chemistry*^	C grade in CYU4302 + CYU5302 + CYU5308
CYU6307	3	Industrial training and Literature seminar*^	C grades in 12 credits L4 Chemistry + CYU6307 CR
CYU6908	9	Research Project in Chemistry*^	
*Compulsory for Honours degree ^Only for Honours degree			

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Physics			
PHU6300*	3	Advanced Practicals in Physics	CR/Valid OCAM/Pass in PHU4300 + PHU5313
PHU6301*	3	Advanced Solid State Physics	CR/Valid OCAM/Pass in PHU5312
PHU6302*	3	Advanced Quantum Mechanics	CR/Valid OCAM/Pass in PHU4300
PHU6603*	6	Advanced Research Project in Physics	only for Honours Degree students
PHU6304*	3	Advanced Electronics	CR/Valid OCAM/Pass in PHU4301
PHU6305	3	Nanophysics and its Applications	CR/Valid OCAM/Pass in PHU5312
PHU6306*	3	Statistical Physics	CR/Valid OCAM/Pass in PHU4303 + PHU5314
PHU6307	3	Modern Optics	CR/Valid OCAM/Pass in PHU4300 + PHU4302
PHU6308*	3	Classical Mechanics	CR/Valid OCAM/Pass in PHU4303
Zoology			
ZYU6300	3	Management of Insect pests and vector	ZYU5306 (Pass or valid OCAM)
ZYU6301	3	Aquaculture	
ZYU6302	3	Immunology	
ZYU6303	3	Molecular Biology	
ZYU6605*	6	Advanced Laboratory Techniques in Zoology	
ZYU6306	3	Ornithology	
ZYU6908*	9	Research Project in Zoology	ZYU5313(Pass or valid OCAM or CR)
ZYU6309	3	Oceanography and Ocean Resources	
ZYU6310	3	Wild life Management and Conservation	
ZYU6311*	3	Special topics in Zoology	

Level 6 Courses, contd.

Discipline- based Courses			
Course Code	Credit Rating	Course Title	Pre-Requisites
Computer Science			
CSU6300	3	Advanced Database Systems	CSU3301 (Pass/ Valid OCAM)
CSU6301	3	Data Mining & Machine Learning	(CSU5304 + CSU5308) (Pass/ Valid OCAM)
CSU6602	6	Computer Graphics and Image Processing	CSU5304 (Pass/ Valid OCAM)
CSU6603	6	Advanced Networking	CSU4303 (Pass/ Valid OCAM)
CSU6304	3	Computer Architecture	CSU5306 (Pass/ Valid OCAM)
CSU6305	3	Computer Interfacing	CSU5306 (Pass/ Valid OCAM)
CSU6306	3	Selected Topics in Computer Science	CSU3200 (Pass/ Valid OCAM) , CSU3302 (Pass/ Valid OCAM)
CSU6607*	6	Research Project in Computer Science	L3 ,L4 and L5 all CS Courses including PASS CSU5320 and to be decided in consultation with departmental academic staff, based on the Research project proposal report/ presentation.
Information Technology			
CSU6308	3	Advanced Database Systems	CSU3301 (Pass/ Valid OCAM)
CSU6309	3	Electronic Commerce	(CSU5302 + CSU5303) (Pass/ Valid OCAM)
CSU6310	3	Information Systems Management & Professional Ethics	CSU5303 (Pass/ Valid OCAM)
CSU6311	3	Human Computer Interaction	CSU5303 (Pass/ Valid OCAM)
CSU6312	3	Software Architecture and Designing	CSU4302 (Pass/ Valid OCAM)
CSU6313	3	Information Technology Social Aspects & Infrastructure Management	(CSU4302 + CSU5300) (Pass/ Valid OCAM)
CSU6314	3	E- Governance	
CSU6315	3	Management Theories & Practices	
CSU6316	3	Selected Topics in Information Technology	CSU3200 (Pass/ Valid OCAM) , CSU3302 (Pass/ Valid OCAM)
CSU6617*	6	Research Project in Information Technology	L3 and L4 and L5 all CS Courses including PASS CSU5320 and to be decided in consultation with departmental academic staff, based on the Research project proposal report/presentation.
Applied Mathematics			
ADU6300	3	Stochastic Processes	
ADU6601	6	Applied Number Theory	PEU5303 (Pass/ Valid OCAM)
ADU6602	6	Statistical Quality Control	
ADU6303	3	Actuarial Mathematics	
ADU6304	3	Computational Mathematics	ADU5307 (Pass/ Valid OCAM) only for Applied Mathematics Special
ADU6305	3	Optimization Theory	ADU5300 (Pass/ Valid OCAM) only for Applied Mathematics Special
ADU6306	3	Mathematical Modelling	
ADU6307	3	Advanced Statistical Distribution Theory	only for statistics Special
ADU6308	3	Survival Analysis	only for statistics Special
ADU6309	3	Medical Statistics	only for statistics Special
ADU6310	6	Multivariate Analysis	only for statistics Special
ADU6611**,*A	6	Research Project	Limited Registration only for Mathematics/ Applied Mathematics /statistics Special

Pure Mathematics			
Course Code	Credit Rating	Course Title	Pre-Requisites
PEU6300*	3	Group Theory II	PEU4303 (Pass) or PUU2144 (Pass) only for Mathematics Special
PEU6601*	6	Point Set Topology	PEU4300 (Pass) + PEU4301 (Pass) or (PUU2140+PUU2141) (Pass) only for Mathematics Special
PEU6602*	6	Measure Theory	PEU5300 (Pass/ Valid OCAM) or PUU3143 (EL) only for Mathematics Special
PEU6303	3	Complex Analysis II	PEU5305 (Pass/ Valid OCAM) or PUU3245 (EL) only for Mathematics Special
PEU6304	3	Functional Analysis	PEU6602 (Pass/ Valid OCAM/ CR) only for Mathematics Special
PEU6305	3	Introduction to Galois Theory	PEU5301 (Pass/ Valid OCAM) or PUU3240 (EL) only for Mathematics Special
PEU6306	3	Advanced Topics in Real Analysis	PEU4300 (Pass) + PEU5300 (Pass/Valid OCAM) or PUU2140 (Pass) + PUU3141 (Pass) only for Mathematics Special

Open Elective Courses			
Course Codes	Credit Rating	Course Title	Pre-Requisites
FNU6300	3	GIS and remote sensing in Natural Resource Management	Only for special degree in any discipline
FNU6301	3	Environmental Degradation Management	
FNU6302	3	Fundamentals of Environmental Impact Assessment	

* Compulsory for Physics special Degree

- * **NA** - For Mathematics students not offering Applied Mathematics
- * - Compulsory for the relevant discipline specialization.
- * **MM** - Compulsory for students who offer Pure Mathematics as a major discipline.
- # - Compulsory for specialization in Information Technology.
- * **S45** - Shifted from Level 04 to Level 05.
- * **A** - Compulsory for Special Degree in Applied Mathematics.
- ** **A** - Compulsory for students who offer Applied Mathematics.
- * **M** - Compulsory for Special Degree in Mathematics.
- ** **M** - Compulsory for students who offer Pure Mathematics.
- * **NM** - For Computer Science students not offering Mathematics.
- * **E** - Only for students from the Faculty of Engineering Technology
- * **CS** - Compulsory for students who offer Computer Science

Evaluation

Evaluation procedure involves both continuous assessments and final examinations. To be eligible to sit the final examination of a course, a student should score a minimum of 35% for its continuous assessments, which will be valid for two years.

- i) **Overall Mark :** For the courses offered by the Faculty of Natural Sciences, overall mark, "Z%" will be computed by a combination of the Continuous Assessment Mark (CAM), "X%" and the Final Examination Mark (FEM), "Y%" as follows.

If $Y \geq 40$ and, then $Z = 0.4 X + 0.6 Y$
 If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.
 If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of any course offered by the Faculty of Humanities & Social Sciences, except for the course LEE3410:English for General Academic Purposes shall be computed as follows :

If $Y \geq 40$, then $Z = 0.4 X + 0.6 Y$
 If $30 \leq Y < 40$, then $Z = 0.4 X + 0.6 Y$, subject to a maximum of 40.
 If $Y < 30$, then $Z = Y$

The overall assessment mark (Z%) of the course LEE3410:English for General Academic Purposes shall be determined by the Faculty of Humanities & Social Sciences as follows:

If $Y \geq 40$, then $Z = 0.3 X + 0.7 Y$
 If $Y < 40$, then $Z = Y$

- ii) **Overall Grade and Grade Point Value:** For each course, an overall Grade and a Grade Point Value will be awarded based on Z% as shown below.

Range of Marks	85-100	70-84	65-69	60-64	55-59	50-54	45-49	40-44	35-39	30-34	20-29	0-19
Overall Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	E
Grade Point Value	4.00	4.00	3.70	3.30	3.00	2.70	2.30	2.00	1.70	1.30	1.00	0.00

A⁺, A, A⁻, B⁺, B, B⁺, C⁺, and C are Pass grades. Not eligible students will be assigned a F Grade and Absentees for a final examination will be assigned a RX Grade

Range of marks

Grade Point Average (GPA): GPA is the credit-weighted arithmetic mean of the Grade Point Values obtained by a student for the total of 120 credits. GPA will be calculated to the second decimal point, subject to a maximum of 4.00, as shown in below. GPA will determine the Passes and Classes of the BSc degree.

$$GPA = \frac{\sum c_i g_i l_i}{\sum c_i l_i}$$

where c_i is the credit rating of the i th course, g_i is the GP value the student has obtained for the i th course, l_i is 2 if the i th course is in either Level 3 or 4, and l_i is 3 if the i th course is in either Level 5 or 6.

BSc Special Degree (SS Structure) Award Criteria (120 credits)

For the award of the Bachelor of Science Special degree, a student may be required to complete 120 credits within 06 academic years from his/her initial registration to the BSc Degree Programme. Those who do not complete within the stipulated period, may opt for the Bachelor of Science General Degree, on completing 90 credits and satisfy the requirements for the award.

The BSc Special Degree will be awarded in accordance with the provisions of the OUSL Regulation and Rule 1.1.1.1(g). An extract of the award criteria is given below.

Minimum credit requirements	<p>Exemption and/or acquired the OCAM requirement in courses adding up to a total of 120 credits comprising:</p> <ul style="list-style-type: none"> • 30credits at L3 with 8 credits in each of the three chosen disciplines and 6 credits of open electives, • 30 credits at L4 with 12 credits in each of the two main disciplines and 6 credits from the remaining discipline chosen at L3, • 30 credits at Level 5 comprising minimum 21 credits from the subject of specialization, including all compulsory courses and minimum 03 credits and maximum 06 credits from the other two disciplines and/or upto 06 credits of open electives. • 30 credits at Level 6 comprising minimum 24 credits from the subject of specialization (as specified by the department) which shall include a minimum of 6 credit research component (compulsory). <p>and Minimum C grade or exemption in CYE3200 for Chemistry and Biology students, Minimum C grade or exemption in LEE3410 and CSE3213 Complete the above requirement 6 academic year</p>
Pass	<ul style="list-style-type: none"> • C grades or above for courses adding up to 120 credits, and, • a minimum Grade Point Average of 2.00 in courses adding up to 120 credits as specified.
To be awarded a First or Second Class student needs to fulfill the Pass criteria specified above with criteria specified below:	
Second Class (Lower Division) Honours	<ul style="list-style-type: none"> • B grades or above in courses adding up to at least 60 credits comprising 39 credits at Levels 5 and 6 out of a total of 45 credits of the subject of specialization at Levels 5 and 6 taken together, and, • a minimum Grade Point Average of 3.00 in courses adding up to 120 credits as specified.
Second Class (Upper Division) Honours	<ul style="list-style-type: none"> • B⁺ grades or above in courses adding up to at least 60 credits comprising 39 credits at Levels 5 and 6 out of the total of 45 credits of the subject of specialization at Levels 5 and 6 taken together, and, • a minimum Grade Point Average of 3.30 in courses adding up to 120 credits as specified.
First Class Honours	<ul style="list-style-type: none"> • A grades or above in courses adding up to at least 60 credits comprising 39 credits at Levels 5 and 6 out of the total of 45 credits of the subject of specialization at Levels 5 and 6) taken together, and, • a minimum Grade Point Average of 3.70 in courses adding up to 120 credits as specified.

Course Fees

Level 5- Rs. 1900.00

Level 6- Rs. 2400.00

Higher Diploma in Science [HDip (Bs)] (S1 Structure)

Students who originally registered for the BSc Degree Programme may exit the programme and opt for a Diploma in Science after the acquisition of 60 credits by applying on the prescribed form to SAR/Examinations, before the stipulated date.

Award Criteria

- i) **For students admitted to the BSc programme NS Structure:** The Diploma in Science will be awarded in accordance with Regulation & Rule 1.1.1.1 (g). An extract of the award criteria is given below.

Minimum credit requirements	<p>Exemption and/or valid OCAM requirement in courses adding up to a total of 60 credits comprising:</p> <ul style="list-style-type: none"> • 30 credits at L3 with 8 credit in each of the three chosen disciplines and 6 credits of specified open electives, • 30 credits comprising 12 credits at L4 in each of the two main disciplines and 6 credits comprising discipline-based courses • Pass in CYE3200, LEE3410 & CSE3213
Pass	<ul style="list-style-type: none"> • C grades or above in courses adding up to a total of 60 credits courses in Level 3 and 4 • Minimum GPA of 2.00, • Pass in CYE3200, LEE3410 & CSE3213 • Complete the relevant requirements within a period of 9 academic years.
Merit Pass	<ul style="list-style-type: none"> • C grades or above in courses adding upto a total of 60 credits of courses in Level 3 and Level 4 • Minimum GPA 3.00 • Pass in CYE3200, LEE3410 & CSE3213

Re-admission to the BSc programme: Diplomates may seek re-admission to the BSc Degree programme with exemptions/credit transfers and shall be required to register for courses to fulfil the requirements for the award of the Degree as specified in the Regulation and Rule 1.1.1.1 (g)

COURSE DETAILS

Bachelor of Science Degree Programme

LLU3261 - Understanding Law

Introduction to the legal system of Sri Lanka; sources of Sri Lankan law. Formation of contracts, Delictual liability, contract of service, Types of Employment, Industrial Disputes, workmen's compensation ordinance.

MSU3208 - Managing Your Work and People

The job of a manager; types of managers; recent developments in management; the organizational environment; globalization and its impact on management; the impact of culture on management; the concept of planning; ethics of downsizing and minimizing its adverse effects; authority and power; authority delegation and job design; communication and its fundamentals; leadership and its approaches, styles and effectiveness; motivation at work place; effective control; operations management in organization.

DSU3298 –Introduction to Sri Lankan Society

The ecological setting of Sri Lanka, Distribution of Physical Resources in Sri Lanka, Dutch in Sri Lanka, Portuguese in Sri Lanka, Sri Lankan under British rule, The Kandyan Kingdom, Soulbury Reforms, Constitutions of Sri Lanka I (Pre independence), Constitution of Sri Lanka II (Pre Independence), Constitutions Distribution, Sri Lanka Society culture, Economic Policy I (Pre liberation), Economic Policy II (Post liberalization), Reforms and rural development in Sri Lanka. Social welfare Services in Sri Lanka.

FNU3200 - Ethics in Science & Technology

Definitions of terms; Philosophy of life: Values, Beliefs, Attitudes, Moral problems and dilemmas, and changing values; Principles of ethics: Basic

principles of ethics, Ethical theories; History of Ethics in Science and Technology including theories, International and National (Sri Lanka); Ethics in practice: Medical ethics, Ethical conduct in other subjects, Informed consent, Ethics in dissemination of knowledge; Ethics in intellectual property rights (IRR); Ethical decision making, Ethical problems, Ethical dilemmas, Ethical reasoning; Session; Related issues: Research in Ecology, Research in Biotechnology, Technological researches, Medical researches; Present status of ethics in Science and Technology in Sri Lanka.

PHU5318 - Electronics for Biology Students

Fundamentals of electronics; constant voltage and current sources; electronic diodes; rectifiers; junction transistors; small signal amplifiers; large signal amplifiers; feedback amplifiers; oscillators; regulated power supplies; wave shaping circuits; electronic measuring instruments; digital electronics; practicals upto 40 laboratory hours.

ADU5318 - Bio Statistics (For non-Mathematics students)

Sampling Techniques; Probability and Non Probability Sampling; Simple random Sampling; Stratified Random Sampling; Cluster Sampling; Systematic Sampling; Multi Stage Sampling; Classifications of Data; Qualitative vs Quantitative Data; Nominal Data; Ordinal Data; Interval and Ratio Data; Design of Experiments; Completely Randomized Design; Randomized Complete Block Design; Factorial Design; 2k experiments; Tabular Data Summaries; Graphical Data Summaries; Numerical Data Summaries; Measures of Location; Measures of Dispersion; Measures of Skewness; Statistical Hypotheses; Introduction to the Statistical Hypotheses; Formulating a Hypothesis; Null and Alternative Hy-

potheses; One sided and Two sided Hypotheses; Testing Hypotheses on the mean of a population; Comparison of two population means; Analysis of Count Data.

ADU3218 – Basic Statistics

See under the Applied Mathematics courses offered by the Department of Mathematics and Computer Science.

BYU5318 – Environmental Studies

An Introduction to the environmental sciences; The Lithosphere; The Atmosphere; Hydro-sphere; Structure of the biosphere; Energy flow and organisms; Interactions among spheres; Resources from the environment; Energy resources; Aquatic resources; Living resources; Human Population Growth; Atmospheric Pollution; Water Pollution; Loss of biodiversity; Soils and land degradation; Waste disposal; Environmental Policies and Management; Environmental problems in Sri Lanka; Environmental Ethics and philosophy

FNU3201 Communication Skills

Work-related Communication, Developing Reading and Writing Skills, Report Writing, Meetings Presenting and Negotiating, Jobs and Interviews, Scientific Writing for Scientific Community, Proposal Writing, Thesis Writing, Science communication for General Public: Science Journalism, Science Communication Methods

ADU5319 – Design and Analysis of Experiments

Need for design of experiments, Introduction to terminology used in experiment design, completely randomized design, concept of blocking, Randomized block design, Randomized complete

block design, Latin square design, factorial designs, Split plot designs, mathematical models for data collected in designed experiments, analysis of designed experiment data and interpretation of results.

CYE3200 - Mathematics for Chemistry & Biology

Numbers; Algebra, logarithms; trigonometric functions; limits; differentiation; integration; statistics; elementary probability theory; probability distributions.

BOTANY

BYU3301 - Organization of Cells and Plant Biochemistry

Introduction to Cells; Structure and functions of cell membrane and cell wall; The Cytoplasm and the Cytoskeleton; The Structure and Function of Cytoplasmic Organelles; Cell Cycle and Cellular Division –Mitosis; Cellular Reproduction –Meiosis

Metabolism and Energy Utilization; Amino acids, Peptides and proteins; Enzymes; Lipids; Carbohydrates; Nitrogen Assimilation; The Nature of Nucleic Acids; DNA Replication; Gene expression; The Genetic code and Synthesis of protein; Some Basics in Genetic Engineering

BYU3500 - Diversity of Plants

Origin and Diversity of Life; Viruses; Bacteria –Morphology and Structure; Bacteria Physiology, Growth and Reproduction; Cyanobacteria; General features of Fungi I –Vegetative features and Nutrition; General features of fungi II –Reproduction and Classification; Sub-divisions- Myxomycotina and Mastigomycotina; Sub-divisions- Zygomycotina; Sub-divisions- Ascomycotina; Sub-divisions - Basidiomycotina; Sub-division – Deuteromycotina; Special microbial relationships; The Algae; The Green Algae; The Brown Algae; The Red

Algae; Evolutionary trends and the economic Importance of algae; Non Vascular Land Plants- Bryophytes; Liverworts; Hornworts and mosses; Vascular Plants; The earliest Vascular Plants- psilopsids; Lycopods; Horsetails; The ferns; Higher Ferns; The most advanced ferns – Mixtae; The Gymnosperms; Coniferophytes; Angiosperms or the Flowering plants; The Flower; Development of the Gametophytes, Pollination and Fertilization; Fruits, Seeds and Germination; The Cells and Tissues; The Structure of the primary plant body; The root; The Structure of the Primary Plant Body; The Shoot; Secondary Growth

BYU4300 - Plant Physiology

Plants and water; Free energy, chemical potential and water potential; Soils and water; Absorption and movement of water in plants; Stomata and stomatal physiology; Transpiration; Mineral nutrition of plants; Functions of essential elements; Absorption of mineral elements; Phloem translocation; Introduction to photosynthesis; Photochemical Biochemical reactions of Photosynthesis; Different pathways of CO₂ fixation; Breakdown of storage plant materials; Plant growth and development; Phytohormones: Gibberellins and Cytokinins; Ethylene and abscisic acid; Plant movements; Control of Flowering; Dormancy of buds and seed; Plants under stress

BYU4301 - Genetics and Evolution

Heredity and its physical basis; Mendelian genetics; Chromosomes and the Distribution of Genetic Material; Deviation from Mendelian Inheritance; Penetrance and Expressivity; Naming of Genes and Loci; Sex Determination and sex Linkage; Linkage crossing Over and Chromosome Mapping; Variation in Chromosomal Number and Arrangement; Cytoplasmic inheritance; Quantitative Inheritance; The Origin of Species; Origin of Life and Development of Early organisms; Evolution of major plant and animal groups; Evolution of Mammals; The Pace of Evo-

lution; Origin of angiosperms; Structural evolution in angiosperms

BYU4302 – Systematics of Higher plants and Animals

Systematics of organisms; Development of Modern Systematics; Identification of plants and animals; Nomenclature; Biological Classification; Classification of life; A historical Perspective; Plant Classification systems; Classification of animals; Variation and Speciation; Evolutionary taxonomy (Phylogeny); The Concept of Character and Sources of Taxonomic Evidence; Fundamentals of Molecular systematics (Plant Proteins, Nucleic Acid and Micromolecules); Numerical taxonomy, Flora and Fauna of Sri Lanka; Information technology and systematics; Ethics of Systematics

BYU4303 – Principles of Microbiology

Introduction to Microbiology; Historical development of microbiology; Viruses; Prokaryotic microorganisms - The bacteria; Eukaryotic microorganisms; Cultivation of microorganisms; Sterilization of instruments and media; Isolation of saprophytic microorganisms; Isolation of saprophytic microorganisms; Purification and maintenance of fungal and bacterial cultures; Isolation and purification of viruses; Microscopes; Techniques for microscopy; Identification of bacteria and fungi; Enumeration of bacteria and fungi; Quantitative measurements of viruses; Growth of microorganisms; Factors influencing microbial growth; Metabolism in microorganisms- Energy yielding processes; Genetics of bacteria; Concepts of microbial control and antimicrobial physical agents; Chemical agents in common use in sterilization and disinfection; Chemical agents used to cure diseases- Chemotherapy

BYU5300 - Environmental and Applied Microbiology

Microorganisms and their interactions in soil; soil microbial activities of ecological importance; methods of studying soil microorganisms; aquatic microorganisms; pollution of water supplies and quality of potable water and its treatment; sewage disposal and treatment; microorganisms of air, ecology, importance and control; microorganisms in food; microbial spoilage of foods; food-borne illnesses; principles and processes of food preservation; microbiological standards and quality control of foods; microorganisms of medical importance; relationships between microorganisms and man; infectious diseases; host's resistance to microbial infection; immune system and immunological tests; use of microorganisms in industry, agriculture and environment related issues; genetic engineering; microbial deterioration of materials.

BYU5301 - Plant Pathology

Introduction to plant pathology; Morphological symptoms of diseases in plants; Plant pathogenic microorganisms; Other animate agents of plant disease; Inanimate agents of plant disorders; Identification of plant diseases; Production and dispersal of inocula; Entry into the host plant; Growth and colonization; Mode of attack; Resistance to entry and spread; Effect of pathogens on host physiology; Survival of plant pathogens; Plant disease epidemiology; Plant disease control; Damping off of seedlings; Rots of fleshy tissues; Downy mildew diseases; Powdery mildew diseases and other mildews and molds; Leaf blights; Vascular wilt diseases; Root diseases of trees; Rust diseases; Smut diseases; Bacterial and Fungal galls; Leaf spot diseases; Cankers, scab diseases and anthracnoses; Miscellaneous diseases; Diseases caused by viruses and mycoplasma like organisms;

BYU5302 - Plant Growth and Development

Plant growth; Growth regulatory substances; Auxins; Cytokinins; Gibberellins; Abscisic acid; Ethylene; Complications in the hormonal control; Applications of plant hormones in agriculture; Phytochrome and plant growth, Phytochrome mediated plant responses Photoperiodism; blue light responses; Vernalisation; plant embryogenesis; Germination; Dormancy; Senescence and abscission

BYU5303 - Ethnobotany

Introduction to Ethnobotany Domestication of crop germplasm ; conservation of crop variety; Origin of Agriculture; Cereals, Legumes; Vegetables and Tuber/Root crops; beverages, Spices and Flavoring. Phytochemicals; Alkaloids, Saponins. Flavonoids etc. Poisonous plants; Drugs; plants used in native medicines; fiber, essential oils plant exudates. producing plants, dies, tobacco etc. Wood and paper; Biomass and fuel; Social and cultural values of plants and Ecological and environmental importance.

BYU5304 - Soils and Plant Growth

Soil; rocks and minerals; processes of soil development; decomposition and destructive processes; constructive process; classification and survey of soils; colour, particle size distribution and texture; structure, consistence and porosity; aeration, temperature and colour; chemical properties of soil; plant nutrients; microorganisms in soil; soil organic matter; biologically mediated processes in the soil; fertility characteristics in soils of Sri Lanka and land utilisation; fertilisers and fertiliser management; degradation of soils; soil improvement; soil conservation and sustainability. Importance of soil in crop production, soil and water managements.

BYU5305 - Literature Review in Botany

A limited number of selected students are registered to carry out a literature review on an approved topic under the supervision of a senior staff member. Submission of a report/dissertation followed by a presentation and an oral examination is a requirement for the final examination.

BYU5306- Plant Breeding

Plant Breeding; Quantitative inheritance in Plant Breeding, Population Genetics, Values and Means, Variance, Populations in Plant Breeding, Breeding self pollinated crops; Breeding cross pollinated crops; Methods of Breeding Asexually Propagated Plants and Mutation Breeding, Plant Tissue Culture, Some Applications in Tissue Culture, Somaclonal Variation and Mutant selection, Protoplast Fusion and Somatic Hybridization, In Vitro Conservation and Transport of Germplasm, The Role of Gene Technology in Plant Breeding, Reproduction in Plants, Plant Genetic Resources, Germplasm Resources and their Maintenance in Sri Lanka, Seed Production Practices in Plant Breeding.

BYU5308 – Post-harvest Technology of Fresh Produce

Introduction to post-harvest technology; Contribution of fresh produce to human nutrition; Pre and post-harvest physiology / biochemistry of fresh produce; Ethylene in post-harvest technology; Post-harvest losses of fresh produce and their control; Harvesting and field handling; Packaging and Packing; Cooling of fresh produce; Transport of fresh produce; Storage of fresh produce; Packing house operations; Specialized utilization of horticultural produce; Quality assurance; Marketing of fresh produce Apparatus used in post-harvest technology

BYU6300-Plant Molecular Biology

This course unit will deal with the regulation of gene expression; application of gene transfer technology; cloning of plant genes; molecular biology of plant processes; application of molecular biology and Issues/Ethics in plant molecular biology.

BYU6301– Bioinformatics

Introduction to Bioinformatics biological bases of Bioinformatics Genomics Proteomics bases of algorithms Bioinformatics databases, Bioinformatics analysis in silica research Application of Bioinformatics.

BYU6302 – Advanced Biotechnology

In this unit, a student is able to study how advanced technology based on biology can be used in Agriculture, Food Science, Medicine and Genetic Engineering. More emphasis will be given on how this field should be utilized to solve the current issues related to Biology and achieve our targets in developing our economy.

BYU6303 - Experimental Design and Biological Data Analysis

Variability in biological observation,; Population and Sample; scale of measurement; Building hypothesis and testing; Fundamentals of Experimental Designing; Experimental Designs; Data entry, formats, preprocessing etc, Exploration of data (examination of data) Introduction to analysis of variance (ANOVA) mean separation; Correlation And Simple Linear Regression; Analysis of Covariance: Factorial Experiments; of Compounding; Fractional Experiments; Analysis of count data. Analysis of multi-way contingency tables; Analysis of binary data introduction to multivariate analysis, principles of data mining and common statistical software packages.

BYU6304 – Integrated Crop Protection

In the field of Crop Science under the discipline of Botany, protection of crops from variety of pests and pathogens is an important area to be dealt with. For those who are in related fields, this will give a better knowledge and understanding on how to protect our harvest from pathogens and their control.

BYU6305 - Industrial Microbiology

Introduction and Scope of Industrial Microbiology: Growth and growth kinetics of microorganisms: Fermentation systems: Solid state fermentation; Microbial biochemistry/ Metabolism and Energy conversion; Microorganisms in Industry; Enzymes, Pharmaceuticals and Food and Beverages; Biological fuel generation through fermentation; Microbiological Environmental applications; Fermentor designs and construction; Introduction to downstream processing; Product development and regulations; Economics and Marketing in Industrial Microbiology.

BYU6306 - Molecular Systematics

The Molecular Systematics also known as Molecular Phylogenetics, is the use of the structure of molecules to gain information on an organism's evolutionary relationships. Early attempts at molecular systematics were also termed as chemotaxonomy and made use of proteins, enzymes, carbohydrates and other molecules which were separated and characterized using techniques such as chromatography. With recent advances, this can be done using the living organism containing DNA, RNA, and proteins. The developed relationship will show the evolutionary tree for a particular species.

BYU6307 – Advanced Plant Physiology and Biochemistry

Amino acids, proteins and enzymes; enzyme kinetics, regulation of metabolism, plant respiration, photosynthesis carbohydrate metabolism; Lipid metabolism Assimilation of nutrients, secondary metabolism and plant natural products; signal transduction in plants, plant responds to biotic and abiotic stresses, molecular- biochemical mechanisms of plant hormone responses. Introduction to agricultural bio technology.

BYU6308 – Advanced Ecology

Advanced Ecology is a course that disseminates knowledge beyond the basic concept in Ecology. Its deals with the topics and modern methods of sending and approach Ecological issues in present day world.

BYU6309 – Soil Biology

This unit will mainly educate a student on advanced interactions and biochemical reactions that are taking place within biological organisms in the soil environment. The knowledge to be gained will help the student to understand the complex biological nature of soil organisms in maintaining soil fertility required by plants.

BYU6310 – Advanced Plant Pathology

Spore germination and its regulation; Cytology of penetration; Forces by which pathogens attack – Introduction; Pathogen-produced enzymes in plant disease; Microbial toxins in plant disease; Growth regulators in plant disease; Effect of infection on host physiology-Photosynthesis, Carbohydrate, Nucleic acid and protein metabolism and growth regulator in balances; Water transport, cell permeability and respiration; Effect of environment on disease development; Plant defenses-Preexisting defenses and induced defenses, Phytoalexins; Genetics of plant disease; Plant disease epidemiology and control

BYU5911 – Research Project in Botany

A limited number of selected students are registered to carry out a research project on an approved topic under the supervision of a senior staff member.

Submission of a report/dissertation followed by a presentation and an oral examination is a requirement for the final examination.

BYU6312 - Special Topics in Botany

Students will be asked to write an essay on a chosen topic related to the field of Botany after registration. The student can select a topic from among the subject areas given by the department. Basic outline and how to write will be explained at a day school.

CHEMISTRY

CYU3300 - Basic Principles of Chemistry I

Development of models for the structure of atom, Principles underlying the arrangement of Periodic Table, a brief description of elements, their behavior and reactions, Chemical bonding and related theories, Structure - bonding relationships and properties of molecules, Introduction to organic reactions, Acids and bases in organic chemistry, Structure, properties and chemistry of aliphatic hydrocarbons, alkyl halides, alcohols and epoxides.

CYU3201 – Basic Principles of Chemistry II

The behavior of ideal gases using the ideal gas model and the factors responsible for deviating from ideal behavior to non-ideal behavior of gases; basic concepts, terminology and mathematics of thermodynamics; heat and work; first and second laws of thermodynamics and their applications, internal energy; heat capacity; expansion and compression of gases; Joule Thomson effect; free energy change; relationship between first and second laws; basic concepts and terminology; order of a reaction, elementary reaction;

molecularity, rate equation, rate constant and catalyst; factors that affect the rate; Arrhenius equation; experimental methods in determining the kinetics of a reaction, cell diagram, anode, cathode and cell reactions of a cell diagram; electromotive force (emf) of a cell diagram and a cell reaction; emf and Gibbs free energy of a cell reaction; electrode potential; determination of pH, thermodynamic parameters of a reaction, endpoint of a titration and the solubility product of a sparingly soluble salt using potentiometry; primary, secondary and fuel cells.

CYU3302- Basic Practical Chemistry

This is a seven day practical course which is designed to give the first year students basic skills in working in an elementary chemistry laboratory. The laboratory classes are conducted in such a way to enhance their analytical thinking in problem solving with improvement of soft skills such as communicating, presentation, IT, writing etc. This course consists of a theory book which covers the concepts behind the experimental designed.

CYU4300 – Inorganic Chemistry

Solids & their structures; X-ray diffraction; crystal defects; Miller Indices; Symmetry in molecules; Coordination chemistry; nomenclature; isomerism and bonding in coordination compounds including theories of bonding; stability of coordination compounds; Introduction to Radio Chemistry.

CYU4301 – Concepts in Physical Chemistry

Electromagnetic radiation and its particle properties; Beer-Lambert law; absorption spectrometers; dipole moment; energy transitions and absorption spectra; stimulated emission, stimulated absorption and spontaneous emission; pure rotational spectra of diatomic molecules; rate constant, rate law, order of reactions; molecularity; elementary reaction; Arrhenius equation and its applications; mechanisms and the rate determining step; catalysis, complex reactions; reversible reactions; chain reactions; steady

state approximation; experimental determination of rate constant and order of a reaction; experimental study of slow and fast reactions; conductivity and molar conductivity; ionic mobility; transport number; limiting molar conductivity; determination of the dissociation constant of a weak acid and the end-point of an acid-base titration using conductimetry; phase rule; phase diagrams, intensive and extensive variables; independent components; one component systems; ideal (binary) system; Raoult's Law and Dalton's Law; temperature/vapour pressure/ composition curves; non ideal binary systems deviations from Raoult's Law; fractional distillation of mixtures; vapour pressure/temperature composition curves; azeotropes, solid-liquid equilibria; simple eutectic systems; compound formation; congruent and incongruent melting points; partially miscible binary systems; solubility curve upper and lower critical temperatures; totally immiscible binary systems, steam distillation

CYU4303 - Organic Chemistry I

Stereochemistry, Reaction mechanisms, structure Activity relationships of some aliphatic compounds, chemistry of conjugated dienes and benzenoid compounds.

CYU4302 Practical Chemistry

This unit gives you the essential theory required in understanding the experiments you will perform. The experiments include areas such as thermodynamic solubility product, phase diagram of partially miscible two components, kinetics, conductimetry, spectroscopic methods I.e. Beer-Lambert law, rotational spectra etc. In addition you will learn about errors, treatment of results and calculation, report writing, Basic techniques in organic chemistry including Recrystallization, melting point determination, liquid - liquid extraction, Thin layer chromatography.

CYU5303 - Organic Chemistry II

Properties and reactions of some aromatic heterocyclic compounds; Synthetic organic chemistry including synthesis of C-C and C-N bonds; oxidation and reduction; Properties and reactions of polycyclic aromatic hydrocarbons; Structure elucidation of organic compounds through spectroscopic methods. This course will have five day practical class.

CYU5300 -Organometallic Chemistry

Nomenclature, relationship between geometry and the number of valence electrons, monohapto ligands, polyhapto ligands, types of reaction of organometallic compounds, metal carbonyls, alkyl metal complexes, metal hydrides, dihydrogen complexes, catalysts & hydrogenation of olefins, isomerization, hydrocyanation, hydrosilation & hydroboration of olefins, carbonylation reactions, metathesis & polymerisation of olefins, palladium catalysed reactions.

CYU5302 - Analytical Chemistry

Classical methods of Analysis: acid-base titrimetry; complexometric titrations; gravimetry; redox titrations. Separation methods: solvent extraction. Introduction to electro analytical methods: conductometry and potentiometry. Overview of analytical chemistry; introduction to spectroscopy; Beer-Lambert law; Thermal analysis.

There will be a 5 day practical session.

CYU5304 - Chemistry of Biomolecules

This course covers topics on primary metabolites such as carbohydrates, Amino acids peptides and proteins, lipids and nucleic acids. Also, enzymes, coenzymes, vitamins and which are important in metabolic pathways will be discussed.

CYU5305 - Natural Products Chemistry

Relationship between primary and secondary metabolites, chemistry and biosynthesis of terpenes, steroids, alkaloids and phenolic compounds. Chemical ecology and biopesticides.

CYU5306 - Biochemistry

Energy metabolism, Enzymes, carbohydrate, metabolism, amino acids, protein and fat metabolism.

CYU5307 - Chemical aspects of Food Industry,

Macro and micronutrients, water activity and food, An overview of food components such as carbohydrates, proteins and lipids. Enzymes, natural pigments and flavour compounds, toxins and contaminants, principles of food processing, quality assurance and legislation.

There will be a 3 day practical session.

CYU5308 - Instrumental Methods of Chemical Analysis.

UV-Visible spectrometry and its applications; fluorescence, atomic emission, infra-red, Raman and mass spectrometry; introduction to electrochemistry; potentiometric, coulometric, electro-gravimetric, voltammetric and polarographic methods of analysis; chromatographic methods; gas chromatography, liquid chromatography, and HPLC; Radioanalytical techniques. There will be a five day practical session.

CYU5309 - Environmental Chemistry

Environmental Chemistry of air (atmosphere), water (hydrosphere) and soil (geosphere) and air-water and solid-water exchanges of contaminants. Atmosphere: composition, (layer) structure and function; natural cycles: O₂, N₂ and CO₂; Temperature profile/structure of the

atmosphere; Atmospheric (tropospheric and stratospheric) phenomena: green house effect, acid rain, photochemical smog and ozone depletion. Atmospheric pollution. Water: Chemistry of water, types and properties of water bodies; hydrological cycle. Redox reactions, hydrolysis, complexation; pollution of water. Soil: structure; Air-water, solid-water interaction; Environmental pollution of air, and soil.

YU5301 - Concepts in Spectroscopy

Pure vibrational spectra of diatomic molecules; anharmonicity of vibrations in a diatomic molecule; pure vibrational spectroscopy of polyatomic molecules; effects of non-rigidity on the rotational spectrum of a diatomic molecule; classification of molecules based on their rotational characteristics; pure rotational spectra of polyatomic molecules; vibration-rotation spectra of diatomic and polyatomic molecules; skeletal group vibrations; Raman scattering phenomenon; pure rotational Raman spectroscopy; high resolution vibrational Raman spectroscopy; usage of IR and Raman spectroscopy in molecular structure determination; electronic states of diatomic molecules; electronic spectra of diatomic molecules with vibrational and rotational fine structure; Jablonski diagrams; origin of an NMR spectrum; effects of spin-spin interactions through chemical bonds on NMR spectra; experimental setup and a classical view of the NMR process; pulsed Fourier transform NMR spectroscopy; relaxation processes in NMR spectroscopy.

CYU5312 - Industrial Chemistry

Ceramic and glass, cement, Industrial utilization of plant oils, coconut oil extraction soap, detergent and biodiesel production,

essential oils, spices], petroleum chemistry, fats and oils,

The course will also include industrial visits. The students would be expected to submit a brief report after the visit.

CCYU5313 - Polymer Chemistry

Classification of polymers; plastics, rubber and liquid resins; methods of polymerisation; types of copolymers; importance of copolymerisation; syntheses of copolymers; types of degradation; chemistry of rubber processing; chemical ingredients used in rubber processing; compounding rubber; vulcanising agents; accelerators; activators; antidegradents; fillers; processing aids; special additives; vulcanisation; thermoplastics; thermosets colourants; plastizcers; foaming agents; flame retardants; curing agents; processing techniques.

CYU5310 - Literature Project in Chemistry

The Department encourages students who have completed level 04 and started level 05 courses to register for the course- Literature Project in Chemistry. Only a limited number of projects are available. The selected student has to conduct a literature survey under the supervision of a senior staff member (supervisor) on a predetermined topic. The unit will be evaluated through a report, presentation and an oral examination.

This course unit gives students a good opportunity to improve their communication and writing skills as well as their ability to read and compile information independently.

CYU5611 - Research Project in Chemistry

The Department encourages students to complete level 04 and start level 05 before you select a Research Project in Chemistry. Limited number of projects is available. The student has to conduct a research project under the supervision of a senior staff member (internal supervisor) and/or a scientist appointed by the Chemistry Department (external supervisor) on a predetermined topic. Six to eight weeks before beginning of this unit, the student has to make a short

presentation on the proposed research work and literature on the date announced by the Department. This course should be completed within one academic year. The student has to submit the final report/ dissertation on or before the date announced by the Chemistry Department.

After submitting the report/dissertation, student has to make a short presentation on his/her research project. This is followed by an oral examination, to test the student's knowledge about his/her research project. The course unit gives students a good opportunity to improve their practical skills (techniques/designing of experiments, interpretation of data etc.) as well as communication and writing skills.

PURE MATHEMATICS

PEU3300 - Mathematical Logic and Mathematical Proofs

Valid Statements; Logical Connectives, Simpler Statements and Compound Statements; Logical Connective "not"; Logical Connective "and"; Logical Connective "or"; Logical Connective "implies"; Logical Connective "if and only if"; Relations among Logical Connectives - Distributive Laws; Relations among Logical Connectives - De Morgan's Laws; Conditional Statements and Biconditional Statements; Conditional Proof and the Definition of \vdash ; Tautologies, Contradictions and Proof by Contradiction; Quantifiers, Statements with more than one Quantifier; The Generalized Laws; Ordinary Language, Logic and Daily Life; Proof of a Disjunctive Statement; Proof of a Conjunctive Statement; Proof of a Conditional Statement; Proof of a Biconditional Statement; Proof of an Existential Statement; Proof of a Universal Statement; Proof of a Statement with more than one Quantifier; Proof of a General Statement; Proof of a Negation of a Statement and Proof by Contradiction; Proof of a General Statement.

PEU3301 - Foundation of Mathematics

Sets; Algebra of Sets; Intervals and Cartesian Products; Order Relations; Zorn's Lemma, The Well-Ordering Theorem and The Axiom of Choice; Functions; Functions and Sets; Finite Sets and Infinite Sets; Countability; Order of Infinity; Algebraic Structure of the Real Number System; Order Structure of the Real Number System; Solution of an Inequality; Integers and Rationals; Bounds, Maxima and Minima; Bounds, Sups and Infs; Completeness Axiom; The Archimedean Property; Irrational Numbers; Algebraic Numbers and Transcendental Numbers; Dense Subsets of \mathbb{R} ; Metric Structure of the Real Number System; The Distance Function; The Meaning of Limit of a Sequence; The Meaning of Sum of a Series.

PEU3202- Vector Spaces

Vector Space; Subspaces; Spanning Sets; Linear Independence and Dependence; Basis of a vector space; Dimension of a vector space; Linear Transformations; Homomorphism of a Vector Space; Isomorphism of Vector Spaces; Matrices and Linear Transformations; Rank and Nullity of a Linear Transformation; Invariant Subspaces; Inner Product Spaces; Euclidean Spaces; Length of a vector in a Euclidean Space; Concept of angle in Euclidean Space; Orthogonal Set ; Orthonormal Bases; Change of Basis; Unitary Spaces.

PEU4300 - Real Analysis I

Definition of a Sequence, Monotonic Sequences, Bounded Sequences, Convergent Sequences, Subsequences, Bolzano Weierstrass Theorem, Algebra of Convergent Sequences, Cauchy Sequences, \limsup and \liminf , Squeezing Theorem, Definition of an infinite Series, Sum of an infinite series, Convergent Series, Algebra of Convergent Series, Comparison Test, Limit Comparison Test, Cauchy Criterion for Convergent Series, Cauchy Condensation Test, The number e , The Ratio Test, The Root Test, Power Series,

Absolutely Convergent Series, Rearrangement of Series, Conditionally Convergent Series

PEU4301 - Real Analysis II

Limit at a point, Right limit at a point, Left limit at a point, Algebra of Limits, Squeezing Theorem, Limits of composition, Sufficiency of Sequences, Infinite Limits, Limits at Infinity, Algebra of Limits at Infinity, Left Continuity at a point, Right Continuity at a point, Continuity at a point, Continuity on an interval, Discontinuities, Continuity on a closed and bounded interval, Images of intervals under continuous functions, Sufficiency of Sequence in Continuity, Algebra of Continuous functions, Limits of Composite functions, Monotone functions, Convex functions, Intermediate Theorem, Uniform Continuity. Derivative and Differentiability at a point, Left Derivative, Right Derivative, Algebra of Differentiable functions, Differentiability on an interval, Product Rule, Quotient Rule, Chain Rule, Continuity of Derivative, Local maxima and Local minima, Rolles Theorem, Mean value Theorems, Monotone functions, Differentiable functions, L'Hôpital's Rule, Derivatives of Higher Orders, Taylor's Theorem, Derivatives of power series, Taylor series and McLaurin Series, Exponential function, Logarithmic function, Trigonometric function, The number δ , Hyperbolic functions,

PEU4302 - Linear Algebra

Linear simultaneous equations and their solutions; matrix operations; Gauss-Jordan reduction; Elementary transformations; Elementary matrices and equivalent matrix; Square matrices its transpose and inverses; Determinants; Ad-joins of a matrix; Minor and Co-factor; Rank of a matrix; Cramer's Ruler; Application of matrix theory to linear equations; Conditions for consistency; General solution; Eigen values and eigen vectors; Some results related to eigen values; Triangular form of a matrix; Canonical form; Linear mappings; Kernel and Image of a linear mappings.

PEU4303 - Group Theory I

Binary operations, Introduction to groups, Elementary properties of groups, Subgroups, Finite groups, Dihedral groups & their properties, Symmetric & alternating groups, Cyclic groups & their properties, Abelian groups, Cosets, Lagrange's Theorem, Introduction to direct product of two groups, Classification of finite groups of order 9-12, Normal subgroups, Properties of normal subgroups, Normalizer & centralizer, Conjugate elements & class equations, Quotient groups, Group Homomorphism, Group Isomorphism, Homomorphism Theorem & its application, Direct product of two groups, Semi-direct product.

PEU5301 - Ring Theory

Abelian Groups, co-sets, Ring and Sub ring, Commutative ring, Commutative ring with 1, Units of ring, Sub ring having a different 1, Zero divisors, Integral domain, Characteristic of a ring, Division ring, Field, A Finite integral domain is a field, Ideal, Quotient ring, Homomorphism, Epimorphism, Monomorphism, Isomorphism, Isomorphism Theorem, Maximal ideal, Prime ideal, Product Ideals, sum of ideals, local ring, Field of quotient, PID, UFD, Euclidean domains, Prime Element, Irreducible element, Polynomial, If F is a field then $F[X]$ is a PID, R and $R[X]$, Polynomials over Ring $R[X]$, Zeros of a polynomial, Division algorithms for $R[X]$, Number of zeros of $f(x) \in I[X]$ where I is an integral domain, field from ring.

PEU5304 - Introduction to Complex-Analysis

Definition of a Complex number, Algebra of Complex Numbers, Absolute value and Complex conjugate, Polar form of a Complex Number, Integer Powers, Integer Roots, Rational Powers, Rational Roots, Exponential Function, The Logarithm function, trigonometric functions, Irrational powers, Irrational Roots, Complex Powers, Complex Roots, Inverse Trigonometric functions,

Planer sets, limits of a sequence, Limit of function and continuity, Discontinuous of argument, derivative of complex function, Differentiable functions.

PEU5302 - Combinatorics

History of counting, Functions & Sets, Functions & counting, Sets & counting, Matrices & counting, Examples where counting is needed, Pigeon hole principle, Factorials, Multiplication Principle, Application of the multiplication principle, Additive principle, Application of the additive principle, Problems related to counting, Permutation functions, Permutations, Idea of unordered & ordered selections, Introduction to combinations, Combinations, Problem related to cyclic order, Counting problems related to partition functions, Worked examples of permutations & combinations-part I, Worked examples of permutations & combinations-part II, Generalized permutations & combinations, Applications of permutations & combinations, Flow charts, Algorithms in generating permutations, Algorithms in generating combinations, Examples where permutations & combinations in applied probability, Introduction to probability theory, Conditional probability, Applications in permutations & combinations in applied probability, Generalized multiplications, First principle of Induction, Binominals Expansion, Binomial Coefficients, Pascal's Triangle, Binomial expansion & its relation with combinations, Multinomial coefficients & Multinomial expansion, Combinatorial Identities, Proofs to Combinatorial Identities using permutations & combinations/ Problems related to Combinatorial Identities

PEU5300 - Riemann Integration

Trapezoidal Rule and Simpson's Rule, Riemann Sums, Upper Riemann Integral, Lower Riemann Integral, Properties of Upper and Lower Riemann Integrals, Riemann Criterion, Inequalities involving integrals, Algebra of integrable functions, Inequality of Monotone functions, Integrability of Continuous functions, Integrability of Composition of functions, Properties of integrable functions, Integral as a limit of Sums, Differentiation and integration, Fundamental Theorem of Calculus, Logarithmic function, Exponential function, Mean Value Theorem, Improper integrals of unbounded functions Improper integrals on unbounded intervals, General Improper integrals, The Gamma function, The Integral Test, Euler's Constant

PEU5305 – Complex Analysis I

Functions of complex variables, Limits, Continuity, The derivative, Cauchy-Riemann equations, Analytic functions, Sufficient conditions, Harmonic functions, The exponential function, Trigonometric functions, Hyperbolic functions, The logarithmic function, Definite integral of a complex valued function of real variable, Contours, Contours integrals, ML-inequality, Path independence of Contours integrals, Ring theorem in the plane, Cauchy's theorem, Cauchy's integral formula, Cauchy's integral formula for derivatives, The Taylor series, The Laurent series, Types of singularities, Classifications of singularities, Residues, The residues theorem, Evaluation of integral of the form $\int_C \frac{f(z)}{z-a} dz$, Evaluation of integral of the form $\int_C \frac{f(z)}{P(z)Q(z)} dz$, where $P(x)$ and $Q(x)$ are polynomials.

PEU5303 - Number Theory

History, early number theory; Sets of numbers \mathbb{N} , \mathbb{Z} , \mathbb{Q} , \mathbb{R} , \mathbb{C} , and irrational, Algebraic, Transcendental; How to identify \mathbb{Z} ; Properties of \mathbb{Z} , Binomial theorem; Induction; Well ordering principle; Properties of \mathbb{Z} modulo n ; Residue classes;

Division algorithm; Greatest common divisor; Euclidean algorithm; Seeking non-negative integer solutions for problems faced by common people; Primes and their distribution; Theorems on primes; Fermat's little theorem; Willson's theorem; Theory of congruencies; Properties of congruencies; Application and exercise; Divisibility tests; Linear congruencies and their solutions; Useful theorems using linear congruencies; Primitive roots of primes; Primitive roots of composites; Theory of indices; Number theoretic functions; Fibonacci and Lucas Sequences, Continued Fractions.

PEU6306- Advanced Topics in Real Analysis

Normed vector spaces: Definition, equivalent Norms, Norms that arise from inner products, Norms defined on \mathbb{R}^n .

Sequence and functions spaces: Norm convergence of these spaces, Completeness, Limits in functions spaces, Continuous functions on compact sets, Equicontinuous families of functions, Completion of a Normed space.

Series: Non absolute convergence, Absolute convergence in Normed vector spaces,

Series of functions: Absolute and uniform convergence, Interchangeability of limits, Differentiability and integrability of series of real functions.

Integration of vector valued functions: The extension theorem for linear maps, The integral of step maps and the extension of the integral to regulated maps, Properties of the integral, The derivative and relations between integration and differentiation, Interchanging derivatives and integrals (also involving improper integrals).

PEU6300 - Group Theory II

Group Isomorphism, Cayley's Theorem, Group Automorphism, Direct product and Semi-direct product, Factor Group, Finitely Generate Abelian Group, Simple Group, Class of group, Radicals & Residuals, Commutator of a Group, Three Subgroup Lemma, Commutator subgroups, Series of Groups, Composition series, Soluble Groups, Examples of Soluble Group, Group action on sets, Stabilizer and orbits of an action, Conjugate class and class equation, The Sylow Theorem, Application of Sylow Theorem, Maximal Subgroups, Cauchy's Theorem, Sylow p -subgroups of a Group, Groups of even order, Free groups,

Homomorphism of free group, Free Abelian Groups, General linear Groups, Classification of finite Groups of order 8 to 12, Klein-4-Subgroups, Elementary Abelian Groups, Inner Automorphism, Extensions, Split Extension.

PEU6305 - Introduction to Galois Theory

Fields and Galois theory: Algebraic and transcendental extensions; Finitely generated and finite dimensional towers; Algebraic numbers; Gaussian integers; Quadratic integers; Applications; Rule and compass constructions; Galois groups of polynomials; Galois correspondence and applications; Finite fields; Insolvability of quintic equations; Fundamental theorem of algebra.

PEU6601 - Point Set Topology

Families of sets, Relations and functions, Equivalence relations, General Cartesian products, Ordered sets, Normed spaces and Metric spaces, Definition and examples of topological spaces, Closure, Interior and Derived set, Dense and nowhere dense sets, Separability Category of spaces, Sub spaces, Finite products and Quotient spaces, Bases and Sub-bases, First and second countable spaces, Convergence of sequences,

Continuous functions and Homeomorphisms, Complete metric spaces and Uniform convergence, Baire category theorem, Product spaces, Connected spaces, Compact spaces, Separation Axioms.

PEU6303 – Complex Analysis II

Cauchy- Goursat Theorem, Cauchy's Theorem in a Convex set, Winding Number, Cauchy's Estimate, Liouville's theorem, Fundamental theorem of algebra, Zeros of an Analytic function, The identity principle, Schwarz's Lemma, The maximum Modulus Theorem, The minimum Modulus Theorem, The phargem-Lindel of method, Poisson's Intragal formula, Parseval's identity, Morera's theorem, The open mapping theorem, Intragals involving

Rectangular Contours, $\int_{-\infty}^{\infty} \frac{P(x)}{Q(x)} e^{ix} dx$ where

$P(x)$ and $Q(x)$ are polynomials, Intragals

Involving Indented Contours 1, Intragals Involving Indented Contours 2, Intragals Involving Branches of the Logarithm, Use of Residues to evaluate sums of series, The Argument Principle, Rouche's Theorem, Casorati-Weierstrass theorem, Sequences of complex function, Uniform Convergens of the series, Conformal Mapping, Linear Fractional Transformation, The symmetry principle, Finite Blaschke Products, Composition of Elementary Conformal Mapping.

PEU6602 - Measure Theory

Convergence Theorems in Riemann Integration, Measures, Algebras, Sigma Algebras, Outer Measures, Inner Measures, Lebesgue Measure, Orel Measures, The Cantor Set- 1, The Cantor Set - II, The Cantor Set Function, Singular Functions, Completeness of Measures, Regular Measures, Dykin Classes, Measurable sets, on Measurable Functions, Measurable Functions, on Measurable Functions, Properties that hold Almost, Integral

of Simple Functions, Density of Simple Functions, The Integral, Monotone Convergence Theorem, Lebesgue Dominated Convergence, Fatou's Lemma, Egoroff's Theorem, Modes of Convergence, Signed Measures, Hahn - Decomposition Theorem, Jordan Decomposition Theorem, Absolute Continuity, Radon Nikodim Theorem, Lebesgue Decomposition Theorem, Functions of Bounded Variation I, Functions of Bounded Variation II, Differentiation of Monotone Functions, Differentiation of an integral, Convex Functions, Jensen's Inequality

PEU6304 - Functional Analysis

Metric Spaces, Normed Linear Spaces, Complete Normed Linear Spaces (Banach Spaces), Bair's Theorem, Continuous Functions in Complete Normed Linear Spaces,

Semi Continuous Functions in Complete

Normed Linear Spaces, l^p spaces I,

$1 \leq p \leq \infty$ spaces II, spaces III, spaces I,

spaces II, spaces III, Linear Functionals in Banach Spaces, Dual of a Banach Space, Dual of spaces, Dual of spaces, Weak-Topology on a Dual Space, Double Dual of a Banach Space, Weak * -Topology on a Double Dual, Embedding of Banach a Space in its Double Dual, Reflexivity of Banach Spaces, The Banach Space C ([a, 6]) ,The Banach Space c, The Banach Space c0, The Hah-Banach Theorem, The Open Mapping Theorem, The Closed Graph Theorem, The Principle of Uniform Boundedness, The Banach-Steinhaus Theorem, Quotients of Banach Spaces, Product of Banach Spaces, Dual of a Product of Banach Spaces, Dual of a Quotient Space, Finite Dimensional Normed Linear Spaces, Hilbert Spaces, The Riesz Representation Theorem, Orthornormal Sets of Vectors and Bases, Isomorphic Hilbert Spaces, The Direct Sum of Hilbert Spaces, Complemented Subspaces of Banach Spaces.

APPLIED MATHEMATICS

ADU3300 – Vector Algebra

Scalars, Vectors and addition of vectors; Multiplication of vectors by scalars; Centroids; Linear combinations of vectors; Vectors in component form in two dimensions; Vectors in component form in three dimensions; The straight line; Proof of well known theorems in plane geometry using vectors; Scalar product; Vector product; Geometrical proofs using scalar product & vector product; Scalar triple products; Vector triple product; Product of four vectors; Parametric form of the vector equation of plane; The normal form of the vector equation of a plane; The vector equation of a circle; The vector equation of an ellipse; The vector equation of a hyperbola; Vector equation of a sphere; Vector functions; Differentiation of vector functions; Integrating of vector functions; Curves in space.

ADU3201 – Basic Statistics

Classifications of Data; Tabular Data Summaries; Numerical Data Summaries: Measures of Locations; Measures of dispersion; Measures of skewness; Introduction to probability; Mathematical Expectation and Variance; Introduction to Probability Random Variables; Classifications of Random Variables as Discrete vs Continuous; Probability Mass Function; Probability Density Function; Cumulative Distribution Function; Empirical Distribution Function; Discrete Uniform Distribution, Geometric Distribution, Binomial Distribution, Poisson Distribution, Uniform Distribution, Normal Distribution, Exponential Distribution

ADU3302 – Differential Equations

Introduction to ordinary differential equations; Variable separable equations; Homogeneous equations; First order linear equations; Partial derivatives, exact differential equations; Inte-

grating factors; Two special types of second order equations; Problems in mechanics; Problems in population growth; Rate and mixture problems; Problems in economics; Homogeneous linear ordinary differential equations; Second order homogeneous linear ordinary differential equations with constant coefficients; Non homogeneous linear differential equations; Finding particular integrals; Power series; Series solutions; Legendre polynomials & Bessel functions; Difference equations.

ADU4300 - Statistical Distribution Theory

Introduction to Probability Distributions: Negative Binomial Distribution, Hyper Geometric Distribution; Gamma Distribution, Chi-squared Distribution;

Student t Distribution; F- Distribution; Joint Probability Distributions; Marginal Distributions; Conditional Probability Distributions; Moment Generating Function; Applications of Moment Generating Function; Cumulant Generating Function; Applications of Cumulant Generating Function; Relations between different Distributions; Normal and Chi-squared Distribution; Exponential and Poisson Distribution; Exponential and Gamma Distribution; Chi-squared and F-distribution; Standard Normal and Student t distribution

ADU4301 - Newtonian Mechanics I

Description of motion; laws of motion; motion in one dimension; curvilinear motion in intrinsic coordinates; curvilinear motion on a plane using polar coordinates; motion in three dimension; motion of a particle under a central force; law of Gravitation; motion under gravitational attraction: energy in orbits; motion of a system of particles; modelling the motion of a rocket; moment of inertia of a rigid body; angular momentum of a rigid body; rotation about a fixed axis; Rolling and sliding motion.

ADU4302 - Vector Calculus

Functions of more than one variable; first order partial derivatives; some applications of partial derivatives; higher-order partial derivatives and Taylor polynomials; maxima and minima; vector calculus; scalar and vector fields; differentiating scalar fields; the scalar line integral; the curl of a vector field; multiple integrals; vector field theory; cylindrical and spherical polar coordinates; surface integrals; the divergence of a vector field; Gauss' divergence theorem; Stokes' theorem.

ADU4303- Applied Linear Algebra and Differential Equations

understand matrix arithmetic, operations and properties of Matrix Arithmetic, the value of the determinant of a square matrix, the rank of a matrix, existence of the inverse of a matrix and evaluate it, the Gaussian elimination method and the Gauss-Jordan elimination method for solving a system of equations, the eigen values and eigen vectors of a matrix, the inverse of a matrix using Cayley-Hamilton theorem, diagonalise powers of a matrix, quadratic form, canonical form, complex matrices. Simultaneous differential equations; first-order systems; further methods for linear first order systems; second order homogeneous systems; forced oscillations; boundary value problems; change of variables; first-order partial differential equations; the solution of first - order partial differential equations; the chain rule; the method of characteristics for first-order equations; second - order partial differential equations; solving simple equations; classification and characteristics of initial and boundary conditions; separation of variables

ADU5307 - Numerical Methods

Introduction; algorithms and flowcharts; errors in computations; Bisection method for the solution of single equations; the simple iterative

method; Newton Raphson method; solution of polynomial equations Horner's method; linear interpolation; Lagrange. Interpolation and errors; interpolation by Newton's formulae; difference tables & numerical differentiation; least squares polynomial fitting; numerical integrations using Trapezoidal rule and Simpson's rule; accuracy of numerical integration; numerical solution of first order ordinary differential equations using Euler and Taylor series method; second order and fourth order Runge-Kutta methods, Predictor-Corrector method.

ADU5300 - Linear Programming

Introduction to Optimization theory, Introduction to linear programming(LP), Mathematical formulation of the LP problem, LP models, Convex sets, Convex Functions, Graphical solution methods, Sensitivity analysis using graphical method, Simplex Algorithm, Revised simplex Algorithm, The Big M method, LP problems with unrestricted variables Degeneracy & cycling, Concept in Duality, Fundamental theorem of Duality, Duality & simplex method, Dual simplex algorithm, Introduction to transportation problem, The transportation table, The north-west method, The minimum-cost method, Transportation Algorithm, Assignment problem.

ADU5301 - Regression Analysis I

Identifying relationships between variables; Modelling relationships between variables; Linear and Non-Linear Models; Measuring Strengths of Linear Association: Pearson Correlation Coefficient; Simple Linear Regression Model; Model Assumptions; Interpretation of Model Parameters; Model Building; Model Assessment; R^2 as a measure, Adjusted R^2 , Model Applications; Multiple Linear Regression Model; Multicollinearity and dealing with multicollinearity;; Variable Selection: Use of R^2 , Cp-Statistic; Forward Selection Method; Backward Selection Method; Stepwise Selection Method; Model Fitting; Model Assessment; Model Application

ADU5302- Mathematical Methods

Laplace transformations; Fourier series-periodic functions; fourier series; half-range expansions; convergence of fourier series; operations on fourier series; Sturm-liouville theory-orthogonal set of functions; strum-liouville problems; the Legendre equation; the Bessel equation.; Laplaces equation; boundary value problems.

ADU5308 - Graph Theory

Introduction to graphs, Matrix representation of a graph, Graphs Isomorphism, Types of graphs, Connectivity, Eulerian graphs, Hamiltonian graphs, Applications- Shortest path problems etc, Travelling salesman problem, Introduction to trees, Binary trees, Tree traversals, Trees & sorting, Spanning trees, Minimal spanning trees, Planner graphs, Euler's formula, Dual of plana graphs, Graph colouring, Edge colouring, Time-table scheduling, Directed graphs, Applications to directed graphs, Line graphs, Line graphs & traversability, Total graphs, Blocks, Cut points & bridges, Factorization, Hall's marriage theorem, Transversal theory, Applications of Hall's theorem, Menger's theorem, Network flows, Introduction to matroids, Examples of Matroids, Matroids & graphs, Steiner triple systems, Partitions, Infinite graphs.

ADU5303 - Newtonian Mechanics II

Newton's laws of motion; different coordinate systems; Lagrange's equations and the Variation principle; Euler's equations; motion of a particle due to rotionof the earth Hamiltonian mechanics; Canonical transformations; Poisson brackets.

ADU5304 - Operational Research

Introduction to Game Theory, Two person zero sum games, The maxmin & minmax principle, Games without saddle point, Graphical solutions to game theory, Dominance Property, The modified Dominance Property, Reducing the game

problem to a Linear programming Problem, Introduction to Queueing Theory, Queueing system, Characteristics of Queueing systems, The M/M/1 Queueing system, M/M/1/FIFO Queueing model M/M/1/N/FIFO Queueing model, The M/M/C Queueing system, M/M/C//FIFO Queueing model, M/M/C/N/FIFO Queueing model, Introduction to inventory management, Introduction to Economic Order Quantity (EOQ), Techniques of inventory control with known demand, EOQ with uniform demand, EOQ with finite rate of replenishment, EOQ with shortage, Multi-Item deterministic problem, Techniques of deterministic problem, Techniques of inventory control stochastic problems.

ADU5305- Statistical Inference

Introduction to statistical Inference, Parameter, Point estimation, Method of moments, Likelihood function, method of maximum likelihood, Properties of estimators, Sufficiency, Unbiased estimators, mean squared error, minimum varience unbiased /estimators, paramal estimators, Statistical tests, Uniformly most powerful test.

ADU5306 - Fluid Mechanics

Properties of a fluid; the nature of fluid mechanics; some simple experiments; formulating mathematical models; fluid statics; kinematics of fluids; path lines and streamlines; the stream functions; modelling by combining stream function; description of fluid motions; Euler's equation; Bernoulli's equation; vorticity and circulation; inviscid flow around an obstacle; the flow of a viscous fluid; solving the Navier- Stokes equations; approximating the Navier- Stokes equations.

ADU5320 - Introduction to Mathematics Programing with MATLAB

Basic introduction to matlab with operations, ma-

trices and linear algebra, functions and vectors, numerical methods, Fourier Transformation and application, Basic Statistics, Regression and time series, solving differential equations in matlab, Solving system of differential equations (linear and non-linear), Basic concepts of optimization techniques, applications and case studies of real world problems.

ADU5615- Project in Mathematics

This is a project course that requires the students to design, implement and conduct a project/survey in any of the areas in Pure Mathematics, Applied Mathematics and Statistics. The course is designed with the aim of enhancing the skills of students in planning, carrying out and report writing.

ADU6300 - Stochastic Processes

Introduction to stochastic processes; States of a stochastic process; Classifications of states of a stochastic process; Properties of a stochastic process: stationarity, independent increments, stationary increments ; Gaussian Processes; Markov Property, Discrete time Markov chains; Continuous time Markov chains; Sojourn time; Determination of the expected sojourn time of a Markov chain; Long term behaviour of Markov chains; Recurrent events; Random Walk; Brownian Motion; Counting Processes: Binomial counting processes, Poisson Processes, Renewal Processes; Applications of stochastic processes in Insurance and Finance.

ADU6601 - Applied Number Theory

Applications of Mathematics Software, Integer Factorization, Prime Numbers and Properties, Euler Phi-function and properties, Linear Congruences, Chines Remainder Theorem, Primitive rules, Quadratic residues, Lagrange and Leg-

ender Symbols, Euclidean Algorithm, Inverse modulo n , CeasorCiphers, Permutation ciphers, Assine Ciphers, etc, El- Gammel Crypto System, RSA- Crypto System, Rabin- Crypto System.

ADU6602 - Statistical Quality Control

Introduction, Statistical Process Control, Chance and Assignable Causes of Quality, Control Chart, Control Limits, Choice of Control Limits, Sigma Control Limits, Probability Control Limits, Actions Limits and Warning Limits, Analysis of Patterns on control charts, Control Charts for attributes, Control Charts for Fraction Nonconforming (p Charts), Choosing Sample Size, Interpretation of points Below the LCL, Operating Characteristic Curve (OC curve), Average Run Length, Average Time to Signal, Control chart for number of Non-conformities, Control charts for Variables, \bar{X} -bar and R Charts, Estimating Process Capability-bar and S charts, Estimating Process Capability, Acceptance Sampling, Single Sampling Plan for Attributes, Sampling plan, Producer's Risk and Consumer's Risk, Operating Characteristic Curve (OC Curve) for a sampling plan, Designing a Sampling Plan with a Specified OC Curve, AQL and LTPD, Rectifying Inspection, Average Outgoing Quality (AOQ), Average Outgoing Quality Limit (AOQL), Double sampling plan for attributes, Average Total Inspection per Lot (ATI), The Average Sample Number (Size), Rectifying Inspections, Advantages and Disadvantages of Double Sampling Plans.

ADU6303 - Actuarial Mathematics

Time value of money, Annuities, Random variables, Commonly used Random variables, Multivariate probability, Continuous survival models, Important survival models, Random variable for time until death for a life age X , The central rate of failure, The life time table, Curtate future life time, Select mortality, Contingent payment

models for life insurance, Whole life insurance, Term insurance, Endowment insurance, Deferred insurance, Insurance payable at the end of the year of death, Variable benefit insurance, Relating discrete & continuous insurances, Whole life insurance applications, Life annuities, Continuous annuities, Continuous temporary life annuities, Deferred life annuities, Special annuities, Discrete life annuities, Life annuities with monthly payments, Premiums, Fully continuous benefit & premium, Fully discrete benefit & premium, Semi continuous benefit premiums, Monthly benefit premiums, Benefit reserves, Reserves in the continuous case, Fully discrete level benefit reserves, Multiple life random variables, The joint life status survival model, Premium benefits for the joint life status, Multiple decrements.

ADU6607 - Research Project in Mathematics

This is a project course that requires the students to design, implement and conduct a project/survey in any of the areas in Pure Mathematics, Applied Mathematics and Statistics. The course is designed with the aim of enhancing the skills of students in planning and carrying out a research and relevant report writing.

Computer Science

CSU3200 -Introduction to Computer Programming

Introduction to Computer Programming, Introduction to C Programming, The Data Types and Variables, Input and Output Functions, Operators and Expressions, Selections in C, Repetitions in C, Arrays in C, Strings in C, Pointers in C, Functions in C, Structures and Unions in C, Storage Classes, Allocating Memory, File Handling in C, Error Handling

CSU3301 - Database Design & Implementation

Introduction to Databases, History of Databases, Introduction to Database Management Systems, Types of Databases, Hierarchical and Network Data Models, Relational, Entity Relationship and Object Oriented Data Models, Evolution of Data Models, Entity Relationship (E-R) Model, Logical Structure and Keys in Relational Models, Relational Algebra, Relational Database Model, Developing E-R Diagrams, Database Tables and Normalization, Introduction to SQL, Introduction to the Database Query, Categorize Data Using Operators, Summarizing Data Results From a Query, Sorting and Grouping Data, Restructuring the Appearance of Data, Understanding Dates and Times, Joining Tables in Queries, Using Sub-Queries to Define Unknown Data, Combining Multiple Queries into One, Stored Procedures and Functions.

CSU3302- Data Structures and Algorithms

Overview, Preliminaries, List, Pointer Implementation of List, Advanced Linked List Structures, Stack, Queues, Tree Structures, Binary Trees, Applications of Tree Structures, Different Tree Structures, Graphs, Graph Traversals, Introduction to Algorithms, Analyzing Algorithms, Asymptotic Analysis of Algorithms, Recursion, Internal Sorting, Internal Sorting by Insertion, Internal Sorting by Selection, External Sorting, Searching Methods, Binary Search Trees, Hashing, Memory Management.

CSU4300 - Operating Systems

Objectives and History of Operating Systems, Operating Systems Components and Functions, Process Concepts and Management, Process Scheduling Algorithms, Concurrent Process Synchronization, Inter Process Communication, Semaphores & Monitors, Deadlock Definition, Deadlock Detection and Recovery, Need for the Memory Management, Memory Al-

location to Programs, Partitioning of Memory, Free Memory Management, Memory Protection Hardware in Multiprogramming Systems, Paging & Page Replacement Mechanisms, Segmentation, Threads and Thread Management, Overview of Files, File Access Methods, Structure of Directory, File Sharing & Protection, File System Structure & File Allocation Methods, Free Space Management Techniques, File System Recovery..

CSU4301 - Object Oriented Programming

Introduction to Object Oriented Programming, Object Oriented Programming Terminologies, Introduction to JAVA, Objects and Classes, Java Syntax for OOP, Classes and Objects in Java, Controlling access to Java classes, Class constructors in Java, Inheritance, Polymorphism, Overloading, Overriding, Abstract classes and methods, Final classes, Interfaces in Java, Inner classes, Association, Aggregation, Composition, Exception Handling, Threads and Multithreaded programming, Swing class..

CSU4302 - System Analysis and Software Engineering

Introduction to Software Engineering, Software Processes, Software Requirements and Requirements Engineering Process, System Models , Critical Systems, Introduction to Software Design, Object- Oriented Design and Introducing UML, Use Case Diagrams, Class Diagrams, State Diagrams, Sequence Diagrams, Activity Diagrams, Component Diagrams, Software Development, Rapid Application Development, Component-Based Software Engineering, Software Testing, Software System Implementation, Software Maintenance, Software Cost Estimation, Software Quality Management, Configuration Management, Project Management, Computer Aided Software Engineering Tools.

CSU4303 - Computer Networks

Fundamentals of networking, Open Systems Interconnection (OSI) and Internet models of

networking, Functionality of layers of OSI / Internet models, Networking media and network devices (switches, routers), Network protocols, IP addressing & subnets, routing, Configuring network switches and routers, network services and server systems, Windows Networking and server installation, Active directory installation and configuration, User/computer policy management, Linux / Unix overview and system installation, Threats to computer networks and threat mitigation.

CSU5300 Information Technology Project Management

Introduction, A Project and its Management, The Project Management Context – Project Life Cycle & Project Phases, Project Management Context – Project Stakeholder and Organizational Influences, Project Management Process Groups, Strategic Planning and Project Selection, Project Integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Human Resource Management ,Project Communication Management, Project Risk Management, Project Procurement Management, Project Stakeholder Management

CSU5301 Software Quality Assurance

Introduction to Software Quality Assurance, Quality Assurance Concepts, What is Quality Software, Problems in Software Development Process, Software Quality Assurance Standards, Software Engineering Testing, Testing Techniques, Software Testing in Difference Environments, Static versus Dynamic Testing, Types of Testing, Levels of Testing, Creating a Test Plan, Software Bugs, Quality Assurance versus Quality Control, The Cost of Quality, Software Quality Factors, Factors Affecting Software Testing, The Five Levels of Maturity, Risk Management, Configuration Management, Automating Testing, Performance Testing, The Importance of Work Process, Testing Competency, Team Building .

CSU5302 :Web Technologies

Internet and Evolution of the Web, Client Server Model, Popular Internet Protocols, Markup Languages, Web Designing Fundamentals, Web Animation Technologies, Introduction to Web Development, Client Side Programming – Java Script, Server Side Programming– PHP, Cascading Style Sheets – CSS, Extensible Markup Language – XML, Web Services, Database Connectivity, Web Development Tools, Web Servers, Web Security, Search Engine Technologies, Search Engine Optimization (SEO), Web Hosting, Mobile Web Applications, Web Technology Best Practices, HTML 5, ASP.NET Overview

CSU5303 Management Information systems.

Introduction to Management Information Systems (MIS), Information Systems in the Enterprise – Major Types of Systems in Organizations, Information Systems, Organizations, Management, and Strategy, The Digital Firm: Electronic Business and Electronic Commerce, Ethical and Social Issues in the Digital Firm, IT Infrastructure and Platforms, Organizing Data in a Traditional File Environment, Telecommunications and Networking in Today's Business World, The Internet, Technologies and Tools For Communication and E-Business, The Wireless Computing Landscape, M-Commerce and Mobile Computing, System Vulnerability and Abuse, Security and Control, Enterprise Applications and Business Process Integration, Managing Knowledge in The Digital Firm, Intelligent Techniques Used in MIS, Decision Making and Decision-Support Systems,

Redesigning the Organization With Information Systems -BPR and Process Improvement, Overview of Systems Development, Alternative Systems-Building Approaches, Understanding The Business Value of Systems, Managing Change and Implementation, Managing International Information Systems, Technology Challenges of Global Systems

CSU5304 – Mathematics for Computing

Fundamentals, Logic, Propositional Equivalences, Logic Proofs, Logic and Bit Operations, Introduction to Predicate Logic, Sets, Proofs and Laws of Sets, Mathematical Reasoning, Functions, Sequences and Summations, Writing Algorithms, Evaluation Algorithms, Number theory, Integer and Algorithms, Applications of Number Theory, Matrices, Induction, Strong Induction and Well-ordering, Recursion and Recursive Definitions, Program Correctness, Counting, Combinatorics, Binomial Coefficients and Generalized Permutations and Combinations, Introduction to Probability Theory.

CSU5305 -Theory of Computing

Introduction, Some fundamental concepts on alphabets and strings, Formal Languages, Finite Representation of Languages, Grammars. Context free Grammars, The Chomsky hierarchy of Grammars, Derivations, Derivation trees, Transition Systems, Introduction to Computational models, Power of machines, Finite State Machines, Computation with finite automation, Finite automation as recognizers of languages, Accessibility and equivalence of Finite Automata, Non-Deterministic finite machines, NFA with e-transitions, Transformation of NFA into DFA, Partitions and equivalence relations, Minimizing

Finite State machines, Finite state Transducers, Configurations and Moves of Finite-State Transducers, operations on Finite State Machines.

CSU5306–Digital Electronics

Introduction to Digital Electronics, Number Systems and Binary Arithmetic, Binary Code and other codes, Logic Gates, Boolean Algebra and Boolean expression minimization, Max. Term, Min Term and Canonical forms, Digital ICs, Combinational Circuits – Adders, Combinational Circuits – Other types of circuits, Sequential Logic Basics, Sequential Circuits – Flip Flops, Sequential Circuits – Types of Flip Flops, Counters and Registers, Asynchronous Sequential Circuits, Asynchronous and synchronous counters, Circuit Hazards, The Processor – CPU, Memory organization, Digital Memory, Programmable Logic Devices – PLD, The Digital Computer and Micro Processor, Micro Processor Programming, Hardware Description language – HDL, Digital system projects using HDL, Digital Communication Concepts.

CSU5307 – Data Communication

History of data communication and objective of the study, Communication Model - in General, Communication Model - Functional description, TCP/IP layered structure, ISO/OSI Model, Transmission Terminology, Analog and Digital Data Transmission, Transmission Impairments and Channel Capacity, Digital Data, Digital Signal, Digital Data, Analog Signal, Analog Data, Digital Signal, Analog Data, Analog Signal, Asynchronous and Synchronous Transmission, Line Configuration, Frequency Division Multiplexing, Time Division Multiplexing, Time Division Multiplexing, Flow Control, Public Switched Telephone Network, Asymmetric Digital Subscriber Line, Network Evolution, GSM- Global System for Mobile Communication,

GSM Communication, 4G – LTE, Communication Network Security

CSU5308 - Artificial Intelligence

Introduction, Reasoning, Propositional Logic, First-Order Logic, Definite Logic Programs, Intelligent Agents, The Nature of Environment, The Structure of Agents, Problem-Solving Agents, Example Problems, Searching for Solutions, Uninformed Search Strategies, Avoidance of Repeated States, Informed Search Strategies, Local Search Algorithms, Constraint Satisfaction Problem, Backtracking Search for CSPs, Logical Agents, The Prolog Language, Syntax and Semantics of Prolog Programs, List, Operators and Arithmetic in Prolog, Input and Output, More on Prolog, AI and Prolog, Future Trends in Artificial Intelligence.

CSU5309: Information Security and Cryptography

Introduction to security, Features of security systems, Threats and attacks on security, Computer system security, Network security and Secure networks, Secure computer systems, Introduction to cryptography, Digital signatures, Program level security, OS security principles, exploitations, Security devices: Firewalls, IDS, IPS, etc., Secure designs, Client and server security, Secure applications, Secure Protocols, Kerberos, VPN, L2TP, PPTP, IPSec, SSL, HTTPS, Security standards, Information security models, Access control theories and techniques, Cryptography and related concepts, theories, standards, and methods, Key exchange, digital certificate systems and protocols, Application security, attacks and counter measures.

CSU5320 – Project in Computer Science

Emphasis is given to the application of software/hardware technologies, where there is a strong problem-solving component. Report writing skills and presentation skills are also expected as a major part of the project. The final evaluation is based on the Final Dissertation, Software Demonstration, Viva and the supervisor's overall assessment on the performance through out the year. 18

CSU6300/CSU6308 - Advanced Database Systems

Traditional Systems Development Life Cycle (SDLC), The Database Life Cycle (DBLC), Procedure Flow in database Design, Parallel Activities in DBLC and SDLC, What is a Transaction?, Evaluating Transaction Results, Transaction properties, Transaction Management with SQL, The use of COMMIT statement, The transaction Log, Concurrency control, Lost updates, Uncommitted Data, Inconsistent Retrievals, Concurrency control with Locking Methods and Different Lock types, Concurrency control with Time stamping / Optimistic Method, Distributed processing and Distributed Databases, Functions of DDBMS, DDBMS components, Classification of Database systems, DBMS Transparency features, Distributed Concurrency Control, Fragmentation and Replication, Network File Server Systems, Client Server Computing / Databases, Object oriented databases, characteristics and Components of OO data model, Graphical Representation of objects and abstract data types, Class-subclass/Attribute class relationships in OO model, Representing 1:1/1:M and M:N relationships, Object space representation and object classification, Data warehouse and rules, Multidimensional data analysis, Schema Representation and Database administration.

CSU6301 – Data Mining & Machine Learning

Machine learning and statistics, Generalization as search, Input: Concepts, instances, attributes, Output: Knowledge representation, Algorithms: The basic methods, Inferring rudimentary rules, Statistical modeling, Divide-and-conquer: constructing decision trees, Covering algorithms: constructing rules, Mining association rules, Linear models, Instance-based learning, Clustering, Predicting performance, Cross-validation, Other estimates, Predicting probabilities, Counting the cost, Evaluating numeric prediction, The minimum description length (MDL) principle, Applying MDL to clustering, Real machine learning, Bayesian networks, Attribute selection, Discretizing numeric attributes, Some useful transformations, Automatic data cleansing, Combining multiple models, using unlabeled data, Extensions and applications of Machine learning, Learning from massive datasets, Incorporating domain knowledge, Text and Web mining, Adversarial situations, Ubiquitous data mining, Information fusion

CSU6602 - Computer Graphics & Image Processing

Introduction to computer Graphics, Nonparametric object representations, Parametric object representations, NonEuclidean object representation, Transformation of Objects, Modelling shapes, Introduction to Graphics rendering, Ray-tracing algorithms, Animation, OpenGL in a nutshell, Introduction to image processing, Fundamentals in Digital image processing, Human Visual perception, Image sampling, Image Enhancement, Image Enhancement - Spatial Domain, Introduction to Fourier transformation, Image Enhancement – Frequency Domain, Im-

age restoration, Filtering methods, Colour Image processing, Techniques in Colour Image processing, Image Compression, Techniques of Image Compression, Morphological Algorithms, Image Segmentation, Image Segmentation continued, Representation Methods, Descriptors, Object recognition – Decision theoretic, Object recognition – Structural, Image Processing Matlab, Real World Applications, Computer Vision Fundamentals, Knowledge Representation, Tracking Objects, Recognizing and tracking events, Applications of Computer Vision, Cognitive Computer Vision, Introduction to OpenCV System

CSU6603-Advanced Networking

Fundamentals of networking (quick revision of CPU3245), Network models and IP addressing (IPV4 and IPV6), IP routing and load balancing in small and large networks, Setting up / design of networks (small, campus, large), network services (DNS, DHCP, MAIL, Directory, WEB), Network clustering and load balancing, Virtual servers and applications, Setting up and using Multimedia technologies (VOIP, VOD, Internet radio, Streaming), Storage networks (NAS SAN), Wireless networks and routing. Firewalls and Network access control, Wide Area Networking Technologies and Distributed networks, Quality of Service in networks and Disaster recovery techniques.

CSU6304: Computer Architecture

Design basics of the computer microprocessor, Computer organization base and explores techniques that go into designing a modern microprocessor, basic building blocks of the microprocessor and interaction mechanisms in the computer, instruction set of architecture, Performance issues, performance benchmarking, communication, ILP, TLP, input/output and storage systems.

CSU6305: Computer Interfacing

Digital interfaces, including memory, serial, parallel, synchronous and asynchronous, Digital, analog interfaces, Hardware implementations of interrupts, buses, input/output devices, Microcontroller architecture, Microcontroller based design techniques, Role of the computer architect and assembly programming, Understand interfacing techniques and practice them in lab experiments

CSU6306: Selected Topics in Computer Science

Information System Management and Professional Ethics, Modeling and Simulation, parallel Computing, Operational Research, Algorithms and Complexity, Human Computer Interaction. Content may vary.

CSU6607 – Research Project in Computer Science

Identify research opportunities in the area of computer science, ability to solve the problems by using techniques, skills and computer science tools, disseminate information effectively through oral and written presentations, work independently in seeking and acquiring new knowledge

CSU6309- Electronic Commerce

Introduction to e-Commerce, Types of e-Commerce Systems, Requirements and Services for e-Commerce Systems, Technologies for Electronic Business Communication, Electronic Payment Systems, Electronic Catalogs, Infrastructure for e-Commerce Systems, e-Commerce Systems Security Functions and Requirements, Security Management, User Perception and Trust, Security Technologies, Data Encryptions and Digital Signatures, Intellectual Property, Legal Issues

for Electronic Payment Systems, Contractual and Legal Settlements, Regulatory Framework for e-Commerce, e-Commerce Standards and Global Forums, Internet Governance, Telecommunication Infrastructure, Decision Support Systems for e-Commerce, Interoperability of Business Applications, Storage and Retrieval of Multimedia Information, Economic, Social, and Cultural Issues, Workflow Management, Markup Languages, Enterprise Modeling Ontologies, Business Motivation Modeling, Electronic Business and Value Modeling, Business Process Modeling, Business Process Specification and Service Composition, Enterprise Knowledge Management, Technologies for e-Commerce Systems, Business Models and Business Functions, e-Commerce use within Government, Business Uses of Electronic Commerce and Industrial Applications, Auctions, Portals and Communities, Pricing, packaging and distribution of information goods, Competitive Strategy for the Information Economy, Webonomics, ERP Systems, Marketing and the Internet

CSU6310-Information Systems Management & Professional Ethics

Importance of Information system and management, using IT for strategic reasons and ethical issues in IS management, Management Information systems and Role of information worker, Professional ethics, privacy and accountability, IT capacity building, IT planning process, IT policy and frameworks, Different types of policies, issues in enforcement of IT policies in an organization, Government vs Private sector policies, software piracy and licensing issues, Legal issues in IT, Intellectual property laws in Sri Lanka and Overseas, Intellectual property laws related to IT, Electronic contracts and cyber laws, Cyber crime and governing laws.

CSU6311: Human Computer Interaction

Perceives and interacts with computers, how to model computer users, interaction design, testing and evaluation, define HCI in software process, exercise HCI basics through a design project which will help to solve problems in interactive software and websites

CSU6312: Software Architecture and Designing

Mapping enterprise strategic vision to architectural model, Architectural modeling through views, Evaluation of architectures, design patterns and application frameworks, Principles of software design, Modularization of functionality and elicitation of system properties, Design strategies and evaluation of designs, Cross-cutting concerns in a software design, Practice of software architecture and design, Design of distributed systems, component based design and software as a service, Documenting software architectures, Reuse of architectures, Case studies in software architecture and design

CSU6313: Information Technology Social Aspects & Infrastructure Management

Basic principles related to Management, Risks and options in an uncertain organizational environment for the technology management process, The development, management and exploitation of information systems and their impact on organizations and the society and the technological factors that drive success in innovation, processes, systems, and services, How different technologies can be managed for competitive advantage, The development of appropriate business policies and strategies and their

implementation, Range of contemporary and pervasive issues, which may change over time.

CSU6314: E-Governance

Uses of specific IT systems in the organization, The role of ICTs as a development tool, The basic principles of managing IT in the organization, How to analyze and identify the IT induced organizational changes, How to deliver services online efficiently, Elaborate a successful modernization using to ICTs.

CSU6315: Management Theories and Practices

Basic management functions, Realistic and practical applications of management concepts, Internal and external factors that affect organizational design and production, Problem-solving strategies and critical thinking related to Information system development using the management knowledge

CSU6316: Selected Topics in Information Technology

Math and Statistics for IT, System Integration and Architecture, Platform Technologies, Database Administration,

CSU6617: Research Project in Information Technology

Identify research opportunities in the area of Information Technology, ability to solve the problems by using techniques, skills and information technology tools, disseminate information effectively through oral and written presentations, work independently in seeking and acquiring new knowledge

Physics

PHU3300/PHE3300 - General & Thermal Physics

Basic Concepts (vectors and Scalars, Newton's Laws of Motion, Friction), Work, Mass and Energy, Impulse Momentum, Angular Motion & Angular Momentum, Kepler's Law, Principles of Rockets & Satellite Motion, Gravity; Elasticity, Bending of Beams, Columns and Support, Fluid Flow, Bernoulli's Theorem Viscosity of Liquids, Flow of Liquids in Capillary Tubes, Stokes' Law, Surface Tension I: Angle of contact, Surface Tension II: Rise of Liquid in Capillary Tubes; Free and Force Expansion of a Gas, The Kinetic Theory of Gasses, Gas Laws, Kinetic Interpretation of Temperature, Distribution of Molecular Velocities, Real Gasses, Van der Waals' Equation, Thermodynamics, Specific Heat Capacities of Gases I, Specific Heat Capacities of Gases II: Classical Theory, Thermometry I: International Scale of Temperature, Thermometry II: Primary and Secondary Standard Fixed Points, Thermo-Couple

PHU3301/PHE3301- Basic Electromagnetism

Electric charge and Coulomb's Law; electric field and lines of force; electric flux and Gauss' Theorem; electric potential; dielectrics; capacitors; current electricity and Ohm's Law; electrical circuits and Kirchhoff's Laws; magnetic action of moving charges; force on moving charges in a magnetic field; moving coil galvanometers; electromagnetic induction; Inductance; transformers; magnetic properties of materials; transient phenomena and AC theory; Practicals up to 24 laboratory hours.

PHU3202/PHE3202- Waves in Physics

Simple harmonic motion, superposition of simple harmonic motion, damped oscillations, forced oscillations and resonance, waves in physical media Properties of sound waves, interference of sound waves, intensity and sound level, interaction of sound waves and acoustics, ultrasonic waves Introduction to EM waves, production of EM waves and their uses, wave equation and wave properties, basic modes of propagation of EM waves, reflection, transmission, diffraction, interference and polarization of EM waves

PHU4300 - Modern Physics

Special Theory of Relativity

Classical Mechanics and its Limitations: maximum speed limit, physical events and frames of references, Galilean Transformations, nature of light and its propagation, Special Relativity and Relativistic Motion: postulates of special theory of relativity, nature of time and simultaneity, Lorentz transformation, Relativity of Time and Length: time dilation, length contraction, Lorentz transformation, transformation of velocities, Relativistic Mechanics: relativistic mass, momentum and energy, equivalence of mass and energy, Additional Topics on Relativity

Quantum Mechanics

Inadequacies of classical physics; distribution of energy in the blackbody radiation; Quantization of energy : Planck's theory; theories of specific heat solids; photoelectric effect; einstein's equation for the photoelectric effect and Compton scattering; de Broglie hypothesis; experimental verification of de Broglie hypothesis; Heisenberg's uncertainty principle; Schrodinger's wave

equation ;application of Schrodinger's equation
further application of Schrodinger's equation

PHU4302 –Optics

Wave Front, Wave Packets, Principle of Superposition and Huygen's Principle, Interference Patterns by the Method of Deviation of Wave Front, Interference Patterns by the Methods of Deviation of Amplitude, Industrial Applications of Interference,

The Michelson Interferometer, The Fabry –Perot Interferometer, Fresnel Diffraction, Fraunhofer Diffraction by a Double Slit, Diffraction Grating, Concave Grating, Echelon Grating, Polarisation, Double Refraction, Wave Plates, Optical Activity of a Solid and Liquid, Kerr-Electro Optic Effect

PHU4303 –Mathematical Methods for Physics

Introduction to Algebra, Expressions, Equations and Functions, Trigonometry, Limits, Permutations and combinations, Series and sequences - I, Series and sequences - II, Differentiation, Integration, Complex Numbers – I, Complex Numbers – II, Introduction to Vectors, Vector Analysis, Polar coordinate systems, Matrices and Determinants, Eigen vectors and Eigen values, Graphs, Errors, First order Ordinary differential Equations, Second Order Differential Equations, Partial Differential Equation, Applications of ODEs and PDEs in physics, Fourier Series

PHU4301 Electronics

Basic semiconductor physics: Fundamentals in circuit theory, Properties of elements and energy bands in solids, Fundamentals of Semiconductors, The p-n junction, Semiconductor diode, Diode Applications, Special Purpose Diodes. Analogue electronics: Bipolar Junction Transis-

tors (BJT), Transistor Operation, Field Effect Transistors (FET), Thyristors, Triacs, and Diacs, Transistors Modeling Techniques, Transistor Amplifiers, Fundamentals of Operational Amplifiers, Applications of Operational Amplifiers, Oscillators and filters, communication systems. Digital electronics: Number Systems and Truth tables, Logic gates, Boolean algebra, Flip-Flop, Applications of Flip-Flop, Analogue/Digital conversion, Memory circuits and systems, Introduction to digital computer.

10 practical sessions (each session 3 hours duration)

PHU5300/PHE5300 - Nuclear and Particle Physics

Introduction to background material; the constitution of the atom and the failure of classical physics; alpha particles scattering by atoms; Rutherford scattering formula; models of the atoms; Bohr theory for hydrogen like atoms; fine structure of hydrogen atoms; general introduction to the nucleus; some properties of nuclei; semi-empirical mass formula; natural radio activity; radio active equilibrium; radio activity : alpha decay; β^- decay; the γ - rays; artificial (induced) radioactivity; nuclear reactions; nuclear fusion; nuclear fission; nuclear reactor; elementary particles; radiation detection devices; nuclear power safety-radiation hazards.

PHU5301 - Practical Physics

Introduction to building blocks of microprocessors and microcontrollers, Registers, Counters, Timers, Digital to analogue conversion (DAC), Analogue to digital conversion (ADC), Harvard and Von-Neumann Architecture, Family of PIC microcontrollers, Power supply requirements for PIC microcontrollers, PIC Explanation of the PIC pin count, Registers, Internal and External Oscil-

lators of the PIC, Input/output Ports, Memory organization and function registers of the PIC, Assembly language programming, programme simulation with software, in circuit serial Programming (ICSP) of the PIC, RS 232 programmers, PIC Microcontroller applications.

PHU5302- Atmospheric Physics

Origin and composition of Earth atmosphere, The distribution of atmospheric mass and charged particles, The layering of Atmosphere, The gas laws, hydrostatic equation and its applications, Thermodynamics of the atmosphere, humidity measures, Moisture indicators, Atmospheric Stability, Types of Stability, The hydrostatics of special atmosphere, Radioactive transfer, quantitative distribution of radiation, radiation laws, thermodynamic diagrams, atmospheric circulation and winds in the earth's atmosphere, monsoons, precipitation, storms and hurricanes, greenhouse effect and global warming, climate change, atmospheric electricity, lightning and thunderstorms, cyclones

PHU5303 Data Acquisition and Signal Processing

Introduction to data acquisition systems ; displacement, force and weight sensors ; optical sensors and radiation detectors ; more radiation detectors ;controlling external devices ; analysis of operation amplifiers circuits ; deviations of Op - amps from ideal behaviour ; clipping clamping and filter circuits ; delay lines ; computers, Schmidt triggers and discriminators ; noise ; multiple time average and phase sensitive detection ; spectrum analysis ; interfacing analogue and digital worlds ; digital to analogue circuits; analogue to digital conversion circuits ; introduction to microprocessors preliminary concepts ; components of a microprocessor ; memory ; programming's microprocessor ; motorola MC 6809

processor ; designing with MC 6809; microprocessor support chips ; introduction to IBM PC ; interfacing to IBM PC; interrupts in IBM PC; ISA Bus, standard interfaces.

PHU5304/PHE5304 Biophysics

Introduction of biophysics: Expenditure of energy, human mechanics, the eye, The physics of hearing, biomedical measurements, Temperature measurements, pressure measurements, Physics for biological functions: building blocks of nature, Molecules, Interaction between molecules, interaction of ions and molecules with water, motion of molecules in a fluids, emission and absorption light, elements of equilibrium thermodynamics, biological systems and thermodynamics, Investigation of biological processes: Interference and diffraction of light, spectroscopy, Introduction of X-ray diffraction, X ray diffraction methods and analysis, Nuclear Magnetic Resonance spectroscopy(NMR)

PHU5305/PHE5305 Essentials of Geology

Earth Processes: Introduction to Geology, Origin of the Earth, History of the Earth, Structure of the Earth, Composition of the Earth, Plate Tectonics, Surface Processes: Weathering, Erosion, Mass Movements, Rocks & Minerals: Introduction to Earth Materials, Properties of Minerals, Classification of Minerals, Silicate Minerals, Clay Minerals, Rocks & Rock Cycle, Igneous Rocks, Sedimentary Rocks, Metamorphic Rocks, Surface Processes: Weathering of Rocks, Erosion, Mass Movements, Sri Lankan Geology: Historical Records, Formation of Sri Lankan Crust, Geology of Sri Lanka, Geological Mapping, Natural Resources in Sri Lanka: Water Resources, Energy Resources, Mineral Resources , Mineral Resources in Sri Lanka. 8 practical sessions (each session 3 hours duration) and two days field trip

PHU5307/PHE5307 - Medical Physics

Introduction to medical physics ; Human disorders (Associated with a man) ; Radiotelemetry ; Light and electronic optics ; Laser in Medicine ; Fiber optic light in medicines; Ultrasonic ; Nuclear magnetic imaging (NMR or MRJ) ; X ray in medicine ; Some instrumentation for medical diagnostic procedures ; Positron emission tomography (PEY) ; Computer axial tomography (CAT) or CT , SPECT and simulators ; Production unit and dosimetry ; Radiation protection ;Computer in medicine ; Medical statistic ; Nuclear medicine instrumentation ; Evaluation of radiation hazards ; Cancer ; Clinical radiotherapy equipment (Clinical radiation generators) Limitation of radiotherapy ; Delivery of the dose prescribed by the doctors ; Radiobiology

PHU5308 Fundamentals of Geophysics

Introduction to Geophysics: Basic characteristics of Earth: size, shape, mass, structure, age, Earth geometry, spherical coordinates, Plate tectonics: Divergent, convergent and conservative plate boundaries, Plate movement on Flat Earth, Rotation poles and present day plate motions, Past plate movements, role of Earth's magnetic field, Gravity Methods: Principles, gravity of the earth, Consequences of spherical geometry, Isotasy and mountain heights, Gravity measurements and anomalies, Gravity measurements of Sri Lanka, Magnetic Methods: Principles, Magnetism of the earth, Magnetic measurements, Data processing, Interpretation of field examples, Magnetic survey in Sri Lanka, Seismology: Seismic Theory, Types of seismic waves, Elasticity and elastic waves Earthquake location and magnitudes, Seismology and Earth's interior, Reflection field methods and instruments, data processing, interpretation, Seismicity of Sri Lanka, Electrical Methods: Electric properties of rocks and minerals, Self Potential method, Telluric and magneto-

metric methods, Induced Polarization method, Resistivity methods, data processing, interpretation and applications, Electromagnetic Methods: Electromagnetic theory, electromagnetic equipments and field methods, Airborne EM systems, Ground Penetrating Radar, Magneto-telluric, Radio activity Methods: Principles, instruments and, field examples, Global Positioning Systems (GPS): 2 days field survey (OUSL premises)

PHU5309 Literature Project in Physics

The department encourages students to complete level 04 and start level 05 before you select a Literature Project in physics. Limited number of projects are available. The student has to conduct a literature survey under the supervision of a senior staff member on a predetermined topic. This course should be completed within one academic year and produce a report on a timetable agreed with your supervisor. The student has to submit a report on or before a date announced by the Physics Department.

PHU5610 Research Project in Physics

The Department encourages students to complete level 04 and start level 05 before you select a Research Project in Physics. Limited numbers of projects are available. The student has to conduct a research project under the supervision of a senior staff member of the Department of Physics on a predetermined topic. This course should be completed within one academic year. The student has to submit the final report on or before the date announced by the Department of Physics. After submitting the report, student has to make a short presentation on his/her research project. This is followed by an oral examination, to test the student's knowledge about his/her research project. The course unit gives students a good opportunity to improve their research skills.

PHU5306 Environmental Geology

Fundamental concepts in environmental geology: Introduction to environmental geosciences, Geology and environment, Geologic factors that may impact upon human life or way of life, Environmental problems and possible alternative solutions to such problems, Natural geologic hazards: earthquakes and plate tectonics, earthquakes in Sri Lanka and Indian ocean, tsunamis, volcanic eruptions, tornado, future trends, Earth resource utilization & pollution: land degradation & pollution, industrial, agricultural and mining pollution, waste disposal, water, mineral and energy resources and conservation, Social Environment: Geologic factors affecting on land degradation, landslides, soil erosion, gem mining, rock quarrying, sand mining, hydropower, Geochemistry & Health: Fluoride & Iodine related health problems, Case studies in Sri Lanka, Geological considerations in Urban & Development Planning: Importance of geological considerations in land reclamation, land-use planning, town planning, Geological aspects in development projects - hydropower power, Mining, coastal development, infrastructure development projects, Case studies from Sri Lanka

PHU5311/PHE5311 Astronomy

History and Development of Astronomy, Gravity and the Laws of Planetary Motion, Identification of Constellations, The Celestial Sphere & Astronomical Coordinates, Astronomical Instrumentation: The Telescope, CCD Imaging, Photometry and Spectrometry, The solar system: The Origin and the constituents of the solar system, Comets, Meteors and Asteroids, The sun as a star & the structure of stars, Luminosity and Magnitude of stars, Variable Stars and Binary Stars, Stellar Evolution: H-R diagram, Main Sequence Stars, Red Giants & White Dwarfs, Nova, Super-

nova, Death of a star, Neutron Stars, Black Holes and Pulsars, Interstellar Matter, The Milky Way Galaxy and the Position of our solar system, Galaxies in the universe and the Hubble Classification, Cosmology: The Universe, Geometry of the Universe, Intelligent Life & Anthropic Principle

PHU5312 Solid State Physics

Solids, liquids and gasses, atomic bonding, amorphous and crystalline solids. Crystal structure: Cubic structure, Lattice, Unit cell, Basis, Crystal planes and Miller indices, symmetry. Crystal diffraction and Reciprocal space: Bragg diffraction law, experimental methods in X-Ray Diffraction, Reciprocal lattice vector, Diffraction condition. Forms of inter atomic binding: Binding force in crystal, Cohesive energy, Repulsive and attractive force, Ionic binding, covalent bonding, Metallic binding and molecular bonding (Van der Waals). Electrical Conductivity of materials: Drude's model, free electron theory, Density of states, Fermi level, Fermi-Dirac Distribution, Band theory of solids, semiconductors, introduction to superconductivity.

PHU5314 Thermodynamics

Thermal equilibrium, Zeroth Law of Thermodynamics and Temperature. Reversible process and work. First and Second laws of Thermodynamics, Entropy, Thermodynamics potentials, Maxwell relations, General thermodynamic relations. Magnetic system, Change of phase. First and second order phase transitions. Open systems and the chemical potential. The third law of thermodynamics: Nernst postulates and its applications to solids. Magnetic and electric systems. thermodynamics of dilute solutions

PHU5313 Advanced Electromagnetism

Introductory vector algebra. Maxwell's equations, Electromagnetic waves in free space and

non conducting media. Wave propagation in conducting media, skin effect, Poynting vector electromagnetic waves in bounded media, wave guides, transmission line theory, electromagnetic radiation dipole antennas

Zoology

ZYU3500 - Animal Life and Diversity

The classification and diversity in structure, function and development of the Protozoa, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematoda, Rotifera, Annelida, Mollusca, Arthropoda, Echinodermata, Hemichordata, and Chordata

ZYU3301 - Biogeography

History of biogeography, geographic template and patterns of variation in the terrestrial environment, distribution of individual species, basic patterns in species distributions, zoogeographic regions of the world, patterns of variation in geographic range, species diversity and individual traits, fundamental biogeographic processes, continental drift and plate tectonics, earth's tectonic history, glaciation events of the Pleistocene epoch, patterns in island biogeography, biogeographic categories of islands, biogeography of Sri Lanka, biogeography of humanity

ZYU4300 - Animal Form and Function

Level of organization in the animal kingdom; membrane structure and functioning; types of tissues; feeding and digestion; respiration & circulation, immune systems; homeostasis, osmoregulation and excretion; endocrine system, function of hormones; muscular system, movement of animals; neurons & nervous system, sensory systems; asexual and sexual reproduction

ZYU4301 - Ecology

Levels of organization beyond the individual organism; principles governing the distribution of organisms in the environment; concept of ecosystem and its functioning; characteristics of populations; nature of communities & community dynamics; environmental impacts, conservation & management of ecosystems.

ZYU4302 - Animal Development

Phases of animal development including germ cell formation, fertilization, cleavage, gastrulation, organogenesis, growth and differentiation, human embryonic development, post-embryonic development; analysis of development including cell determination, cell differentiation, cellular basis of morphogenesis, genes and development, early patterning of vertebrate body; recent advances in developmental biology.

ZYU4303 - Animal Behaviour

History of animal behaviour; the concept of classical ethology and the current approaches to study behavior; inherited and learned behaviour and its functional significance; general principles and central concepts of behavioural ecology in terms of habitat selection, feeding, anti-predatory behaviour, reproduction and social organization; genetics, development and evolution of behaviour; communication in animals and their applied behaviour.

ZYU5300 - Aquatic Biology

Physiochemical characteristics and biological components of freshwater water bodies; classification of lakes; adaptations of fresh water organisms; productivity and trophic status in fresh water bodies; brackish water environments (estuaries, lagoons) and their characteristics; oceanic environment, its characteristics and habitats.

ZYU5301 - Fish Biology and Fishery Management

Introduction to fish biology and fisheries management; evolutionary history of fishes; major groups of living fishes; external anatomy of fishes; internal anatomy, systems and their functions; estimation of parameters related to diet and reproduction; growth of fish; characteristics of fisheries, fishing gears and crafts; population dynamics of fishes; estimation of fish population size; mortality, recruitment and gear selectivity; yield; habitat improvement; commercially important fish species in Sri Lanka; management of fishery resources in Sri Lanka

ZYU5302 - Conservation & Management of Biodiversity

Introduction to biodiversity and its conservation; distribution of biodiversity, causes and mechanisms for the loss of biodiversity, conservation at the species and population level, conservation at the community/ecosystem level, conservation and human societies, international approaches to conservation and sustainable development, the role of conservation biologists in achieving sustainable development.

ZYU5304 - Parasitology

Fundamental principles and concepts of parasitism covering types of parasites, host parasite interactions and adaptations for parasitism; life cycles, morphology, transmission and the control of medically important parasites belonging to Protozoa, Platyhelminthes, Nematoda and Arthropoda; detection of parasites in the laboratory.

ZYU5305 - Human biology

The characteristics of the human being; origin and evolution of humans; human variability; human adaptability; integumentary and musculo-

skeletal system; integration and coordination functions of the nervous system; human nutrition and metabolism; the respiratory, circulatory, excretory and fluid regulation processes of humans; physiology of the human reproductive system; pregnancy and contraception; human growth and development; human diseases, health and hygiene

ZYU5306 - Insect Biology

External morphology of insects and classification; insect integument; biogeography and evolution; environment, biodiversity and conservation; modes of life; behavior; social insects; digestive system; tracheal system and gas exchange; blood, circulatory system and functioning; excretory system; reproductive system and potentiality for reproduction; insect development; nervous system and sense organs; chemical communication.

ZYU5307-Mammalian Biology

Basic characters of mammals; origin and distribution; diversity; adaptive radiation of major orders of class Mammalia; Monotremata, Marsupialia, Insectivora, Dermoptera, Chirptera, Lagomorpha, Pholidota, Primates, Rodentia, Lagomorpha, Cetacea, Carnivora, Proboscidea, Sirenia, Perissodactyla, Artiodactyla, evolutionary history, sociology, community ecology and conservation of mammals.

ZYU5608 – Zoology Project

A basic training on carrying out a scientific investigation related to Zoology is provided to students. Students are required to plan the investigation, write the project proposal carry out the scientific investigation based on the proposed methodology, analyze and interpret result and submit a project report. Half term progress reports, oral presentations and final report will contribute towards the overall grade. A limited

number of students will be registered for this course depending on their interest and writing skills in English.

ZYU5309-Paleobiology

That we offer under the zoology department here is a growing and comparatively new discipline which combines the methods and findings of the natural science biology with the "geobiology". Paleobiological research uses biological field research of current biota and of fossils millions of years old to answer questions about the molecular evolution and the evolutionary history of life. In this scientific quest, microfossils, microfossils and trace fossils are typically analyzed. However, the 21st century biochemical analysis of DNA and RNA samples offers much promise, as does the biometric construction of phylogenetic trees. There are popular activities in Sri Lanka and in the world, which in many ways parallel Paleobiology. However, many are probably not doing science. In this course, we will concentrate on the science rather than the popular activities.

ZYU5311 Literature review in Zoology

This course provides basic training on collecting literature, summarizing, critically evaluating and organizing a literature review on an approved topic. Submission of the proposal for literature review, literature survey report and finally the literature review article followed by a presentation and oral examination will contribute towards the overall grade. This course is offered only to Zoology Special students.

ZYU5313- Research methodology

Concepts and principles of scientific research; Searching and maintaining literature; Experimenting and sampling animals; Ming maps for planning and designing research studies; Qualitative and quantitative information gathering; Basic statistics; Report writing, Publication as

journal articles; Effective communication methods and presentation skills; Types of scientific publication.

ZYU 5390 -Evolutionary biology

Fitness and Adaptation, Plasticity and norms, Patterns of Diversity, Sexual Selection and Evolution of Sex, Evolutionary Behaviour, Evolution of Life Histories, Models of Speciation, Genetics of Speciation, Cases of Speciation, Coevolution, Extinction, Human Evolution, Human Diversity, Genes and Form, Schools of Systematics, Phylogenetic Inference, Molecular Evolution, Molecular Systematics, Conservation Genetics, Artificial selection

ZYU6300 - Management of Insect Pests and Vectors

Introduction to insect pests and vectors; pest damage, yield loss and assessment; pests of rice, fruit and vegetables, plantation crops, stored products; insect vectors of plant diseases; forest entomology; major insect vectors of diseases; transmission of pathogens by vectors; insecticidal control; biological control; use of resistant crop varieties; cultural practices; methods of vector control and management; interference and disruption; regulatory control; pest management approaches and strategies.

ZYU6301 - Aquaculture

Introduction to aquaculture industry; fish culture systems; planning for aquaculture development; water sources; site selection and construction of different aquaculture facilities; supplying quality water; obtaining quality seeds; maximizing growth; minimizing mortalities; harvesting and post-harvest technology; management of fish culture facilities and economic considerations; biology and culture methods of fin fish species, shrimps, bivalves, sea weeds and ornamental fish

ZYU6302 - Immunology

Host defence, innate immunity, acquired immunity, acquired immune response, antigens and antibodies, MHC molecules, T cells and B cells mediated immune responses, regulation of immune responses, cell mediated and humoral immune responses, immunity to infection, vaccination against infection, immunity to tissue transplants, immunity to tumours, hypersensitivity diseases, autoimmune diseases, immunodeficiencies and other disorders of the immune system

ZYU6303 - Molecular Biology

Overview of prokaryotic and eukaryotic cells; general structure of proteins; chromosome and chromatin structure and function; structure and organisation of genomes and genes; structure and function of nucleic acids; properties of nucleic acids; DNA replication; DNA damage, repair and recombination; gene expression and protein synthesis; tools in DNA manipulation including an introduction to genetic manipulation of animals; applications of recombinant DNA technology; Human Genome project and ethical aspects of gene technology

ZYU 6311.Special Topics in Zoology

This will be offered only to the final year Zoology special students. Students will be trained to write essays on current topics of Zoology which are of scientific interest. They need to gather information from various sources and write scientific essays for the topics given to them by the Zoology Department. The final examination will be a theory paper where students are required to write 3 essays.

ZYU6605 -Advance Laboratory Techniques in Zoology

Laboratory and general equipment maintenance; Health and safety in biological laboratories; Microtomy; Staining of microscopic animals, animal sections and tissues; Microscopy; Drawing and imaging; Dissections of invertebrate and vertebrates for comparative anatomy; Preparation of animals and skeletons for displaying; Mini Project in a selected field to apply techniques. This course is offered only to Zoology Special students.

ZYU6306 - Ornithology

Introduction to birds and bird taxonomy, bird flight, other means of locomotion, digestive system, food & feeding habits, circulatory system, respiratory system, energy balance & thermoregulation, nervous system- brain & senses, vocal communication, territorial & colonial behavior, mating systems, avian reproduction- anatomy & the bird egg, nests, clutch size, incubation, & hatching, parental care, migration and orientation, important bird areas of the world and Sri Lanka, status of bird diversity in Sri Lanka, bird study methods, birds and biodiversity conservation-local regional and global issues, field project

ZYU6908 Research Project in Zoology

This course provides a basic training on carrying out a proper scientific investigation in the field of Zoology. Students are required to plan the investigation, write the project proposal, carry out the investigation based on the proposed methodology, analyse and interpret results, and submission of a dissertation. Project proposal, half term progress report, final dissertation, project

presentation and oral examination will contribute towards the overall grade. This course is offered only to Zoology Special stud

ZYU6309- Oceanography and Ocean resources

Introduction to Oceanography, Plate Tectonics and the Ocean Floor, Marine Sediments, Ocean Circulation, Waves and water Dynamics, Tides, The Coast, Beaches, and Shoreline Processes, Marine Life and the Marine Environment, Animals of the Benthic Environment, Biological Productivity and the Marine Environment, Remote Sensing and GIS applications in Oceanography. The Oceans and climate change.

ZYU6310- Wildlife Management and Conservation

Basics of population, community and ecosystem ecology; biodiversity and its values; introduction to Sri Lankan biodiversity and wildlife; history of wildlife conservation in Sri Lanka; threats to wildlife and related issues; animal behaviour; wildlife management; options available for wildlife conservation; elephant conservation in Sri Lanka; protected areas in Sri Lanka; protected area planning; wildlife policy, elephant conservation policy and fauna and flora protection ordinance; ecotourism principles and practices; Field sampling methods of fauna and flora; Report writing and presentations on field visits.

FNU6300- GIS& RS in Natural Resource Management(GIS)

Introduction to GIS, understanding datums, map projections, coordinate systems, map scale, basic characteristics of maps, sampling the world, data models, digital databases, components of the GIS and data inputs, elementary spatial data

analysis, feature measurements in GIS, classification of digital objects, global positioning systems, fundamentals of remote sensing

FNU6302 – Fundamentals of Environmental Impact Assessment (EIA)

Introduction to EIA, EIA concepts, screening, scoping, project affected environment and legislation, impact identification, impact prediction, impact evaluation, mitigation of impacts, environmental management plan, EIA report writing, evaluation of EIA reports, EIA procedures in Sri Lanka, role of public participation.

FNU6301 - Environmental Degradation and Management (EDM)

Understanding our environment, environment sustainability, state of the Sri Lankan environment, key environmental issues in Sri Lanka, causes of environmental degradation, linkages to global environment, combating environment degradation, valuing the environment, policy and institutional set-up in Sri Lanka, environmental monitoring

APPENDIX

Appendix 1 Schedule of Exemptions

Specific Exemptions from Foundation courses in Science

GCE A/L Sri Lanka		Qualifications Accepted for Exemptions										
		OUSL Foundation certificate in Science / London A/Levels						Institute of Chemistry Lab Technicians Certificate (LTCC)/(DLTC)	Diploma in Sci./ Maths (AUC); Diploma in Teaching Sci./ Maths (NIE); Trained Teachers Certificate		Science Teachers Diploma	
New Scheme	Old Scheme	Pure Maths	App. Maths	Physics	Chemistry	Botany	Zoology		Maths	Sci.	Phy. Sci.	Bio.Sci.
		Com. Maths/Higher Maths				Biology						
Combined Maths / Higher Maths	Pure Maths	X						X				
	App. Maths		X					X				
Physics	Physics			X					X	X		
Chemistry	Chemistry				X				X			
Biology	Botany					X			X		X	
	Zoology						X		X		X	

Specific Exemptions for EGAP (LEE3410) (scores given below should not be more than 3 years old)

IELTS*	Overall score of minimum 5.0 (academic) or 5.5 (general), with 4.0 in writing
TOFEL*	Paper based: overall score of minimum 450 with 3.5 in writing; Computer based: overall score of minimum 200 with 3.5 in writing; Internet based: overall score of minimum 90 with 3.0 (scaled score of 20) in writing
G.C.E (A/L) English Medium	Student who have completed their advance level Examination in English Medium conducted by the department of Examination.
London A/L	Students who have completed London A/L (Edexcel or Cambridge).
UTEL	Score of not less than band 6.00 in all 4 skills.
Successful completion of a Bachelors Degree/Postgraduate Diploma/Masters in the English medium.	

* IELTS and TOEFL scores should be obtained not more than 3 years prior to the date of request.

Specific Exemption for ICT Skills (CSE3213)

UCTIT	Successful completion of the University Competency Test in Information Technology (UCTIT) conducted by the Higher Education for Twenty First Century (HETC) project of the Ministry of Higher Education.
ICT Technician	Successful completion of National Certificate in Information Communication Technology Technician (ICT Technician) NVQ L4 at Vocational Training Centre.
SCDL/ICDL	Successful completion of Sri Lanka Computer Driving License (SCDL) or International Driving License (ICDL)
CPCA	Successful completion of CPCA; Certificate in Professional Computer Applications (Comprising of L2 Courses) offered by the Department of Mathematics and Computer Science, The Open University of Sri Lanka.

Specific Exemptions for CYE3200

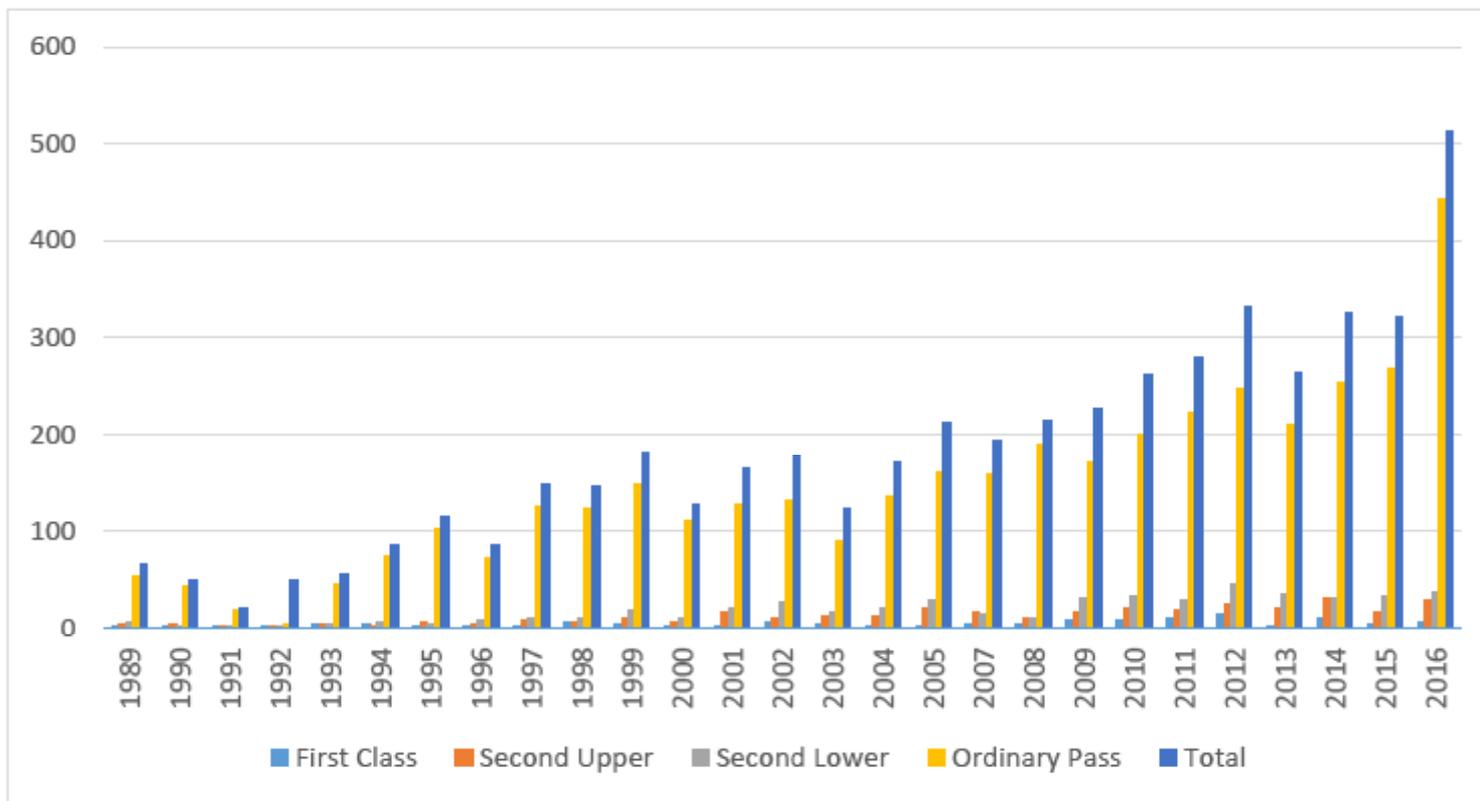
Course Code	1st year Examination in Science of a recognized University		National Diploma in Mathematics	GCE A/L-Combined/Higher/Pure/Applied Maths, Trained Teachers' Certificate in Maths, PSF1301+PSF2301/ PSF1302+ and PSF2302 NDT/JTO/IESL PartI
	Pure Mathematics	Applied Mathematics		
CYE3200	X	X	x	x

Appendix 2

OUSL Computer Centres

Centre Address	Telephone No.
<ul style="list-style-type: none"> • Faculty of Education Building (ground floor) The OUSL, Nawala, Nugegoda 	011-2814557
<ul style="list-style-type: none"> • Nawala, Colombo Regional Centre Building, (ground floor) The OUSL, Nawala, Nugegoda 	011-2810088 011-2881080
<ul style="list-style-type: none"> • Kandy The OUSL Regional Centre, Pollegolla, Kandy 	081-2494119
<ul style="list-style-type: none"> • Monaragala The OUSL Study Centre, Potuvil Road, Monaragala 	552277377
<ul style="list-style-type: none"> • Kurunegala The OUSL Study Centre, Nissanka Mawatha, Malkaduwwa Kurunegala 	372220917
<ul style="list-style-type: none"> • Ampara The OUSL Study Centre, Iginivagala Road, Ampara 	632224388
<ul style="list-style-type: none"> • Rathnapura The OUSL Study Centre, Hidellana, Rathnapura 	452228075
<ul style="list-style-type: none"> • Ambalangoda The OUSL Study Centre, Polwatta Road, Halwatura, Ambalangoda. 	912255310
<ul style="list-style-type: none"> • Anuradhapura The OUSL Study Centre, Javanthi Mawatha, Anuradhapura 	252234484
<ul style="list-style-type: none"> • Matara The OUSL Study Centre, Nupe, Matara 	412222314
<ul style="list-style-type: none"> • Batticaloa The OUSL Study Centre, Bar Road, Batticaloa 	065222264
<ul style="list-style-type: none"> • Galle OUSL Study Centre, Labuduwa, Galle 	091-2223784
<ul style="list-style-type: none"> • Kegalle OUSL Study Centre, Kumaratunaga Munidasa Mawatha, Kegalle 	035- 2222086
<ul style="list-style-type: none"> • Polonnaruwa OUSL Study Centre, Mahavali Housing Scheme, New Town, Polonnaruwa 	027-2223048
<ul style="list-style-type: none"> • Gampaha Open University of Sri Lanka Study Centre, Gampaha Road, Miriswatta, Madugoda 	0332234572/1
<ul style="list-style-type: none"> • Ambalantota OUSL Study Centre, Ragasaranagama, Lunama, Ambalantota 	0112856203
<ul style="list-style-type: none"> • Peradeniya University of Peradeniya, Peradeniya 	081 – 2389206
<ul style="list-style-type: none"> • Katunayake Institute of Engineering Technology, Temple Road, Katunayake 	0112252831
Centre Address	Telephone No
<ul style="list-style-type: none"> • UOC University of Colombo, "College House", 94, Kumaratunga Munidasa Mawatha, Colombo 03 	011-2814557
<ul style="list-style-type: none"> • Trincomalee Sri Lanka Institute of Advanced Technological Education, Selvanayagapuram Rd, Uppuweli, Trincomalee. 	011-2768051 011-2881333 011- 2881380
<ul style="list-style-type: none"> • Badulla Sri Lanka Institute of Advanced Technological Education, Greenland Drive, Badulla 	011-2671783
<ul style="list-style-type: none"> • Kalutara Open University of Sri Lanka Study Centre, 66/2, Nagoda Road, Kalutara. 	034-2220850
<ul style="list-style-type: none"> • Vavuniya Open University of Sri Lanka Study Centre, 366, Thekkawatta, Vavuniya 	024-2225995
<ul style="list-style-type: none"> • Jaffna Open University of Sri Lanka Study Centre, Browns Road, Kokuvil, Jaffna. 	021-2221810
<ul style="list-style-type: none"> • Puttalam Open University of Sri Lanka Study Centre, 137/1, Colombo Road, Puttalam. 	Ms.Nirosha – 071-4484854
<ul style="list-style-type: none"> • Waligatta institute of Agro Technology and Rural Sciences of the University of Colombo, Weligatta New Town, Weligatta, Hambantota 	047-3625245

Appendix 3 Statistics: Programme Completion BSc (Natural Sciences) Graduates



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
First Class	2	1	1	2	3	4	2	2	2	6	4	2	2	6	5	2	2	3	5	8	9	10	15	1	11	4	6
Second Upper	3	5	1	1	3	2	6	4	9	7	10	6	16	11	13	12	20	16	11	17	21	18	25	20	31	16	28
Second Lower	6	2	1	1	5	6	3	9	11	10	19	10	20	27	16	20	29	15	10	30	32	28	45	34	30	33	36
Ordinary Pass	54	42	18	5	44	74	103	71	126	124	148	110	127	132	90	136	161	159	189	171	199	223	246	209	253	268	442
Total	65	50	21	49	55	86	114	86	149	147	181	128	165	176	124	170	212	193	215	226	261	279	331	264	325	321	512

OUSL Holidays

The OUSL recognises seven special holidays on which no compulsory activities will be scheduled.

1. Thai Pongal Day
2. Independence Day
3. Sinhala and Hindu New Year Day
4. May Day
5. Wesak Full Moon Poya Day
6. Prophet Mohammed's Birthday
7. Christmas Day

Faculty of Natural Sciences

