Student Handbook

B.Sc. in Food Science & Nutrition

Faculty of Livestock, Fisheries & Nutrition, Wayamba University of Sri Lanka

B.Sc. in Food Science & Nutrition

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2017/2018 Batch

Faculty of Livestock, Fisheries & Nutrition
Wayamba University of Sri Lanka

This handbook was issued for the students of the batch 2017/2018 admitted in the Bachelor of Science Degree programme in Food Science and Nutrition of the Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka. The information given in the handbook has been updated in 21st January 2019. The university reserves the right to change or cancel any syllabus or examination arrangement at any time. If students need any further clarifications, they may inquire from the Faculty Office of the Faculty of Livestock, Fisheries & Nutrition of the Wayamba University of Sri Lanka.

Contents

1. WAYAMBA UNIVERSITY OF SRI LANKA

The Wayamba University of Sri Lanka was established as a fully-fledged university in 1999 with six faculties; Faculty of Livestock, Fisheries and Nutrition (FLFN), Faculty of Agriculture & Plantation Management (FAPM), Faculty of Applied Sciences (FAS), Faculty of Business Studies & Finance (FBSF), Faculty of Technology (FAT), Faculty of Medicine (FAM). These faculties are located in two premises; FAPM and FLFN in Makandura and FAS, FBSF, FAT, and FAM in Kuliyapitiya. The main administration division of the university operates from Kuliyapitiya.

1.1 Present Status of the University

The Wayamba University of Sri Lanka (WUSL) is well recognized as one of Sri Lanka's latest and modern learning and research institutions. WUSL is the leading education provider in Agriculture, Food & Nutrition, Applied Sciences, Business Studies & Finance, Technology and Medicine in Sri Lanka. The university has time to time introduced innovative job-oriented courses and curricular to cater to the needs of the stakeholders in many sectors. All degree programmes of WUSL are conducted in English and are well designed to equip students with information technology skills and mastery of English Language. Career guidance is given to all students beginning from the first year to focus well in their future careers. Today, nearly 4000 students are studying in the WUSL under the guidance of more than 160 academics.

1.2 Vision and Mission of the University

Vision

"To achieve and be recognized as a centre of excellence in higher education, research and development of technologies whilst training and developing human resources to meet national and global needs"

Mission

"To produce innovative, skilled and knowledgeable graduates who can give the lead in national and global development needs through formal educational programmes as well as to carry out research and development through outreach programmes in its mandated areas".

1.3 Officers of the University

Chancellor	*Deshabandu Prof. Tuley De Silva* *B.Sc. (Cey), B.Pharm. (Lond)* *M.Sc. (Manch), Ph.D. (Manch), D.Sc. (Hon.C)* *C.Chem (SL), F.I.Chem. (Cey.)*
Vice Chancellor	*Prof. E.M.P. Ekanayake* *B.Sc. (Kelaniya, SL), M.Sc. (Kyushu, Japan),* *D.Sc. (Kyushu, Japan)*
Registrar	*Mr. W.A. Don Chithrananda* *M.P.M (SLIDA), HDBM, B.A. (Peradeniya, SL)*
Bursar	*Mr. D.A.U. Dharmadasa* *B.Sc (Kelaniya, SL), ACA, ASCMA*

2. FACULTY OF LIVESTOCK, FISHERIES & NUTRITION

The Faculty of Livestock, Fisheries and Nutrition (FLFN) was established in 1999. The faculty is situated in a scenic location at Makandura (close to Pannala) of the North Western Province of Sri Lanka, about 60 km forwards north-east of Colombo on the Negombo-Kurunegala road, with close proximity to the major cities of Negombo, Kurunegala and Kuliyapitiya and the Bandaranaike International Airport.

FLFN is the only faculty in the Sri Lankan university system which, offers B.Sc. degree programme in food science and nutrition sectors. The faculty possesses a reputation for quality and excellence in higher education and research. With well a team of well qualified academic teaching staff and experienced researchers and modern high- quality learning facilities, FLFN continues to serve the country through producing competent & knowledgeable and highly employable graduates. The faculty conducts academic programmes for undergraduate, post graduate and also research and outreach programmes.

The courses offered by the faculty are designed to move with the timely needs of the country thus reflecting higher employability of graduates. In ensuring excellence in teaching, FLFN adopts flexible learning as a part of its overall strategy to deliver an enhanced student-centred approach to education in a very conducive atmosphere. Apart from imparting knowledge, all courses aim at developing the personality of the students by improving leadership, interpersonal relationships, communication, analytical and critical thinking skills.

2.1 Officers of the Faculty

Dean	*Prof. B.P.A. Jayaweera* *B.Sc. Agric (Peradeniya, SL), M.Phil. (Peradeniya, SL)* *SEDA (UK), C.T.H.E. (Colombo, SL), ASTHE-SEDA (UK)*
Assistant Registrar	*Mrs.S.P.A.U. Senarath* *B.Sc. (Kelaniya, SL)*

2.2 Vision and Mission of the Faculty

The **vision** of the FLFN is to achieve excellence and recognition in higher education, research and developing technologies in its mandated areas. The **mission** is to produce graduates with knowledge skills and competence to meet urgent national needs in the important field of food and nutrition and to develop research and outreach activities.

2.3 Education at the Faculty

The faculty offers two B.Sc. degree programmes; B.Sc. (Honours) in Food Science & Nutrition (BScFSN), B.Sc. (Honours) in Food Production & Technology Management (B.Sc. FPTM). The faculty introduced the BScFSN degree programme in 2001. This degree programme in the combined disciplines of Food Science and Human Nutrition is the first of its kind in the Sri Lankan university system. The faculty started offering B.Sc. FPTM in academic year 2008/09. Both degree programmes are of 4-year-duration and conducted in English medium. The annual enrolment for the BScFSN programme and the B.Sc. FPTM programme are 110 and 60 students, respectively.

The two-degree programmes of the faculty have been designed to train students to meet national needs and embark on postgraduate studies. The faculty is committed to developing strong research and outreach programmes which will contribute to the development of the food and nutrition sectors in Sri Lanka. The development of skills and knowledge necessary for the graduates to be self-employed in the relevant sectors is also a major consideration.

The faculty is situated in an ideal environment with food and agribusiness, industrial and commercial activities. Apart from small and medium scale businesses, large establishments have started operations in the region in the recent past. The faculty has established links with national and regional industries, business establishments, research institutions and other government and non-governmental organizations. The faculty has several ongoing research projects in collaboration with industry.

The faculty has established its lecture theatres, laboratories in par with international standards. A media unit, animal units and aquaculture field units and student counselling centre (Youth Well Being Centre) are also there in the faculty to support the teaching and learning process. The education at the faculty is also supported by the services from the library with a vast collection of latest text books and journals, twenty-four-hour internet access and email facilities, a well-equipped Information & Communication Centre, English Language Teaching Unit and sports and recreational facilities, and a Medical Centre.

The graduates of the faculty are in strong demand by both national and international employers. The knowledge, skills attitudes and mind-set gained through the teaching-learning process at the faculty are a competitive advantage in the job market in finding placements to pursue postgraduate studies locally and internationally.

2.4 Departments of Study and Units of the Faculty

The Faculty of Livestock, Fisheries & Nutrition (FLFN) consists of four departments of study and a unit to support its academic, research and outreach programmes.

- Department of Applied Nutrition
- Department of Food Science & Technology
- Department of Aquaculture & Fisheries
- Department of Livestock & Avian Sciences
- Biostatistics Unit
- Department of English Language Teaching

2.4.1 Department of Food Science & Technology

Head	*Dr. (Mrs.) S. Jayathilake* *B.Sc. Agric (Peradeniya, SL), M.Sc. (Peradeniya, SL)* *Ph.D. (Obihiro, Japan)*
Professor Emeritus	*Prof. T.S.G Fonseka* *B.Sc. (Colombo, SL), M.Sc. (Kelaniya, SL), Ph.D. (Nott.UK)*
Professors	*Prof. C.V.L. Jayasinghe* *B.Sc. (Peradeniya, SL), M.Sc. (J'pura, SL), M.Phil. (J'pura, SL)* *Ph.D. (Tokyo, Japan)*

Senior Lecturers	*Dr. M.S.W. de Silva* *B.Sc. (Peradeniya, SL), Ph.D. (Ill Tech., USA)* *C.Chem (SL)*
	Dr. O.D.A.N. Perera *B.Sc. (Peradeniya, SL), M.Phil. (Peradeniya, SL)* *Ph.D (Ballarat, Australia)*
	Dr (Mrs) B.M.K.S. Tilakaratna *B.Sc. Agric (Peradeniya, SL), M.Sc. (Ja'pura, SL),* *Ph.D. (Dr. YS Parmar University of Horticulture & Forestry, India)*
	Dr. (Mrs.) S. Jayathilake *B.Sc. Agric (Peradeniya, SL), M.Sc. (Peradeniya, SL)* *Ph.D. (Obihiro, Japan)*
	Ms. P.M.H.D. Pathiraje B.Sc. Agric (Peradeniya, SL), M.Phil. (Peradeniya, SL), *Reading for Ph.D. (Saskatchewan, Canada)*
	Ms. A.M.M.U. Adikari *B.Sc. Agric (Peradeniya, SL), M.Sc. (Wales, UK)* *M.Phil. (Peradeniya, SL)*
	Ms. V.P.N. Prasadi (On study leave) *B.Sc. Agric (Peradeniya, SL)* *PG Dip in Applied Statistics (Peradeniya, SL)* *M.Phil. (Peradeniya, SL), Reading for Ph.D. (Gulpeh, Canada)*
	Dr. K.D.P.P. Gunathilake *B.Sc. Agric (Peradeniya, SL), M.Sc. (Peradeniya, SL)* *M.Phil. (Dalhousie University, Canada), Ph.D. (J'pura, SL)*
	Dr. (Ms.) H.P.S. Senarath *B. Sc. Food Science and Nutrition (Wayamba, SL)* *M.Phil. (Peradeniya, SL), Ph.D. (Tokyo, Japan)*
Lecturers	Ms. R.A.C.H. Seneviratne (*on study leave)* *B.Sc. Food Science & Technology (Peradeniya, SL),* *Reading for Ph.D. (Sri Lanka Institute of Nanotechnology/* *University of Cambridge, UK)*

The Department of Food Science & Technology (DFST) is one of the major contributors to the Food Science & Nutrition Degree Program. In addition, DFST also makes a considerable contribution to the B.Sc. in Food Production & Technology Management degree programme. The Department works with the mission of helping the nation through education, research and outreach programmes in the field of Food Science & Technology. DFST syllabus empowers undergraduates with value-added skills and knowledge to competently engage in activities demanded by the academic institutions and food industry. Department activities are of global scale ensuring food quality and safety.

The specialization program offered by the DFST has been designed to provide students with a sound theoretical knowledge in Food Science & Technology as well as practical skills / hands-on experience through highly subject-specific course units such as Food Chemistry, Food Microbiology, Food Engineering, Food Packaging and Post-Harvest Technology in Dairy, Fish, Meat, Cereal, Fruits and Vegetables. In the first semester of the final year, students are guided to carry out a research project in departmental laboratories or in government/ private research institutions where they integrate knowledge, creation and evaluation. In the

second semester of the final year, students will undergo in-plant training in food processing industries, where, in addition to technical aspects they can learn about factory management procedures and adapt to the needs of the food industry.

The students following Food Science & Technology specialization will be given good foundation to fit into professions such as academic, food scientist/ food technologist as well as key administrative positions.

2.4.2 Department of Applied Nutrition

Head	*Dr. (Mrs.) R.L.D. Kumari Malkanthi* *B.Sc. Nutrition (Wayamba, SL), M.Phil. Food & Nutrition (Peradeniya, SL), Ph.D. (Reading, UK)*
Professors	*Prof. Renuka Silva* *B.Sc. Agric (Peradeniya, SL), Ph.D. (Reading, UK), R.Nutr (UK)*
	Prof. (Mrs) Anoma Chandrasekara *B.Sc. Agric (Peradeniya, SL), M.Phil. Food & Nutrition (Peradeniya, SL), Ph.D. (Newfoundland, Canada)* *C.T.H.E. (Colombo, SL), SEDA (UK)*
Senior Lecturers	*Mrs. A.M.NT. Adikari* *B.Sc. Human Biology (J'pura, SL), M.Sc. Nutrition & Dietetics (Mahidol, Thailand), Reading for Ph.D. (Peradeniya, SL)*
	Dr. Ananda Chandrasekara *B.Sc. Agric (Peradeniya, SL), M.Sc. Food & Nutrition (Peradeniya, SL), Ph.D. (Sydney, Australia), Registered, Medical Officer (SLMC 1813), R Nutr (Australia) MTech (Melbourne, Australia)*
	Dr. (Mrs.) R.L.D. Kumari Malkanthi *B.Sc. Nutrition (Wayamba, SL), M.Phil. Food & Nutrition (Peradeniya, SL), Ph.D. (Reading, UK)*
	Mrs. R.M.T.K. Ranathunga (on study leave) *B.Sc. Nutrition (Wayamba, SL), M.Phil. Food & Nutrition (Peradeniya, SL), Reading for Ph.D. (Newcastle, UK)*
Lecturers	*Dr. (Mrs) G.J.M. Nanayakkara* *B.Sc. Food Sc. & Nutrition (Wayamba, SL), M.Phil. (Peradeniya, SL) Ph.D. (Deakin, Australia)*
	Mrs. M.S.F. Sirasa (on study leave) *B.Sc. Food Sc. & Nutrition (Wayamba, SL), M.Sc. (Peradeniya, SL) Reading for Ph.D. (Griffith, Australia)*
	Dr. (Mrs.). H.P. Gunawardane *B.Sc. Food Sc. & Nutrition (Wayamba, SL), Ph.D. (Peradeniya, SL)*
	Mrs. J.I.K. Hettiarachchi *B.Sc. Food Science & Nutrition (Wayamba, SL)* *M.Sc. Food and Nutrition (Peradeniya, SL)*

Department of Applied Nutrition too plays a major role in B.Sc. Food Science & Nutrition degree programme. The nutrition course units offered by the Department of Applied Nutrition provide rigorous and intellectually demanding study of the science of nutrition. The department expects to contribute to the improvement of nutrition and health status of the population in Sri Lanka through the attainment of excellence in teaching, research, training and community work

in the food and nutrition field. Nutritionists, dieticians and food scientists today need a thorough understanding of the scientific basis of nutrient requirements and how they are modified by disease. They also need a detailed knowledge of the toxicological, microbiological and biochemical mechanisms, by which food spoil and become unsafe. In many areas, qualified personnel are lacking and knowledge is incomplete, therefore, training and research in nutrition is necessary to develop a healthy and vibrant nation.

After the completion of a broad range of course units in the first two years in B.Sc. Food Science & Nutrition study programme those who have an interest in specializing nutrition will follow a wider range of nutrition-related specialized course units as well as some course units in food science and technology during the last two years. Medical Nutrition Therapy (dietetics) course units have been specifically designed for undergraduates with a strong interest in science and nutrition. They may apply their scientific, clinical and management background to prevent and treat diseases through modified diets. A limited number of students carry out a placement in a hospital during the final year and the course is expected to cater to the great demand for dieticians in the private and public health sectors.

In order to provide various skills to be used in the field of nutrition, a number of laboratory and field practical course units have been incorporated to the curriculum. The Analytical Laboratory of the department contains a wide range of equipment such as indirect calorimeter, pedometer, bioelectrical impedance analyser, centrifuges, UV/Fluorescence spectrophotometers, and ELISA unit suitable for human nutrition research. The Clinical Unit of the department is equipped to measure anthropometric body composition and to conduct clinical investigations. Computer application in nutrition is also be taught during the courses. Students will undertake group or individual study projects during the programme in order to apply their classroom knowledge in community and industry. In the final year all students undertake a research project under the supervision of a member of the academic staff and each one has to present the findings and submit a printed copy of the report at the end.

The research interests of the academic staff include mechanisms by which diet influences the development of chronic diseases, functional foods, antioxidants, food security and macro and micronutrient deficiencies of community groups. Collaboration with food technologists and with the food industry in the development of foods with specific nutritional properties is a major focus for the applied aspects of research.

The course units in nutrition are career-oriented and the graduates thus produced are in great demand. Graduates with a B.Sc. degree in Nutrition are open for a wide range of careers within the food industry and health services. Graduates of nutrition specialization may gain employment in research institutes and with major food companies concerned with food production and processing or as trainee-dieticians/nutritionists in hospitals. Also, they have employment opportunities in various international & local non-governmental organizations involved in community development.

2.4.3 Department of Livestock and Avian Sciences

Head	*Mr. W.A.D.V. Weerathilake* *B.Sc. Agric (Peradeniya, SL), M.Phil. (Peradeniya, SL), PGDBM* *Reading for Ph.D. (Wayamba, SL), R Ani Sc (UK)*
Professor Emeritus	*Prof. S.S.E. Ranawana* *B.V.Sc. (Peradeniya, SL), M.Phil. (Peradeniya, SL),* *Ph.D. (Sydney, Australia)*
Professors	*Prof. B.P.A. Jayaweera* *B.Sc. Agric (Peradeniya, SL), M.Phil. (Peradeniya, SL)* *SEDA (UK), C.T.H.E. (Colombo, SL), ASTHE-SEDA (UK)*
Senior Lecturers	*Dr. Gamika A. Prathapasinghe* *B.V.Sc. (Peradeniya, SL), M.Sc. (Canada), Ph.D. (Canada),),* *SLVC Registered Veterinary Surgeon*
	Mr. W.A.D.V. Weerathilake (on study leave) *B.Sc. Agric (Peradeniya, SL), M.Phil. (Peradeniya, SL), PGDBM* *Reading for Ph.D. (Wayamba, SL), R Ani Sc (UK)*
	Mrs. H.N.N Dilrukshi (on study leave) *B.Sc. Food & Nutrition (Wayamba, SL), M.Sc. (Peradeniya, SL),* *M.Phil. (Wayamba, SL)*
	Dr. (Mrs.) J.M.K.J.K. Premarathna *B.V.Sc. (Peradeniya, SL), M.Phill (Peradeniya, SL) Ph.D. (Putra,* *Malaysia), SLVC Registered Veterinary Surgeon, MSLCVS*
Lecturers Probationary	*Mr. K.A.H.T. Kodithuwakku (on study leave)* *B.Sc. Agric. (Peradeniya, SL), Reading for M.Sc. (Japan)*
	Mrs. D.I. Abeygunawardana *B.Sc. Food Production & Technology Mgt. (Wayamba, SL),* *M.Sc. (Peradeniya, SL), Reading for M.Phil. (Wayamba, SL)*

Animal life is part of the biological sphere of our existence as people or human beings. There can be hardly any is no meaningful ecosystem, food production, business or economy to talk about without considering the immense contribution of the animal kingdom to the survival of the human kingdom. With the improvement in the standards of living in developing countries, the demand for livestock products has been booming dramatically in recent years. This trend is expected to continue such that by the year 2020 the value of animal products will be equal to those from all crops. Sri Lanka has shown, for example, by more than 600% growth in food production through animal agriculture. Clearly, there will be an increasing demand for trained personnel to serve in the animal production sector, both locally and abroad. Such demands will be in areas such as quality assurance, post-harvest handling value addition and processing, aspects in which skills are presently lacking in Sri Lanka. These areas that require skilled intellects include production efficiency and quality enhancement, further processing of milk and meat, good manufacturing practices, quality assurance and inspection, packaging, etc. There are several animal-related technologies in which there are no properly trained personnel available at present and thus the future prospects for those who gain expertise in the sector will be flourishing.

The Department of Livestock and Avian Sciences will offer course units designed to cater to the demand for such specialized knowledge and skills in the livestock

sector. Being a new degree program, it is possible to innovate and tailor the curriculum to meet the specific areas in which trained personnel are presently inadequate. The course is designed, therefore, to cover those areas in which such skills are presently not available in Sri Lanka since these are not adequately covered by degree programs in other Sri Lankan Universities. The academic and work culture of the department is very unique so that the course units offered by the Department are attractive to students and facilitate deep learning experiences. This has widened the horizons of students' capabilities, greatly enhanced the attitudes, versatility and the employability of the degree programs in food production and technology management and food and nutrition offered by this Faculty.

The Department presently comprises an Emeritus visiting professor, senior lecturers and probationary lecturers who bestow their expertise in animal-based food production, research and innovations. A modern farming facility is being developed with vital species of farm animals and some rare species of nonfarm animals for the student training and research. The Department has developed specialized laboratories with modern and high-tech facilities which are open to provide fullest support for student learning. In addition, the students will be exposed to the skills, knowledge and experience of scientists available in Research Institutes, Government departments, other universities and the livestock industry to supplement the academic resources for students' learning. A modern farming facility is being developed with vitals species of farm animals and some rare species of nonfarm animals for the student training and research. The Department has developed specialized laboratories with modern and high-tech facilities which are open to provide the fullest support for student learning. The faculty being in the centre of the North Western province, the heart of the animal production of Sri Lanka, the department has ample resources in the close vicinity for student training. The blessing of the location in an area with a high concentration of livestock farms, a strong outreach program has been developed by the Department to benefit farming industry and students. The animal husbandry sector is full of opportunities. As an energetic graduate with valuable training and work experience, graduates will be guaranteed a head-start on the job market and will have plenty of career options to choose from. Our graduate can work as an advisor to a supplier, a project manager, commercial officer, marketing officer, scientific researcher and also as a manager or entrepreneur of his/her own industry.

2.4.4 Department of Aquaculture and Fisheries

Head	*Dr. R.G.S. Wijesekara* *B.Sc. (Sp. Hons) (Peradeniya, SL), M.Sc. (Thailand), Ph.D. (Japan)*
Professor Emeritus	*Prof. J.M.P.K. Jayasinghe* *B.Sc. (SL), M.Phil. (SL), Ph.D. (UK)*
Senior Lecturers	*Dr. R.G.S. Wijesekara* *B.Sc. (Sp. Hons) (Peradeniya, SL), M.Sc. (Thailand), Ph.D. (Japan)*
	Dr. (Ms.) J.A.D.S.S. Jayakody *B.Sc. (Sp. Hons) (Kelaniya, SL)* *Post Graduate Dip (Hons) in Wildlife Mgt., Ph.D. (UK)*

Senior Lecturers	*Dr. M.D.S.T. de Croos* *B.Sc. (Sp. Hons) (Colombo, SL), M.Sc. (Kelaniya, SL)* *PGDBM (Colombo, SL), C.T.H.E. / SEDA (UK)* *Ph.D. (Iceland)*
	Dr. W.M.H.K. Wijenayake *B.Sc. (Sp. Hons) (Kelaniya, SL), Ph.D. (Kelaniya, SL)* *Dip in Agriculture (SL)*
	Dr. (Mrs) A.G.S.S. Darshani *B.Sc. Fisheries & Marine Science (Ruhuna, SL),* *M.Sc. (Bodo, Norway), Ph.D. (Tokyo, Japan)*
Lecturers Probationary	*Mr. G.A.H.S. Chathuranga* *B.Sc. Fisheries & Marine Science (Ruhuna, SL)* *Reading for Ph.D. (Auburn, USA)*
	Miss S.T. Gonapinuwala *B.Sc. Food Sci. & Nutr. (Wayamba, SL),* *M.Sc. (Peradeniya, SL)*

Fisheries and Aquaculture sectors play an important role in the economy of the country as they provide protein for the growing population, create employment opportunities, generate development in other related sectors of the economy and help to increase foreign exchange earnings.

Set in a fast developing area of the North Western province, Department of Aquaculture and Fisheries is breaking new ground through its innovative approach to teaching and the introduction of new degree programme which deals directly with emerging needs of the industry. Fisheries education in Sri Lanka is often considered traditional and even old-fashioned but not at the Department of Aquaculture and Fisheries of the Wayamba University of Sri Lanka. The Department is ideally located in the North Western province, with a concentration of shrimp farms, number of freshwater, marine and estuarine ecosystems such as coral reefs, mangroves, sea grass beds, sand dunes, mud flats, lagoons and estuaries.

The course modules of the degree programmes are developed to cater to the emerging needs of the Aquaculture and Fisheries sectors and are becoming extremely popular among university students. The special degree programme gives more emphasis on Applied Fisheries and Aquaculture to meet inadequacies in training current human resources within the country. Department of Aquaculture and Fisheries prides on the strength of its well-qualified teaching staff and the value that is added to students. In addition to the existing B.Sc. in Food and Nutrition degree programme, a new Degree Programme named as B.Sc. in Food Production Technology Management was started in the year 2008/2009. The department works with the mission of "Contributing to the improvement and sustainable utilization of aquatic resources of Sri Lanka and develop relevant competencies and skills in undergraduates through appropriate partnerships with the industry". The courses are designed to move with the timely needs of the country thus reflecting a 100% employability of our graduates. There is no hesitation to say that following the Fisheries Programmes at the Wayamba University of Sri Lanka is not like following any other fisheries course in Sri Lanka, because it has many crossroads to almost all sectors of the "creative"

industry; exploring the aquatic environment, seaweed farming, aquatic phytology, culture-based capture fisheries, ornamental fish farming, participatory resource management, aquaculture engineering and aquaculture biotechnology.

2.4.5 Biostatistics Unit

In Charge	*Prof. C.V.L. Jayasinghe* *B.Sc. (Peradeniya, SL), M.Sc. (J'pura, SL), M.Phil. (J'pura, SL) Ph.D. (Tokyo, Japan)*
Senior Lecturers	*Dr. (Mrs.) T.U.S. Peiris* *B.Sc. Agric (Peradeniya, SL), M.Phil. (Peradeniya, SL) Ph.D. (Peradeniya, SL)*
	Dr. (Mrs.) W.A.H. Champa *B.Sc. Agric (Peradeniya, SL), M.Sc. (Peradeniya, SL) Ph.D. (PAH, LDH, India)*
	Ms. P.U.S. Peiris (on sudy leave) *B.Sc. Agric. (Wayamba, SL)* *M.Sc. (Peradeniya, SL), Reading for Ph.D. (Queensland, Australia)*

Biostatistics Unit was established as a part of the Faculty of Livestock Fisheries & Nutrition in the year 2013. The unit caters to students from both B. Sc. Food Science & Nutrition and Food Production & Technology Management degree programmes offering basic as well as advanced course modules related to Statistics, Mathematics & Agronomy. These course modules provide knowledge on fundamental principles & enable students to develop their analytical skills in statistics and mathematics. Biostatistics Unit is also offering course modules to cover the basic scientific principles of agriculture & agronomical aspects with the view of increasing food production and food security.

Students from both degree programmes who wish to gain sound experience on statistical applications in food Production systems, processes & technology have opportunities to conduct their research in Biostatistics & Agronomy in collaboration with other departments in the faculty as well as with recognized outside institutions. The unit also offers services/course modules/workshops on experimental designing & planning to help students at the final year for successfully planning, implementing & completing their undergraduate research projects.

Currently the main research and development efforts in the Biostatistics unit is in collaboration with outside institutions & the departments of the faculty on Pattern Recognition & Image Processing for complex biological processes using Artificial Neural Networks, Trend Analysis in different food production systems, investigating the potential impacts of climate change on national food security & implications of environmental pollution on human health.

2.4.6 Department of English Language Teaching

Head	*Dr. K.M. Dissanayake* *B.A. Special (Hons) (Peradeniya), M.A. (Kelaniya), PGDBM (Wayamba), PhD (Malaysia)*
Instructor	*Mrs. W.M.C. Fernando* *B.A. (Peradeniya, SL), M.A. (Kelaniya, SL)*

DELT is affiliated to the Faculty of Business Studies and Finance ad located in the Kuliyapitiya premises. DELT has established "English language teaching unit" at Makadura premises to provide English courses to both faculties at the premises. English courses are offered to enhance English Language skills and knowledge of the students. Attention is given to improve reading, writing, and listening, and speaking skills.

The teaching-learning methods are largely enhanced through technology. The ELTU DELT has an e-learning centre equipped with audio-video equipment, computers with internet access, and special language learning software. The centre is opened during office hours and the students are requested to register at the ELTU to use the e-learning centre. The mini-library of the unit has a collection of English books and other reading materials which students are expected to read to improve the language. Reading materials which are prepared with relevance to the main subjects that the students follow in the degree programme are given in English course modules.

The intensive English Language programme is conducted to improve the language skills of the new entrants to the university. During each semester in the year 1 and year 2 (Level 1), non-credit compulsory English Language course are offered.

A certificate course in Business English is offered to students in the third year.

2.5 Other Units Supporting Education at the Faculty

2.5.1 Library

Librarian	*Mr. W. Punyawardena* *BLS (Kelaniya, SL), MLIS (Colombo), ALA (SL)* *Chartered Librarian*
Assistant Librarian	*Mrs. D.G.A.S. Malkanthi* *BA (Kelaniya, SL), ALA (SL)*

The main objective of the university library is to provide access to Library and Information Service in an efficient, effective and useful manner, and to support teaching, learning and research activities of the intellectual community by making resource materials available and by accessing user to be acquainted with skills in locating information deemed necessary in the modern information age.

The library at Kuliyapitiya premises is the main library which mainly provides services to the Faculty of Applied Science and the Faculty of Management Studies & Finance whilst the other library at Makandura premises provides services to the Faculty of Agriculture & Plantation Management and the Faculty of Livestock, Fisheries & Nutrition.

The library at Kuliyapitiya has 38,135 volumes related to the subjects of Management Studies, Electronics, Mathematical Science, Computing & Information Systems, Accountancy and Insurance & Valuation. The library collection at Makandura consists of 19,920 volumes on Agriculture, Biotechnology, Food Science and Technology, Applied Nutrition, Livestock & Avian Science, Aquaculture & Fisheries, Computer Science, English and related

disciplines which are needed for teaching and research programs of the above two faculties. The collection of periodicals is in 22 titles including some key journals on Agriculture, Food Science and related subjects. Subject related CDs & large collection of In-plant Training Reports are also available in addition to the library collection. Six online open Access Journal Database facilities are available at Makandura Library.

Borrowing facilities are available for the Undergraduate Students, Academic, Administrative, Academic Support and the Non-Academic staff. About 102 seating facilities are provided in the Library.

Bibliography materials are available for reference work and most of the reading materials are on open access to readers. Online Public Access Catalogue (OPAC) gives rapid access to the library collection. Students and Faculty Staff can use the Inter-Library Loan Service to obtain items that are not available in the Library. This library has linkages with other local libraries on the basis of Inter-Library Loan activities. The library actively participates in 2 Local Information Networks, namely SLSTINET and AGRINET. Being the member of the SLSTINET, the library is able to quip the Union Catalogue, which lists out publications of other scientific libraries in Sri Lanka. The library has been sharing its periodical collection, with the scientific community in Agricultural Instructions through the SDCP (Selective Dissemination of Current Page) service of AGRINET. The library issued the Current Content Page Service under CAS (Current Awareness Service) as well.

2.5.2 Information & Communication Technology (ICT) Centre

Director	*Dr. W.J.S.K. Weerakkody* *B.Sc. (Kelaniya, SL), Ph.D. (Kelaniya, SL)*
Lecturers	*Dr. H.A.C.K. Jayathilake* *B.Sc. Agric (Peradeniya, SL), PGDIT (SLIIT, SL), M.Sc. in IT (SLIIT, SL)* *Ph.D. (Wayamba, SL)*
	Dr. W.K.G.K.S. Weerasinghe *B.Sc. Agric (Peradeniya, SL), PGDIT (SLIIT, SL),* *M.Sc. in IS (SLIIT, SL), Ph.D. (Mississippi, USA)*
Systems Engineer	*Mr. W.D. Samanwickrama* *B.Sc. (Kelaniya, SL), PGD (Colombo, SL), PGDIT (SLIIT, SL)*
Instructors	*Mr. S.B.M.C.P. Herath* *B.Sc. Agric (Wayamba, SL), M.Sc. in Agri-Econ (Peradeniya, SL)* *M.Sc. in IS (SLIIT, SL)*
	Mr. H.W.H. Premachandra *B.IT (Colombo, SL), DCSD (NIBM, SL)*

The ICT Centre at Makandura premises has been designed to impart knowledge on Information Technology for students to meet the challenges in communication and to make use of computers in their relevant fields. The ICT Centre is currently equipped with more than 125 workstations to access the internet and for course work of the two faculties at Makandura. The Campus-wide fibre network and Wi-Fi system that were added recently facilitate all the offices, departments, units, library, hostels and quarters to gain high-speed web access by a leased line (112 Mbps) and communication facility within the premises through IP telephone system which can also be used to communicate with Kuliyapitiya premises. E-

mail service has been provided to all staff members. Student centred learning environment is created through LMS, which is hosted and maintained by ICT Centre. The Centre has extended its services to out-siders by offering Certificate & Diploma Courses, namely Certificate in Computer Applications & Skills (CCAS) and Diploma in Information Technology (DIT). To enhance the internal students' ICT skill, the Centre offers two Certificate Courses namely, Certificate in Web Designing & Development (CWDD) and Certificate in Programming & Database Systems (CPDS).

More information is provided through the university web site (www.wyb.ac.lk). Equipment including web and e- mail servers, multimedia projectors, multi-functional printers, scanners, digital cameras, video cameras and heavy duty on-line UPS systems help the Centre to provide all necessary facilities to students. The normal opening hours of the Centre are from 7.00am to 8.00pm and it can be extended up to 10.00pm on request.

3. FOOD SCIENCE AND NUTRITION DEGREE PROGRAMME

The faculty conducts two undergraduate degree programmes; B.Sc. in Food Science and Nutrition (BScFSN) and B.Sc. in Food Production and Technology Management (BScFPTM).

This chapter provides details of the BScFSN degree programme.

3.1 Programme Description

The Bachelor of Science in Food Science and Nutrition degree programme provides a strong background in the principles underlying the science of food technology and human nutrition. Graduates of this degree will have knowledge and an understanding of the characteristics and composition of major food materials, the microbiology, nutritional quality, related chemistry, physical properties and eating qualities of food, the impact of food storage and processing, and relationships between food, nutrition, health, and disease prevention. Graduates will have the knowledge, transferable and subject-specific skills, abilities and attitudes required to work in areas spanning the manufacturing, distribution, marketing of food, health promotion programmes and public health programmes. Also, this course will prepare students to enter postgraduate programmes in food science, nutrition and other life sciences.

Food scientists develop the processes that turn raw materials into high quality food products. They work continually to improve the quality of food supply, aiming to ensure food is appealing, safe and nutritious and it also has optimal taste, texture and functionality. Increasing consumer awareness and demands in regard to food related health issues and the important role of nutrition in the development of food products has generated a rapidly growing need for graduates with a good understanding of food science and nutrition.

Nutritional sciences emphasize intensive study in biological and physical sciences as a basis for understanding the science of nutrition and the relationships between nutrients and human health. Nutrition is an expanding field and its graduates are finding employment in a range of different settings. These areas include; patient are and education in hospitals, nutrition and health education in community, public health and nutrition policy in government departments, private practice and consultancy, education and training, sports nutrition and many more.

3.2 Specialization Options

The following areas of specialization are available for the students who follow the BScFSN Degree Programme.

- Applied Nutrition
- Food Science and Technology

Specialization programmes are offered during the second half of the degree programme; year 3 and year 4 (section 3.6.5, 3.6.6).

3.3 Programme Learning Outcomes

BScFSN degree programme provides opportunities for students to achieve and demonstrate the following:

- A broadly based scientific knowledge and understanding of food science and nutrition.
- A knowledge and understanding of related topics in the social sciences, consumer marketing and business and management issues.
- The ability to evaluate and to undertake research in food science and nutrition.
- Development of practical, enterprise and personal skills e.g. communication, teamwork, problem solving, decision making, initiative and creativity.

3.4 Graduate Profile

Successful students will be able to demonstrate that they have **knowledge and understanding of:**

- food composition (including major chemical interactions and nutritional factors) in the context of food quality and safety.
- food production systems, food processing operations and equipment, packaging and food preservation systems.
- microbiological and biochemical aspects of food quality and safety.
- nutrient (including water and alcohol) digestion, absorption, metabolism and requirements throughout the lifecycle, in health and disease.
- physiological basis of nutrient-related diseases.
- techniques for analysis of chemical and physical properties of foods, biologically and nutritionally important macromolecules and small molecules.
- food standards, regulations and policies
- role of agriculture, livestock, and fisheries, food processing, marketing, economic, social and behavioural factors affecting dietary adequacy and food security ***and;***
- a more detailed understanding of a chosen specialist area.

Skills and Other Attributes of Graduates

Intellectual skills

Successful students will be able to:

- analyse and solve problems
- critically evaluate scientific literature, recognizing strengths and weaknesses in research findings
- assess problems and design experiments to test hypotheses
- apply knowledge to new problems and situations
- plan, conduct and report on an individual research project

Practical / Professional skills

Those who specialize in **Food Science and Technology** will be able to:

- perform chemical and physical, microbiological and sensory laboratory tests to assess the quality and safety of food.
- participate in, and help develop, food research and food product development programmes.

- operate quality assurance procedures in food processing
- participate in the assessment of a food production process by the use of techniques such as Hazard Analysis and Critical Control Points (HACCP) so as to ensure the production of safe and quality food.

Those who specialize in **Applied Nutrition** (Nutritional Sciences) will be able to:

- interpret nutrition science as practical information
- assess nutritional status of individuals and groups.
- estimate nutrient intakes using qualitative and quantitative techniques
- develop, implement and document nutrition care plan for individuals or populations.
- to record, collate and analyse nutrition related data using appropriate statistical methods
- provide nutrition education and counselling for individuals and families
- perform chemical and physical, microbiological and sensory tests to assess the quality and safety of foods.

Generic / Transferable skills

Successful students will demonstrate the;

- ability to use library and online search facilities for accessing and searching for information in specified areas, from a range of sources and for evaluating this information to draw rational conclusions or sustainable judgments.
- ability to manipulate and display of numerical data, understand data and draw appropriate conclusions.
- ability to communicate effectively, both orally and in written form, the information concerning food and nutrition formally and informally at a level appropriate to the needs of both specialist and non-specialist target audiences
- ability to work effectively in small or large teams.
- ability to work independently.
- ability to solve problems related to food and nutrition discipline applying knowledge.
- ability to design and carryout research.
- ability to relate to people from a wide range of backgrounds.
- skills necessary for self-managed and lifelong learning.

Values

Successful students will possess;

- an appreciation of the legal (moral and ethical) issues encountered in professional practice
- a commitment to ethical practice
- a commitment to research-based and evidence-based practice
- commitment to the positive advantages of cultural and social diversity

3.5 Admission Requirement

The University Grants Commission of Sri Lanka entertains applications for admission to universities from candidates who have satisfied the minimum requirements for admission at the G.C.E. (Advanced Level) Examination.

In order to be eligible for admission to B.Sc. in Food Science & Nutrition degree programme a candidate should have offered one of the following combinations of subjects and obtained at least 'S' grades in the three subjects offered.

(i) Chemistry, Physics and Biology
(ii) Chemistry; Physics or Mathematics; Biology or Agricultural Science
(iii) Chemistry; Biology; Agricultural Science or Mathematics

3.6 Programme Structure and Levels of Study

3.6.1 Semester, Academic Year and Levels of Study

An academic year consists of two semesters of 15 weeks each. Academic programme is based on course credit system. End semester examinations will be held after a study leave period.

Year 1 and Year 2 of the degree programme are combined as Level 1, and year 3 and year 4 are named as level 2 and level 3, respectively. Level 1 course units offered in Year 1 and 2 provide a knowledge of basic science and business which will form the basis for subsequent study in food and nutrition. To achieve this, students undertake study of Biochemistry and Genetics, Human Physiology, Chemistry, Food & Nutrition, Microbiology, Biochemistry of Energy & Metabolism, Food Production Systems, Statistics and certain non-credit course units such as Mathematics & Computing and Information Technology, and English.

At the end of semester 1 of the Level 1, students are attached to an organization for a period of 2 weeks to gain exposure to 'real world experience'.

At the start of Level 2 (Year 3) students would select either Applied Nutrition or Food Science & Technology specialization streams. The selection criteria for specialization are given in Section 5.4.

Level 2 builds up the knowledge on the subjects taught in Level 1. The students integrate and extend knowledge and skills gained in the earlier years of the course through undertaking advanced course units in food science and human nutrition depend on their specialization.

In Level 3 Semester 1 all students should carry out an individual research project. In the second semester, students can choose to study a few taught course units worth of minimum 5 credits during the first five weeks. In Level 3 Semester 2, students are provided with an opportunity to gain experience whilst working or studying within a challenging and stimulating environment. Students undertake 10 weeks of supervised work experience in research institutes, the food industry, or organizations involved in health promotion and education.

The full list of course units and status of the course units (Compulsory or Elective) is shown in Section 3.6.4.

3.6.2 Programme Structure

The degree programme is delivered on course unit system arranged over a four - year period. The length of each course unit is determined by the measure "credit hour" or "credit".

3.6.2.1 Definition of a Credit

A credit is defined as 15 contact hours of lectures or 30-45 hours of laboratory practical/ field practical/ field visits, 90 of training/self-study/research or any other appropriate combination of the foresaid.

3.6.2.2 Credits Available to Offer in Four Years

The degree programme offers compulsory and optional/elective course units totalling to 147 credits in a four-year period.

3.6.2.3 Minimum Credit Requirement to Complete the Degree Programme

Students who are admitted in the BScFSN degree programme are required to follow course units totalling to a minimum of 120 credits in fulfilling the credit requirements specified for each level of the degree programme as detailed below.

(a) Credit Requirement for Level 1

Students in BScFSN are required to take core course units (compulsory) of 60 credits offered at Level 1 (year 1 and year 2).

(b) Credit Requirement for Level 2

Students in BScFSN are required to take a minimum of 40 credits from the course units offered at Level 2 (year 3), including compulsory course units and electives as specified by the specialization stream.

(c) Credit Requirement for Level 3

Students in BScFSN are required to take a minimum of 20 credits from the course units offered at Level 3 (year 4), including compulsory course units of "Research Project" and "In-plant training" or "Internship training" as specified by the specialization stream and electives.

3.6.2.4 Maximum Credits a Student Can Take

A student may take a maximum of 147 credits (depending on the course units available). All credits accumulated over the entire period shall be taken into account for the award of the degree. The students are strongly advised to seek advice from Heads of Departments and academic staff of the Departments before deciding on elective course units.

3.6.2.5 Length of the Degree Programme

The degree programme should be completed in maximum of 7 years. The duration of a student in the degree programme is determined without considering the medicals or any other reasons including deferments and intermissions. However, in special circumstances Academic Concessions can be granted (Section 5.15).

3.6.3 Abbreviations and Notations

An alpha numeric code is used to identify a course unit. The code consists of four digits prefixed by a set of three letters which refer to the subject area or the

Department or the Unit offering the course unit. The **first digit** denotes the level at which the unit is offered, the **second digit** the semester during which it is offered (if a course unit is offered in both semesters, then X is assigned to the second digit), the **third digit denotes** a serial number assigned to the course unit by the department or an academic unit. The **last digit** stands for the credit rating of the course unit (when the credit number exceeds 9, a sign X is assigned).

Prefix	Subject area/ Department/ Unit/Faculty
AQF	Aquaculture and Fisheries
FST	Food Science and Technology
LAS	Livestock and Avian Sciences
NTN	Applied Nutrition
LFN	Faculty of Livestock, Fisheries & Nutrition
ELT	English Language Teaching
CGU	Career Guidance Unit

Example: NTN 1224 is an Applied Nutrition Level 1 course unit conducted during the second semester having serial number 2 and credit value of 4.

3.6.4 Core-Programme of the Degree Offered at Level 1 (Year 1 and 2)

All core course units at the Level 1 of the study programme are compulsory.

Intended Learning Outcomes of the Level 1

At the end of Level 1 the students should be able to;

- relate/apply basic concepts of physical and general chemistry to production, processing and nutritional aspects of foods.
- describe properties and characteristics of living systems; structures and biological functions of proteins, carbohydrates and lipids, enzymes and their regulation in human body.
- relate biochemical processes involved in generation and storage of energy; biosynthesis of carbohydrates, lipids, proteins, nucleotides, vitamins and minerals to dietary requirements in humans.
- describe basic functional organization of the major physiological systems in the human body (comparative animal and fish physiology) and physiological regulation.
- discuss the contribution of agriculture, livestock and fisheries food production systems to food security in the country, household and individuals.
- analyse food composition (including major chemical interactions and nutritional factors) in the context of food quality and safety.
- explain scientific principles of technology related to food composition, safety, toxicology, processing, preservation and distribution.
- name and characterize major groups of microorganisms of importance to the food industry and explain their ecological, physiological, and public health aspects.
- explain how food processing and preservation systems be used to produce safe, nutritious and palatable foods.

- analyse chemical and physical properties of a food sample and interpret values; evaluate adoption, interpretation and enforcement of laws and regulations governing food processing and food service systems.
- identify food sources of nutrients and relate their functions to metabolism; recognize the requirements of nutrients for humans.
- perform statistical analysis and statistical interpretation of articles in their own discipline.
- perform mathematical calculations and interpret values in their own discipline.
- retrieve information using a variety of media, including web-based resources
- select the appropriate experimental design to test hypotheses in their own discipline.
- recognize the size, structure and organization of the food industry and the food supply chain and food and agricultural markets in Sri Lanka, regionally and globally; identify key economic and business challenges in the food industry and solutions for them.
- recognize professional activities working places; identify range of careers available in their discipline.

Course Units Offered at Level 1

Course unit code	Course unit Title	Credits	Comments
Level 1 Semester 1 (Year 1)			
FST 1113	Chemistry I	3	Core course unit
FST 1121	Laboratory Course in Chemistry	1	Core course unit
NTN 1114	Principles of Biochemistry & Genetics	4	Core course unit
LFN 1114	Food Production Systems I	4	Core course unit
LFN 1120	Mathematics & Computing	0	Core course unit
LFN 1130	Introduction to Information Technology	0	Core course unit
ELT 1110	English for Science I	0	Partial fulfilment
Level 1 Semester 2 (Year 1)			
FST 1212	Chemistry II	2	Core course unit
NTN 1214	Biochemistry of Energy & Metabolism	4	Core course unit
NTN 1224	Human Physiology	4	Core course unit
Course unit code	**Course unit Title**	**Credits**	**Comments**
Level 1 Semester 2 (Year 1)			
LFN 1210	Special Assignment	0	Core course unit; 2-week attachment to stakeholder organization during vacation
LFN 1224	Food Production Systems II	4	Core course unit

LFN 1232	Concepts & Practice of Statistics	2	Core course unit
LFN 1X10	Social Harmony & Conflict Resolution	0	Partial fulfilment; continues to Level 1 Semester 3
ELT 1210	English for Science II	0	Partial fulfilment
Level 1 Semester 3 (Year 2)			
FST 1314	Microbiology	4	Core course unit
FST 1324	Principles of Food Science	4	Core course unit
FST 1334	Principles of Food Marketing & Business Economics	4	Core course unit
NTN 1314	Introduction to Foods & Nutrition	4	Core course unit
LFN 1X10	Social Harmony & Conflict Resolution	0	Partial fulfilment; continued from Level 1 Semester 2
ELT 1310	Academic English I	0	Partial fulfilment
Level 1 Semester 4 (Year 2)			
NTN 1414	Human Nutrition	4	Core course unit
FST 1414	Food Analysis & Quality Assurance	4	Core course unit
FST 1424	Food Processing & Preservation Technology	4	Core course unit
LFN 1414	Information Systems & Data Handling	4	Core course unit
ELT 1410	Academic English II	0	Partial fulfilment

3.6.5 Applied Nutrition Specialization Programme

The specialization programme in Applied Nutrition which is offered over Level 2 and Level 3 is comprised of the following course units. Students have to follow a combination of compulsory and elective course units as recommended by the Department of Applied Nutrition.

Course Units Offered under Applied Nutrition Specialization at Level 2 (Year3)

Course unit code	Course unit Title	Credits	Comments
Level 2 Semester 1 [Minimum of 20 credits]			
NTN 2113	Nutrition in Lifecycle	3	Compulsory
NTN 2122	Diet & Diseases	2	Compulsory
NTN 2133	Nutrition Assessment	3	Compulsory
NTN 2142	Sociology of Food & Nutrition	2	Compulsory
NTN 2153	Public Health & Community Nutrition	3	Compulsory
NTN 2162	Functional foods	2	Compulsory

FST 2113	Food Chemistry	3	Compulsory
FST 2122	Dairy Products Technology	2	Elective
FST 2142	Sensory Evaluation	2	Elective
FST 2163	Biotechnology in Food Science	3	Elective
Level 2 Semester 2 [Minimum of 20 credits]			
NTN 2214	Medical Nutrition Therapy	4	Compulsory
NTN 2223	Sports & Exercise Nutrition	3	Compulsory
NTN 2233	Nutritional Epidemiology & Research Methods	3	Compulsory
NTN 2242	Communication and Health Promotion	2	Compulsory
NTN 2252	Food Toxicology	2	Compulsory
NTN 2262	Special Topics in Nutrition	2	Elective
NTN 2272	Food & Beverage Service Management	2	Elective
FST 2222	Food Packaging	2	Elective
FST 2232	Post-Harvest Technology of Fruits & Vegetables	2	Elective
FST 2242	Food Safety & Quality Management	2	Compulsory
FST 2253	Fish, Meat & Egg Products Technology	3	Elective
FST 2263	Cereal Chemistry & Bakery Products Technology	3	Elective
LFN 2212	Community Link (LinkCom)	2	Compulsory

Course Units Offered under Applied Nutrition Specialization at Level 3 (Year 4)

Course unit code	Course unit Title	Credits	Comments
Level 3 Semester 1			
LFN 3112	Scientific Communication	2	Compulsory
NTN 3118	Research Project in Applied Nutrition	8	Compulsory
Course unit code	**Course unit Title**	**Credits**	**Comments**
Level 3 Semester 2 [Minimum of 10 credits]			
NTN 3212	Field Assignment in Nutrition	2	Compulsory; Either NTN 3212 or NTN 3222
NTN 3222	Practical Dietetics	2	Compulsory; Limited enrolment; Either NTN 3212 or NTN 3222
LFN 3212	Human Resource Management	2	Elective
LFN 3222	Organizational Management	2	Elective
CGU 3211	Mass Communication	1	Elective
CGU 3221	Entrepreneurship	1	Elective

	Development		
NTN 3234	In-plant Training	4	Compulsory; Either NTN 3234 or NTN 3244
NTN 3244	Dietetic Internship	4	

- The status of a particular course unit (i.e., compulsory or optional) depends on the specialization stream.
- The availability of elective course units will be announced by the relevant department at the beginning of each semester.

3.6.6 Food Science & Technology Specialization Programme

Specialization programme in Food Science and Technology which is offered over Level 2 and Level 3 is comprised of the following course units. Students have to follow a combination of compulsory and elective course units as recommended by the Department of Food Science and Technology.

Course Units Offered under Food Science & Technology Specialization at Level 2 (Year 3)

Course unit code	Course unit Title	Credits	Comments
Level 2 Semester 1 [Minimum of 20 credits]			
FST 2113	Food Chemistry	3	Compulsory
FST 2122	Dairy Products Technology	2	Compulsory
FST 2131	Confectionery and Beverage Technology	1	Elective
FST 2142	Sensory Evaluation	2	Compulsory
FST 2154	Food Engineering	4	Compulsory
FST 2163	Biotechnology in Food Science	3	Compulsory
FST 2171	Food Product Development	1	Compulsory
Level 2 Semester 1 [Minimum of 20 credits]			
FST 2181	Rapid Chemical Sensing Methods	1	Elective
NTN 2113	Nutrition in Lifecycle	3	Compulsory
NTN 2142	Sociology of Food & Nutrition	2	Elective
NTN 2162	Functional Foods	2	Elective
Level 2 Semester 2 [Minimum of 20 credits]			
FST 2213	Food Microbiology	3	Compulsory
FST 2222	Food Packaging	2	Compulsory
FST 2232	Post-Harvest Technology of Fruits and Vegetables	2	Compulsory
FST 2242	Food Safety and Quality Management	2	Compulsory
FST 2253	Fish, Meat & Egg Products Technology	3	Compulsory
FST 2263	Cereal Chemistry & Bakery Products Technology	3	Compulsory

FST 2273	Spectroscopic Methods for Structure Determination	3	Compulsory
FST 2281	Indigenous Food Technology	1	Elective
NTN 2252	Food Toxicology	2	Elective
NTN 2272	Food & Beverage Service Management	2	Elective
LFN 2212	Community Link (LinkCom)	2	Elective

Course Units Offered under Food Science and Technology Specialization at Level 3 (Year 4)

Course unit code	Course unit Title	Credits	Comments
Level 3 Semester 1			
LFN 3112	Scientific Communication	2	Compulsory
FST 3118	Research Project in Food Science & Technology	8	Compulsory
Level 3 Semester 2 [Minimum of 10 credits]			
FST 3214	In-plant Training	4	Compulsory
LFN 3212	Human Resource Management	2	Elective
LFN 3222	Organizational Management	2	Elective
CGU 3211	Mass Communication	1	Elective
CGU 3221	Entrepreneurship Development	1	Elective

- The status of a particular course unit (i.e., compulsory or optional) depends on the specialization stream.
- The availability of elective course units will be announced by the relevant department at the beginning of each semester.

3.6.7 Selection for Specialization

All students who are eligible to progress to Level 2 can apply for either of the two specializations; Food Science & Technology or Applied Nutrition. Depending on the number of placements available in each discipline, students will be selected for specialization. If there are more applicants than the number of placements in a particular specialization, students will be selected according to the following criteria:

1. Students applied for a particular specialization will be ranked according to cumulative Grade Point Average (CGPA) (Section 5.7, 5.8) and placements will be filled.
2. Those who are not qualified for their preferred specialization will be placed in the other specialization programme.

4. TEACHING & LEARNING METHODS AND COURSE UNIT ENROLMENT

4.1 Teaching and Learning Methods

The mode of delivery of the programme is based on lectures, practical sessions, demonstrations, assignments, tutorial discussions, field visits, research and industrial training etc.

Lectures will introduce concepts, and practical sessions including group work will foster in-depth understanding of the concepts. Field visits and industrial visits are conducted to provide hands-on experience and awareness about the practical situations. Learning will be encouraged by the use of progressive formative assessments. Placements in industry and institutions will ensure graduates can apply their knowledge appropriately in commercial enterprises, research or educational institutions, or in advisory and regulatory agencies. A variety of approaches such as group work involving problem-based learning, case studies, class presentations, individual tutorials, and the undertaking of individual research projects will be used to develop intellectual skills. Structured classes in science and computer laboratories, and lectures supported by group work and seminars are expected to develop professional and practical skills. Opportunities to enhance transferable skills are incorporated into lectures, seminars and practical sessions involving group and individual work, project preparation and implementation.

At the beginning of the delivery of each course unit, students are provided with a course outline/Course specification which includes, objectives, intended learning outcomes, the content of theory and practical components, and assessment/evaluation procedures.

4.2 Medium of Instruction

All course units are taught in the English medium. All examinations (formative and summative) are set in English and answers must be given only in English.

4.3 Course Unit Enrolment

Students should register for the course units prior to the commencement of each semester using prescribed forms at the Faculty Office.

4.4 Limitation in Enrolment for Course Units

The faculty reserves the right to limit placements and the registration in any of the course units listed in Section 3.6.4. Information concerning limitations on course units will be notified to students in advance.

4.5 Minimum Enrolment of Students to Offer a Course Unit

Enrolment of 5 or more students in a course unit is required to consider offering that course unit in the scheduled semester. If less than 5 students registered, the course unit would not be offered.

4.6 Changes or Dropping of Course Units

Students are not permitted to change or drop course units for which they have registered for a semester after the laps of two weeks from the commencement of the semester.

4.7 Offering Optional and Elective Course Unit

The faculty will decide on offering optional course units in any semester after considering time table arrangements and other relevant factors.

4.8 Revising Course Units

The faculty reserves the right to cancel or revise any of the course units listed in Section 3.6.4. Any revision to course units and cancellation of course units will be notified to students prior to the beginning of the respective semester.

4.9 Sitting Examinations

Only the students who are enrolled for a course shall be permitted to sit for the assessments or examinations on that course unit provided satisfying the attendance requirement and any other course unit requirements specified by the departments at the beginning of each semester.

5. ASSESSMENT OF LEARNING

Assessment of learning and evaluation of outcomes are done through assessment of ILOs of course units.

5.1 Assessment Methods

In general, a course unit may be assessed by both formative and summative methods. Assessment methods are close examinations, assignments, reports, presentations, quizzes, viva-voce examinations, coursework, etc. as appropriate to the course unit. They reflect differences from normal practice depending on the course unit. Both summative assessments (End semester examination) and formative or continuous assessments (throughout course units) are planned to test the achievement of different learning outcomes and demonstration of learning. Continuous assessment marks are taken into account when calculating final grade/course grade. Coursework includes practical reports, problem-solving, case studies, literature-based assignments, log book and a research project report.

5.2 Assessment in Course Units

All the components (Theory, practical) of a course unit are assessed by way of both continuous (formative) assessment and end-semester examination (summative). The contribution from the marks of the two components to the **final marks/ course grade** of the course unit is decided by the relevant Department. The exact methods of assessment will be notified to students by the relevant Department prior to the commencement of the semester or academic year.

5.3 Continuous Assessment

Continuous assessment is comprised of mid-semester tests, quizzes, coursework and other components as defined by the relevant department. If a student is absent at any of the components of continuous assessment, the student will not receive marks for that component. Continues assessments are not repeated and highest marks achieved by a student in previous attempt of a particular continuous assessment of the course unit will be carried forward and considered I finalising marks.

5.4 End Semester Examination

The end semester examination of a course unit is comprised of theory examination or practical examination or both as specified by the relevant department. Thus, for a course unit which is comprised of both theory and practical papers at the end semester examination, the total mark (%) is calculated using an equation which is set according to credit ratio between the theory and practical components of the course unit. Based on the credit value, the duration of practical examination of a course unit varies from one to two hours and, for theory examination, it varies from one hour to three hours.

The theory examination is comprised of two/three sections; Section I, Section II/Section A, and Section III/Section B. Marks distribution among the sections, length & duration of the examination are based on the credit value of the course unit as detailed below.

Section I is comprised of multiple choice questions
Section II / Section A is comprised of structure essay questions
Section III / Section B is comprised of essay questions

Credit Value-Based Structure of Theory Examination Papers

Credit value of the course unit	Section I*			Section II/Section A*			Section III/ Section B*		
	No. of questions	Marks allocation	Duration (h)	No. of questions	Marks allocation	Duration (h)	No. of questions	Marks allocation	Duration (h)
1	N/A	N/A	N/A	0	N/A	N/A	2	100	1
	N/A	N/A	N/A	2	60	½	1	40	½
2	20	30	½	3	30	1	2	40	1
≥ 3	20	30	½	5	40	1 ½	2	30	1

- No multiple choice questions are given under one-credit-course units; therefore, the relevant theory examination paper is comprised of only Section A and Section B.

5.5 Status of Incompletion of Course Units

Students should complete the theory and practical components of summative assessment of a course unit all in one sitting. The final grade obtained for the course units would be released as 'Incomplete' (Grade "I") in situations where the candidate was;

(a) absent at the end semester practical or theory examination even though the he/she has marks for some components of continuous assessment.

(b) not eligible to sit any component of the end semester examination.

Students with "I" grade are allowed to complete those course units by sitting the examination at the next immediate attempt (end semester examination). Students may request to sit for missed components/ failed components of continuous assessment at the immediately available occasion and such requests are granted on the recommendation of the course unit coordinators and the relevant department. The final grade will be calculated taking the marks of the component completed later and the marks of the previously completed components. Students should make a formal request form the course coordinator for resetting any component of a continuous assessment which is counted for final marks.

5.6 Eligibility to Sit the End Semester Examination

Regular attendance is expected of students in all their classes (including lectures, laboratories, tutorials, field visits, seminars, etc.). At least an 80% attendance must be secured by a student for each course unit in order to be eligible to sit for the relevant end-semester examinations. A student who does not record 80% real attendance for any course unit will be considered as a referred candidate and he/she should sit for the course unit at the **next immediately available** examination. The highest grade obtainable in such an attempt will be a grade of C.

If a student is not eligible to sit any end semester examination (theory or practical) due to not having required attendance, it is considered as one attempt.

5.7 Grades and Grade Point Values (GPV)

The grade obtained for a course unit is designated by a letter. The cut-off marks for each grade and the corresponding grade point values (GPV) are shown below.

(a) Cut-off Marks, Grades and GPV for Credited Course Units

Marks	Grade	GPV
90 – 100	A+	4.00
85 – 89	A	4.00
80 – 84	A-	3.70
75 – 79	B+	3.30
70 – 74	B	3.00
65 – 69	B-	2.70
60 – 64	C+	2.30
55 – 59	C	2.00
50 – 54	C-	1.70
45 – 49	D+	1.30
40 – 44	D	1.00
<40	F	0.00
Not sitting for one or more components of the course unit assessment as required by the course unit	I (Incomplete)	0.00

(b) Cut-off marks, Grades and GPV for Non-Credited Course Units

Marks	Grade	GPV
≥ 55	P (Pass)	-
Not sitting for one or more components of the course unit assessment as required by the course unit	I (Incomplete)	-

5.8 Pass mark for a course unit

The pass mark for a course unit is 55 from the final mark which is calculated as described in see sections 5.2, 5.3 and 5.4.

5.9 Re-sitting the examination for improving grades

A student who obtains a grade below "C" for a course unit only may re-sit the unit at the **next immediately available examination** to improve the grade, and in such situations, the maximum grade obtainable is "C". No provision is available for attempts to upgrade the other grades. In an event where the re-sitting results in a lower grade, the student will be entitled to the previous grade. However, only three attempts including the first are allowed. Candidates should apply for re-sitting the examination **before the 10th week of the semester.**

The marks already recorded for completed components of continuous assessment may be carried forward.

5.10 Absence at the First Attempt in Examinations

A student who fails to sit for a course unit at the end semester examination at the first attempt due to medical reasons but submits an acceptable medical certificate (Section 5.14, 5.15) must sit the course unit at the next immediately available end semester examination. This sitting is considered as the first attempt and the student is awarded the grade linked to the marks.

The marks already recorded for completed components would be carried forward.

5.11 Number of Attempts for Sitting Examinations

A student who fails to satisfy the Examiners in an examination, and who has yet to satisfy the conditions to be considered for the relevant award, may be permitted to re-sit the examination up to **a maximum** of **three (3) number of attempts (**as specified in **5.9)**. A student shall not be permitted more than three (03) sittings for the examination of any course unit. A course unit which student has been failed must be retaken at the next immediate occasion of the relevant semester. If a student does not take the examination at the next immediate occasion, or if a student is not eligible for an examination (due to inadequate attendance, etc.), unless a valid medical certificate is submitted, those are considered as attempts. Students are not permitted to sit an examination if he/she has completed **seven academic years** from the date of admission to the University. However, grace chance can be considered by the university under special circumstances and if the candidates make a formal request to the Dean for grace chance **at first two weeks** of the particular semester.

5.12 Appeal for Re-scrutinization of Marks and Grades

With the release of the Semester Examination results, the Assistant Registrar of the Faculty will notify the students to request for result verification. Requests for result verification should be made to the Assistant Registrar of the Faculty within 14 days after the release of results. Applications can be obtained from the Students Affairs Unit of the faculty upon the submission of a receipt issued by the Shroff for paying Rs 500.00 per subject.

5.13 Grade Point Average (GPA), Cumulative Grade Point Average (CGPA) and Final Grade Point Average

GPA and CGPA are the measures of the progress of students in their studies in the faculty. The grading scale for course units is "A+" to "F" with the corresponding grade point value range of "4.00" - "0.00".

5.13.1 Grade Point Average (GPA)

GPA is calculated for every semester. The GPA of a semester is the credit-weighted arithmetic mean of the Grade Point Values (GPV) of the course units taken in the semester. GPA is computed to the second decimal place by using the following equation;

GPA of a semester = $\frac{\sum \text{(GPV of course unit x Credit value of course unit)}}{\text{Total number of credits taken in the semester}}$

Example:

Suppose a student has completed five course units as detailed below,

Course Unit	Credits	Grade	GPV	Credits x GPV
I	4	A	4.0	16
II	3	B+	3.3	9.9
III	2	C	2.0	4
IV	4	D	1.0	4
V	1	F	0.0	0
Summation of (Credits x GPV)				33.9

GPA = 33.9 / Total no. of credits
= 33.9 / 14
= **2.42**

5.13.2 Cumulative Grade Point Average (CGPA)

CGPA is calculated for a given Level. CGPA is the credit-weighted arithmetic mean of the GPV of the course units taken in that Level. The CGPA for a given level is computed to the second decimal place by using the following equation;

$$\textbf{CGPA} = \frac{\sum_{i=1}^{n} \sum_{\text{Semester i}} (\text{GPV of Course Unit} \times \text{Credit value of the course unit})}{\text{Total number of credits taken in the level}}$$

Where, "n" is the number of semesters in the level considered

Example: Calculation of Level CGPA

Semester 1					Semester 2				
Course Unit	Credits	Grade	GPV	Credits x GPV	Course Unit	Credits	Grade	GPV	Credits x GPV
I	4	A	4.00	16.00	I	1	A+	4.00	4.00
II	3	B+	3.30	09.90	II	2	B-	2.70	5.40
III	2	C	2.00	04.00	III	3	C+	2.30	6.90
IV	4	D	1.00	04.00	IV	4	I	0.00	0.00
V	1	F	0.00	0.00	-	**10**	-		**16.30**
-	**14**	-		**33.90**					

CGPA = $\frac{(33.90+16.30)}{(14+10)}$
= 50.20/24= 2.091
= **2.09**

5.13.3 Final Grade Point Average (FGPA)

FGPA of those who completed the degree programme is calculated by taking CGPA values of the three levels as follows:

The contribution of Level 1 CGPA to the final GPA is 30%.
The contribution of Level 2 CGPA to the final GPA is 40%.
The contribution of Level 3 CGPA to the final GPA is 30%.

FGPA = 0.3 (CGPA of Level 1) + 0.4 (CGPA of Level 2) + 0.3 (CGPA of Level 3)

GPA values appear in the academic transcript.

5.14 Absence from Academic Activities and Examinations

If a student fails to attend academic activities (i.e., lectures, tutorials, practical sessions, etc.) or formative or summative assessments (examinations) due to prolonged medical reasons, such absence should be reported to the Senior Assistant Registrar (SAR) of the Examination Branch or, to another person appointed by him with a valid medical certificate immediately after returning to the faculty. All medical certificates should conform to the format of a medical certificate issued by a government hospital and should necessarily be obtained from one of the following persons:

- University Medical Officer (UMO)
- District Medical Officer
- Consultant Specialist in the relevant field
- Head of Government Hospital
- Government Medical Practitioner Registered in the Sri Lanka Medical Council
- Medical Superintendent of a Provincial Ayurvedic Government Hospital
- Ayurvedic Physician registered in the Ayurvedic Medical Council

Under exceptional circumstances medical certificates issued by private hospitals or registered private practitioners might be accepted by the UMO or Medical Board.

Should a student fall ill during an examination, such illness should immediately be reported to the UMO at the University Health Centre. If such illness occurs at residence or elsewhere during an examination session, the student or his/her guardian should inform SAR/Examinations within seven (7) days by a telegram/fax followed by a letter indicating the nature of illness, doctor consulted, examination paper affected, etc. together with the relevant medical certificate.

5.15 Academic Concession

The faculty is committed to supporting students in their academic pursuits. Students may request academic concession in circumstances that may adversely affect their attendance or performance in a course unit or programme. Generally, such circumstances fall into one of the two categories; **conflicting responsibilities and unforeseen events**.

Students who intend to, or who as a result of circumstance must, request academic concession must notify through their Head of Department to the Dean as specified below. Before responding to a student's request, the Dean may require supporting documentation and may also ask the student to formulate and follow an academic plan which could include: a reduction in course load; a commitment to an on-going programme of medical care, counselling services; or other appropriate actions. The student's personal circumstances will be taken into account in the development of such a plan. On-going support from the Departments and Units may require periodic updates from the student on their academic plan and/or the submission of documentation from a treating health professional or other source of personal support. This documentation might be a "Statement of Illness" form obtained from the University Medical Officer or an informative letter from the attending physician, from Counselling Services or from another recognized counsellor.

The academic concessions that may be granted include the following: permission to drop a course after the normal deadlines and/or deferment from the course. When student is ready to continue the academic work, documentation from a medical or counselling professional sufficient to satisfy the University that the student is ready to continue studies may be required before the student will be re-enrolled.

Conflicting Responsibilities

Conflicting responsibilities include, but may not be limited to, representing the university (province or the country) in a competition or performance, working to support oneself or one's family, and having responsibility for the care of a family member and or any other situation accepted by the Faculty Board and the Senate.

Students with conflicting responsibilities have a duty to arrange their course schedules so as to avoid as much as possible any conflicts with course requirements. Students with such responsibilities are also required to discuss with their course instructor(s) and mentors at the start of each semester, or as soon as a conflicting responsibility arises, any accommodation that may be requested. Instructors may not be able to comply with all such requests especially because the academic standards and integrity of the course or programme could not be compromised.

Unforeseen Events

Unforeseen events include, but may not be limited to, ill health or other personal challenges that arise during a term.

Students who, because of unforeseen events, are absent during the semester and are unable to complete tests or other graded work (continuous assessment only), should formally discuss with their course coordinator how they can make up for missed work, according to written guidelines given to them at the start of the course. Instructors are not required to make allowance for any missed test or incomplete work that is not satisfactorily accounted for. If ill-health is an issue, students are encouraged to seek attention from a health professional. The University Health Service and Counselling Services will normally provide documentation only for students who have been seen previously at these offices

for treatment or counselling specific to conditions associated with their academic difficulties. Students who feel that requests for consideration have not been dealt with fairly by their instructors may take their concerns to the office of the Dean.

Students who, because of an unforeseen event, experience a prolonged absence during a semester or who miss a final or end semester examination must report to the Dean to request academic concession as close as possible to the time that attendance is adversely affected. The faculty will not consider late appeals on academic concessions, therefore such students are advised to make appeals immediately. The occurrence of adverse personal circumstances that cannot be anticipated may necessitate that a student seeks academic concession more than once. Each request for academic concession will be considered on its merits. Repeated requests based on the same or similar reasons may require a different response than *de novo* requests.

5.16 Facilitation of Differently-abled Students

The Faculty is ready to facilitate differently-abled students who are enrolled in the academic programme or become differently-abled during the period of enrolment. Faculty would provide facilities for them to progress smoothly through the teaching and learning assessment programme. Students who need special assistance in academic and assessments should make a formal request to the dean highlighting the type of support they require for the successful completion of academic work.

6 PROGRESSION THROUGH THE ACADEMIC PROGRAMME

The academic programme is delivered over a four-year period and years are designated as levels of the programme as defined below.

Level 1 comprises the programme delivered over year 1 and year 2.
Level 2 comprises the programme delivered over year 3.
Level 3 comprises the programme delivered over year 4.

The progression of students from one level to the next higher level is determined by the following criteria. In situation where students do not meet the criteria, appropriate measures will be taken in respect of those students as specified under each progression below.

6.1 Minimum Requirements for Progression to Level 2

A student must fulfil the following requirements at the end of Level 1 of the degree programme:

1. Should pass (obtain 55 marks or greater) a minimum of 80% of the compulsory course units in Level 1 in which the results have been released and;
2. Should sit/complete (by attending all assessment components) 90% of the course units (i.e., 54 credits out of 60) and;
3. Should obtain CGPA of 2.00 and;
4. Should pass non-credit compulsory course units and all English Competency tests in which the final results are released.

If above minimum requirements are not fulfilled from the available Level 1 examination results, a student will not be admitted in Level 2. Even if a student is allowed to proceed to Level 2 without passing some of the course units (but achieving a GPA of 2.00), he/she shall not be able to enrol in certain Level 2 course units if he/she has not completed the pre-requisite course units from Level 1. In such a situation, the student will be placed in Level 2 as a 'provisional student' and he/she has to complete pre-requisites while following Level 2/3 course units.

The Faculty Board has the final discretion to decide on the progression of a student to Level 2.

6.2 Minimum Requirements for Progression to Level 3

A student must fulfil the following requirements at the end of Level 2 of the degree programme:

1. Should pass (obtain 55 marks or greater) a minimum of 80% of the required total number of course units including compulsory course units in Level 1 and 2 in which the results have been released and;
2. Should sit/complete (by attending all assessment components) 90% of the course units and;
3. Should obtain CGPA of 2.00

If above minimum requirements are not fulfilled from the available Level 1 and 2 examination results, a student will not be allowed to go to Level 3. Even if a

student is allowed to proceed to Level 3 without passing some of the course units (after achieving above requirements), he/she shall not be able to enrol in certain Level 3 course units if he/she has not completed the pre-requisite course units from Level 1 and 2.

The Faculty Board has the final discretion to decide on the progression of a student to Level 3.

7. MONITORING AND EVALUATION OF STUDENTS' PERFORMANCE

The faculty continuously monitors and evaluates students' performance in studies at the faculty throughout the degree programme and accordingly advises and takes measure to help them. The mechanism which is in place for this purpose includes Dean's list recognition of students with outstanding performance, Portfolio-based Students Advisory System, and Deficit-point-based-feedback system.

7.1 Dean's List and Faculty Awards

With the intention of motivating students to achieve the highest possible academic standard, the faculty has introduced the "Dean's List" and "Faculty Award" concept. The students, who possess outstanding academic performance, engage actively in extra-curricular activities and who are with good conduct are eligible for a standing in the Dean's List and Faculty Awards. The Dean's List concept is applied to all levels of fulltime undergraduate degree programmes of the faculty. A student can secure a standing in the Dean's List of the respective level of study, if he/she has;

- obtained a minimum GPA of 3.55 at Level 1, 3.60 at Level 2 and 3.70 at Level 3.
- obtained a "C" or higher grade from the first attempt for all credited course units taken by the student in the relevant level.
- passed all non-credited compulsory course units.
- not received academic warning letters while in the university.
- not faced any disciplinary action while in the university.
- evidence for the involvement in extra-curricular activities and the achievements.

7.2 Deficit Point Based-Feedback and fall-back Option

Deficit point-based (DP) feedback system is specially to assist the students who perform poorly in studies. Students are categorized according to the level of DP. The students with unsatisfactory performance will be referred to the Student Advisory Service of the faculty, where they will receive guidance and advice to improve and upgrade academic performance.

Computation of Deficit Point (DP) and Student's Performance

Deficit point is calculated for each semester after the release of the results of the semester examination using the following formula.

DP = 2(credits of the total course units offered–total credits successfully completed)

Note: To successfully complete a credit, a student must obtain a minimum of "C" grade for the course unit.

Student's Performance and DP

DP range	Performance	Remark
DP = zero	Satisfactory	Student's performance is at or above the minimum requirement.
2 ≤ DP < 12	Unsatisfactory-*Poor*[a]	Student's performance is just below the minimum requirement.
12 ≤ DP < 24	Unsatisfactory-*Very Poor*[a]	Student's performance falls considerably below the minimum requirement.
DP ≥ 24	Unsatisfactory-*Extremely Poor*[a]	Student's performance is well below the minimum requirement.

a: These students will be referred to the Student Advisory Service of the faculty.

Example

If the number of credits offered by the student is 24 and number of credits successfully completed is 18, then;

DP = 2 (24-18)
= 12
Performance = Very Poor

7.3 Student Portfolio

Students have to maintain records of their academic performance, co-curricular and extra-curricular activities carried out during the study programme in the 'Student Portfolio' provided by the faculty at the beginning of the academic programme. Students are advised to follow the instructions given in the Portfolio. With the duly filled portfolio, students are required to meet their mentors at least twice a semester. Mentor makes his observation and signs the portfolio which the faculty refers to in responding to student's request on academic concessions, progression to the next higher level, grace chances for examinations, character certificates/ recommendation letters etc.

The faculty has initiated the implementation of the electronic version of the student portfolio: **e-portfolio**, which will replace the present paper-based student portfolio.

8 AWARD OF THE DEGREE AND HONOURS

8.1 Eligibility for the Degree

To be eligible for the award of B.Sc. in Food Science & Nutrition Degree, a student must have accumulated a minimum aggregate of **120 credits** with a minimum prescribed number of credits from each semester including the credits arising out of the compulsory course units belonging to the core-programme and to the relevant specialization. In cases where a student has accumulated more than **120 credits**, all course units will be considered.

Furthermore, a student should;

(i) obtain grades of C or better in core course units and compulsory course units and at least grades of D in the remaining course units taken into consideration,

(ii) obtain a 'Pass' grade for non-credit compulsory course units,

(iii) have a minimum Final Grade Point Average of **2.00,**

and

(iv) complete the relevant requirements within a period of seven academic years.

A student should apply for the award of a degree on satisfying the requirements. Students are entitled to obtain a detailed certificate/transcript and the degree certificate.

8.2 Requirement of English Language Proficiency

All the students are required to obtain a 'Pass' grade at all English Language course units conducted by the Department English Language Teaching Unit (ELT) in Level 1 to fulfil the requirements of the B. Sc. in Food Science & Nutrition degree.

8.3 Award of Honours

8.3.1 First Class Honours

A student may be awarded First Class Honours provided that he/she;

(i) obtains a minimum Final Grade Point Average of **3.70,**

and

(ii) completes the relevant requirements within four academic years.

8.3.2 Second Class (Upper Division) Honours

A student may be awarded Second Class (Upper Division) Honours provided that he/she;

(i) obtains a minimum Final Grade Point Average of **3.30,**

and

(ii) completes the relevant requirements within four academic years.

8.3.3 Second Class (Lower Division) Honours

A student may be awarded Second Class (Lower Division) Honours provided that he/she;

(i) obtains a minimum Final Grade Point Average of **3.00,**

and

(ii) completes the relevant requirements within five academic years.

Final GPA cut-off	Class/ Pass	Maximum duration for the completion*
3.70	First Class	4 years
3.30	Second Class Upper Division	4 years
3.00	Second Class Lower Division	5 years
2.00	Pass	7 years

* Maximum duration for the completion of the degree will be determined subject to Academic Concessions.

8.4 Awards & Medals at the Convocation

Convocation annually presents medals and awards to students who have made an outstanding performance in the degree programme subject to the criteria specified under each award and medal.

1. Prof. and Mrs. T.S.G. Fonseka Gold Medal for the best performance in the Faculty of Livestock, Fisheries and Nutrition
2. Mr. & Mrs. T.R.W. Fonseka Gold Medal for the best overall performance in B.Sc. in Food Science and Nutrition degree
3. Prof. H.P.M. Gunasena Award for the Best Performance in Applied Nutrition specialization in B.Sc. Food Science & Nutrition Degree.
4. Prof. H.P.M. Gunasena Award for the Best Performance in Food Science & Technology specialization in B.Sc. Food Science & Nutrition Degree.
5. Dr. S.Y. Namaratne Memorial Gold Medal for the best performance in Chemistry I & Food Chemistry selected from Food Science & Technology specialization in B.Sc. Food Science & Nutrition Degree.
6. Aston Gold Medal to the student with the best performance in dietetic course modules in the Applied Nutrition Specialization in Food Science and Nutrition Degree Programme.

9. CONTENTS OF THE COURSE UNITS

Details of the course units are given below. Please note that the contents given below and the assessment methods are only guidelines and there can be some changes done by the Departments or Units with prior notice. Theory and practical hours may also be changed when necessary. The course unit overview (approved by the Faculty Board) given at the beginning of the course unit provides exact details and regulations applicable to each course unit.

9.1 Course Units Offered under Food Science & Technology (FST)

FST 1113 Chemistry

Aims

1. To provide the knowledge of basic principles and concepts of chemistry as required for understanding, interpreting and explaining chemistry related to food science & technology and nutrition.
2. To improve the ability to carryout chemistry related calculations.

Learning outcomes

Students should be able to;

1. describe the basic principles and concepts in physical and analytical chemistry.
2. apply the acquired knowledge of chemistry (underlying topics) and analyse, interpret and explain problems, observations and phenomena occur in the context.
3. record data of measurements with correct units and uncertainties, and present final calculated numerical answers in a correct manner.

Contents

Introduction to matter; uncertainties in measurement & significant figures; yield of chemical reactions; acids, bases & buffers; theory of titrations; basics in coordination chemistry; ions in solutions; basics in electrochemistry; molecular interactions; theory of colligative properties; interaction of matter with electromagnetic radiation; basics in gravimetry & precipitation gravimetry.

Contact hours

Lectures (37 h), Tutorials (8 h)

Assessment

Tutorials/Quizzes	10 %
Mid semester Examination - Theory	20 %
End Semester Examination - Theory	70 %

FST 1121 Laboratory Course in Chemistry

Aims

1. To provide opportunity to apply theories taught in the class room and to text their validity.
2. To enhance the skills in applications of chemistry required for understanding processes in Food Science & Technology.
3. To provide methods of carrying out basic laboratory and analytical chemistry procedures related.

4. To give hands-on experience and make familiarize with basic laboratory apparatus, equipment & chemicals and with safety practices in chemistry laboratories.
5. To improve recording or writing of laboratory reports.

Learning outcomes

Students should be able to;

1. perform experiments and carryout calculations with confidence by applying the theoretical knowledge.
2. construct the conclusions based on observations.
3. propose mechanisms to explain observations/changes occur in chemical experiments.
4. recognize appropriate method of analysis upon a given sample.
5. write lab reports and present data in proper manner.

Contents

This course unit consists of a series of laboratory practical related to the course unit contents of FST 1113.

Contact hours

Laboratory practical 30 h

Assessment

Continuous assessment of lab work	25 %
End Semester Examination – Practical	75 %

FST 1212 Chemistry II

Aims

1. To offer the knowledge of basic laws and principles of underlined areas of physical chemistry and analytical chemistry as required for understanding, interpreting and explaining chemistry related to areas of food science & technology and nutrition.
2. To provide hands-on experience to apply the above in real context

Learning outcomes

Students should be able to;

1. analyse, interpret and explain problems, observations and phenomena associated with systems undergoing chemical changes.
2. construct the rate law for chemical reactions and calculate the related parameters.
3. calculate energies of systems undergoing changes.
4. draw mechanism to explain interaction of food constituents with light
5. describe about separation techniques such as chromatography, extraction and distillation

Contents

Basics in chemical kinetics and equilibrium; basics in thermodynamics; colloidal systems; introduction to chromatography; absorption and emission spectroscopy; basics in extraction and distillation, molecular motions, intermolecular interactions

Contact hours
Lectures and practical 25 h, Tutorial 5 h
Assessment

Mid semester examination (Theory)	25 %
Continuous assessment (4 practical)	15 %
End semester examination (Theory)	60 %

FST 1314 Microbiology

Aim
To provide basic knowledge on microbiology in order to understand its importance to the food industry and to familiarize with microorganisms of different sources, classification, techniques of culturing, control and growth requirements of microorganisms.

Learning outcomes
Students should be able to;

1. distinguish between different microorganisms using classification and growth requirements
2. recognize the methods of identification and means of control of microorganisms to ensure quality of food.
3. design appropriate approaches to develop the usage of microorganisms at industrial level and improve the existing methods in order to enhance the quality of outputs.
4. carry out the basic microbiological techniques ensuring safety and confidence

Contents
Theory: Introduction to microbiology- Scope and history of microbiology; characterization and classification of microorganisms; microscopic examination of microorganisms- eukaryotes and prokaryotes, morphology and fine structure of bacteria; cultivation of bacteria, pure culture techniques; theory and practice of sterilization, physical and chemical agents for control of bacteria; principles of microbial nutrition, construction of culture media, selective media; microbial metabolism, energy production- utilization of energy and biosynthesis; isolation and identification of bacteria; microbial growth; microbiology of domestic and waste water; spoilage of food; methods of identification and control of microorganisms; importance of microorganisms at industrial level.

Practical: Examination of living microorganisms in natural environment; microscopic examination of bacteria; simple staining; Gram staining; sterilization techniques; effectiveness of the sterilization techniques; isolation of bacteria; effect of antimicrobial agents on microorganism; quantitative estimation of number of viable cells in a milk sample – Serial dilution; quantitative estimation of cell number using haemocytometer.

Contact hours
Lectures 40 h, Tutorial 5 h, Laboratory 30 h

Assessment

Theory:	Quizzes, assignments	20 %
	End Semester Examination – Theory	55 %
Practical:	Practical Examination	15 %
	Lab reports	10 %

Students have to pass both theory and practical components.

FST 1324 Principles of Food Science

Aim

To provide the knowledge on fundamental concepts on the behaviour of food constituents and food preservation technologies to enable the student to understand the advanced theories and applications in respective subject areas

Learning outcomes

Students should be able to;

1. describe the role of food constituents in food systems.
2. discus the importance of the physical, chemical, biochemical reactions of food constituents to the quality of food.
3. differentiate between the principles of food preservation methods.
4. explain the importance of food safety and quality control in food industry.
5. apply the qualitative and quantitative tests for analysis of food constituents.

Contents

Theory: Physical, chemical and functional properties of food constituents: water, carbohydrates, proteins, lipids, enzymes, vitamins, minerals, flavours, colorants and additives; theory behind the analysis of food constituents; moisture, ash, carbohydrates, proteins, lipids, enzymes, vitamins and minerals; food deterioration, and principles of food preservation: Types and causes of food deterioration, unit operations of food processing, high temperature, low temperature, drying and dehydration, evaporation, fermentation, enzyme technologies and irradiation; fundamentals of food safety and quality control in food industry.

Practical: Review on identification methods of major food constituents; determination of moisture and ash content in food; estimation of glucose in a sugar solution; determination of crude protein, crude fat and crude fiber content in food; determination of titratable acidity in fruit juice/milk; determination of saponification value and acid value of fat; determination of alanine content in food; determination of salt content in dried fish; determination of vitamin C content in fruits; measurement of specific gravity of milk; measurement of brix value in fruit juice concentrates; study on enzymatic browning reaction in fruits and vegetables; evaluation of freshness of milk using methylene blue dye reduction test.

Contact hours

Lectures 45 h, Laboratory 30 h

Assessment

Continuous assessment (Theory)	15 %
End semester examination (Theory)	60 %

Continuous assessment (Practical)	05 %
End semester examination (Practical)	20 %

FST 1334 Principles of Food Marketing & Business Economics

Aims

1. To introduce the basic concepts, tools and techniques used in modern marketing and opportunities to apply them to real life problem solving and decision making.
2. To provide knowledge and understanding of principles of business economics.
3. To provide an understanding of the key economic and business challenges facing decision makers in the food industry and how to address them
4. To provide an understanding of the role and impact of government intervention in the food industry.

Learning outcomes

Students should be able to;

1. identify the current marketing thoughts and significant trends in local and international food industry.
2. recognize the basic marketing management concepts.
3. analyse the forces influencing the behaviour of marketers and consumers in the food market place.
4. recognize the Sri Lankan and international food marketing systems; its participants, characteristics, functions and major trends and the role of the marketing manager in agriculture or food related business environment.
5. collect, analyse and interpret market business and other economic data.
6. analyse and interpret a set of accounts for a business.
7. construct basic marketing and business plans.
8. appraise the role and impact of government intervention on food industry.

Contents

Marketing: Introduction, market orientation in food industry, analysing agricultural and food markets, basis, trends and composition of Sri Lankan food marketing; food marketing environment and international food chains; food marketing: product, promotion, price, place; principles of consumer behaviour towards food and consumer perceptions of food quality; principles of marketing research – analysis of the marketing environment, consumer research, market research methods; food communication management; international food trade and agribusiness marketing; public conceptions of risk and product safety and quality in the food supply chain.

Business Economics*:* Elementary micro economics: consumer behaviour, indifference curves, consumer equilibrium, demand and price, determinants of demand, supply, supply shifters, elasticity of demand and supply, market price determination; Business decision: production behaviour, fixed variable factors, diminishing returns, cost of production; marketing products: market structures, perfect competition and imperfect competition, profit maximization, factor

markets; elementary macro economics: national product, general price, circular flow of income, consumption and income, spending, savings investment, money and interest, inflation, unemployment, policy issues.

Contact hours
Lectures and tutorials 60 h

Assessment

Continuous assessment	40 %
End semester examination	60 %

FST 1414 Food Analysis & Quality Assurance

Aims

1. To offer the knowledge of analysis and quality assurance required to meet the standards as applied to maintain the quality of food.
2. To offer the opportunity to enhance the skills of designing analytical approach to solve problems related to food quality.
3. To provide hands-on experience to apply the procedures of food analysis in real context.

Learning outcomes
Students should be able to;

1. describe quality assurance procedures applied in food industry.
2. use the practical skills gained in respect of food analysis.
3. apply food standards and regulations to assure the quality of food.
4. select an appropriate method to analyse a food sample for a given quality control parameter.
5. design an analytical approach to solve a given problem related to food quality.

Contents
Theory: Analytical approach to solving problems; evaluating analytical data; selecting methods; developing procedures; quality assurance; standards and regulations; molecular and atomic absorption spectroscopic methods; molecular and atomic emission spectroscopic methods; chromatography and electrophoresis; microbial hazards; food additives, adulterants, contaminants, shelf life determination of Food products

Practical: determination of phosphorous content of a fish sample by UV/Visible spectrophotometry; determination of sodium ion content of a fish sample by flame photometry; determination of potassium ion content of a sample by flame photometry; determination of iodine content of a sample by titrametric analysis; determination of sodium metabisulphite content in a food Sample; determination of nitrite content of a sausage sample by spectrophotometry; determination of reducing sugar content of coconut water sample by UV/Visible spectrophotometry; identification of adulterants in food by microscopy; chromatographic separation of food colorants; determination of ethanol percentage in a mixture

Contact hours
Lectures 50 h, Laboratory work 20 h

Assessment

Continuous assessment (practical)	05 %
End semester examination (practical)	15 %
Tutorials/quizzes	10 %
Mid semester examination (Theory)	10 %
End semester examination (Theory)	60 %

FST 1424 Food Processing & Preservation Technology

Aim

To provide the knowledge on principles, technologies, and applications involved in different food processing and preservation methods in order to develop high quality processed foods.

Learning outcomes

Students should be able to;

1. describe preservation in terms of the retardation or prevention of deteriorative changes in the desirable properties of the food
2. recognize the principles & technologies applied in the industrial scale food preservation operations
3. identify the appropriate technology to preserve different types of raw products under the existing facilities.
4. process some selected food products and evaluate their quality and efficiency of the preservation treatment/s applied.

Contents

Theory: Types of food deterioration and losses; introduction to food preservation; different method of food preservation with respect to their principles, unit operation, machinery and equipment, impact on nutritional & sensory qualities of food and their applicability in different groups of foods: chemical preservation, fermentation, thermal processing, low and high temperature preservation, dehydration, osmotic dehydration, membrane concentration, evaporation, smoking, food irradiation, microwave heating.

Practical: Identification of different food ingredients, their chemical properties and use in the food industry; food preservation through fermentation; use of dehydration as a preservation method; measuring the effectiveness of dehydration process; osmotic dehydration of fruits and vegetables; production of osmotically preserved fruit and vegetable chunks; production of different processed products.

Contact hours

Lectures 45 h, Laboratory 30 h

Assessment

End Semester Examination - Theory	60 %
End Semester Examination – Practical	15 %
Continuous Assessment - Theory	15 %
Continuous assessment – Practical	10 %

FST 2113 Food Chemistry

Aims

1. To provide knowledge of the properties of food constituents required to understand their role in determining the properties of food
2. To provide hands-on experience to apply the concepts of food chemistry in real context

Learning outcomes

Students should be able to;

1. use the knowledge on functional properties of food constituents to describe the characteristics of the given food system
2. describe the chemical changes and subsequent effect occur in food constituents during processing and storage of food.
3. select the appropriate additive to impart the required character to the food.
4. describe how enzymatic reactions are controlled to ensure the optimum yield
5. perform simple laboratory procedures to determine food microstructure of selected food components and to obtain reliable results.

Contents

Theory: Water in food, dispersed systems, functional properties of proteins, different carbohydrates and their functional properties, lipids and their functional properties, food additives, food flavours, food colorants, chemistry and functional properties of enzymes in processed foods.

Practical: Construction of phase diagram, dispersed systems, extraction and identification of naturally occurring constituents in spices, use of polarimeter to study of muta rotations, fat oxidation and antioxidant activity, enzyme kinetics.

Contact hours

Lectures 30 h, Tutorials and Laboratory work 20 h

Assessment

Continuous Assessment	
Performa and lab notebook	05 %
Presentation followed by viva-voce	10 %
End Semester Examination	
Theory	70 %
Practical	15%

FST 2122 Dairy Products Technology

Aims

1. To provide knowledge on principles and technologies required for producing dairy products of high quality.
2. To provide practical experience in processing of fluid milk, cultured products, and frozen desserts.

Leaning outcomes

Students should be able to;

1. describe the principle and method used in processing different dairy product.
2. propose appropriate measures to overcome quality defects in dairy products.
3. demonstrate processing of a few selected dairy products.
4. suggest criteria to enhance the quality and product diversity to meet the future food requirement.

Contents

Introduction to dairy processing and composition and nutritive value of milk; chemical, physical and sensory properties of milk; standardization of dairy products; fluid milk processing and packaging, manufacturing of fermented dairy products: yoghurt, curd, cheese, beverages; manufacturing of frozen dairy products: ice cream, ice milk, sherbets, milk ice; manufacturing of other dairy products: cream, condensed milk, recombined milk products, dried milk powder, whey, lactose, casein, butter, ghee, anhydrous milk fat.

Contact hours

Lectures 25 h, Laboratory/field visits, 10 h

Assessment

Mid semester quizzes	10 %
End semester examination (Theory)	75 %
End semester examination (Practical)	10 %
Practical & field visit based assignments	5 %

FST 2131 Confectionery and Beverage Technology

Aims

1. To provide knowledge on principles and technologies applied in confectionery and beverage industry.
2. To provide hands on experience related to processing of selected confectionary and beverage products.

Learning outcomes

Students should be able to;

1. explain the functionality of different ingredients used in confectionery and beverage manufacturing.
2. identify the processing steps necessary to develop a product with required quality/attributes.
3. identify and characterize the quality defects of a given product and suggest remedial action to prevent them
4. use the gained knowledge to develop new products.

Contents

Introduction and classification of beverages; processing and quality attributes of tea and value addition; processing and quality attributes of cocoa and coffee; production of non-alcoholic carbonated beverages & quality attributes; brewing and wine production; milk based drinks; beverage powder mix formulation; bottling of mineral water and their quality attributes; introduction and classification of confectioneries; production process, quality parameters and

defects of sweets; production of chocolates and quality attributes; processing of snacks & quality attributes.

Contact hours
Lectures and tutorials 20 h, Laboratory work and field visits 20 h.

Assessment

Continuous assessment	
Test I	8 %
Test II	7 %
Field visit based assignments	15 %
Practical reports	5%
End Semester Examination	
Theory	65 %

FST 2142 Sensory Evaluation

Aim
To provide knowledge on sensory evaluation required for designing and performing sensory tests and interpreting data to evaluate food products for sensory quality.

Learning outcomes
Students should be able to;

1. describe the sensory quality attributes that are necessary in perception.
2. distinguish between the different sensory evaluation methods
3. appraise the suitability of a test for a given situation.
4. design and conduct sensory tests.
5. Describe the factors to be controlled to prevent bias verdicts in sensory evaluation.

Contents
Introduction to sensory evaluation: importance and conditions; sensory perception and sensory quality attributes; conduction of sensory evaluation tests: requirements in sensory evaluations, how to conduct sensory tests and factors affecting sensory verdicts; types of sensory evaluation tests; analytical tests and affective tests, applications on specific situations; analysis and interpretation of sensory data.

Contact hours
Lectures 24 h, Laboratory 12 h

Assessment

Mid semester quizzes	10%
Assignments / practical	20 %
End semester examination – (Theory)	70 %

FST 2154 Food Engineering

Aim
To develop a quantitative insight into food engineering operations enabling process control in food manufacturing.

Learning outcomes
Students should be able to;

1. describe the basic principles and theories of food engineering operations.
2. perform calculations to predict the appropriate processing conditions.
3. explain the working principle of the selected food processing machineries.
4. determine selected physical parameters important in food engineering operations.

Contents
Physical properties of food products, fundamentals of food engineering operations (heat transfer, psychometrics, flow of fluids, energy balances, material balances, refrigeration & freezing, drying, evaporation, extraction, microwave), food processing machineries (filters, sorters, mills, juice extractors, mixers, sterilizers, dryers & ovens, evaporators, refrigerators & freezers).

Contact hours
Lectures/tutorials - 45 h, Laboratory/field visits - 30 h

Assessment

Continuous assessment	25 %
(mid semester examination/lab reports/presentation)	
End semester examination - Theory	65 %
End semester examination – Practical	10 %

FST 2163 Biotechnology in Food Science

Aims

1. To provide knowledge on concepts, techniques and issues related to biotechnology for understanding its application required in improving the quantity, quality and safety of the food supply.
2. To give hands-on experience to practice basic techniques in biotechnology

Learning outcomes
Students should be able to;

1. describe the principles, theories and concepts in Molecular Biology & Biotechnology
2. use the above theories to explain the application of biotechnology in achieving improved food products
3. demonstrate the basic techniques in biotechnology, competently and safely.
4. assess advantages and limitations of applying biotechnology in food sector.

Contents
Introduction to food Biotechnology- importance, advances and trends, recent applications of biotechnology in food industry; nucleic acid biochemistry; genetic engineering techniques- recombinant DNA techniques, cloning strategies; molecular diagnostics; microbial synthesis and production of food constituents and impact of biotechnology on nutritional quality of food plants; enzyme biotechnology; starter cultures used in dairy, meat and poultry, vegetable products; single-cell proteins; genetically modified foods; regulatory, economic,

social and legal aspects of biotechnology; potential impact of Biotechnology on food industries. Genes and genomes protein synthesis microorganisms in production of organic acids, flavours, amino acids and food related enzymes, fermented foods.

Contact hours
Lectures 30 h, Laboratory 30 h

Assessment

Continuous Assessment	
Mid semester quizzes (2)	15 %
Practical assignments and presentation	20 %
End Semester Examination	
Theory	50 %
Practical	15 %

FST 2171 Food Product Development

Aims

1. To provide knowledge on obtaining, screening and selection of ideas in order to develop a new product.
2. To provide practical experience to develop a new product this is justifiable to be introduced to the market with a systematic approach integrating food processing, chemistry and analysis.

Learning outcomes
Students will be able to;

1. describe the systematic stages involved in developing a new product.
2. develop a new product which is demanded by a specific community.
3. asses the economical feasibility and quality of the product.

Contents
Theory: Requirement of novel food products, causes for failure and success of new products, new trends in novel products and identification of market requirement, drives of new product success, product development process, 5D concept, stage-gate process for systematic product development.

Practical: Students will be given the opportunity to develop a new product to an assigned market.

Contact hours
Lectures 8 h, Laboratory 14 h

Assessment

Assignment (Practical): Presenting of the developed novel product and justification of the product to a panel of judges	50 %
End Semester Examination - Theory	50 %

FST 2181 Rapid Chemical Sensing Methods

Aim
To offer the fundamental knowledge on theories, fabrication and uses of chemical & bio sensors

Learning outcomes
Students will be able to;

1. describe the role of components of sensors.
2. explain the sensing mechanisms of sensors of different categories.
3. explain the factors affecting the suitability of sensors.
4. propose an appropriate sensor for a given situation.

Contents
The following will be taught in relation to Chemical sensors, Biosensors and Immuno-biosensors; Theory & mechanism of sensing, fabrication of sensors, components of sensors, factors affecting sensing characteristics, sensors in on-line detection of toxins.

Contact hours
Lectures 15 h

Assessment

Assignments, Tutorials & Quizzes	30 %
End semester examination	70 %

FST 2213 Food Microbiology

Aims

1. To provide knowledge on food related microorganisms required to understand their effect on the quality of food.
2. To provide hands on experience on isolation, enumeration, characterization, identification of selected microorganisms important to food industry.

Learning outcomes
Students should be able to;

1. list the food borne pathogens with subsequent effects on health.
2. select the appropriate method for detection of food borne microorganisms.
3. describe the prevalence of microorganisms in spoilage of different food
4. use the basic techniques in identification of selected food born microorganisms competently and safely.
5. appraise the future trends/ needs in food microbiology in upgrading the quality of food and enhancing the health conditions of mankind.

Contents
Introduction to food microbiology, historical background and taxonomy; intrinsic and extrinsic parameters in food that effect microbial growth; microorganisms in foods: incidence and spoilage- meats, poultry, fish, shell fish, dairy products, fruits and vegetables, fermented and miscellaneous foods; microbiological examination of foods; culturing and sampling methods, physical, chemical and immunological methods, rapid methods of detection; microbial indicators of food safety and quality: principles of quality control, microbiological criteria, HACCP and food safety systems; control of microorganisms in foods by methods of preservation; food borne diseases: ecology, source, mode of action, symptoms, prevention.

Contact hours
Lectures 30 h, Laboratory 30 h

Assessment

Continuous assessment - Theory	15 %
Continuous assessment – Practical	15 %
End semester examination – Theory	50 %
End semester examination – practical	20 %

FST 2222 Food Packaging

Aims

1. To provide knowledge on use and evaluation of food packaging materials
2. To provide knowledge on methods to design an appropriate packaging system for particular food product.
3.

Learning outcomes
Students should be able to;

1. explain physical and chemical properties of packaging materials.
2. evaluate packaging materials and methods in relation to their applicability in foods.
3. compare the usability of traditional vs. synthetic packaging materials /methods.
4. propose novel packaging systems to selected food items.

Contents
Introduction to packaging; importance of packaging in food industry; packaging materials: flexible, metal, paper, glass; properties of packaging material; methods of packaging in food industry; modern packaging systems; packaging of fresh, processed and preserved products; traditional packaging materials and development of traditional packaging materials, closures for food containers, Edible packaging, Biodegradable packaging, Nano technology based food packaging

Contact hours
Lectures and Tutorial 25 h, Presentations/Assignments /Field Visits 10 h

Assessment

End semester examination (theory)	65 %
End semester examination (practical) 10%	
Practical examination, Assignment/ learning activity, Presentation	25 %

FST 2232 Post Harvest Technology of Fruits and Vegetables

Aims

1. To provide knowledge on post harvest physiology/practices of fruits and vegetables necessary to minimize quality losses.
2. To provide knowledge on post harvest handling practices of export agriculture crops, desiccated-coconut and cashew, necessary to develop products with export quality.

Learning outcomes
Students should be able to;

1. identify the causes for post-harvest losses in fruits and vegetables.

2. describe the significance of post-harvest losses and the economic benefits of minimizing them
3. discuss the handling, storage and processing technologies necessary for post-harvest loss reduction and value addition of fruits and vegetables.
4. use the gained knowledge to minimize the post-harvest losses of common fruits and vegetables.
5. identify the post-harvest practices involved in production of export agriculture crops, desiccated coconut and cashew.

Contents

Basic objectives of post-harvest technology; classification and composition of fruit and vegetables; causes and significance of post-harvest losses in fruit and vegetable sector in Sri Lanka and possible solutions to overcome them; post-harvest changes in fruits and vegetables – respiration, transpiration, ripening; maturity indices of fruits and vegetables; post-harvest treatments applied in fruit and vegetable industry; fruit ripening in climacteric and non climacteric fruits, controlled ripening of fruits; harvesting, storage, transportation and packaging of fruits and vegetables; minimal processing and modified atmosphere storage of fruits and vegetables; post-harvest practices involved in processing of export agriculture crops (pepper, cinnamon, cloves, cardamom, cloves, nutmeg, cocoa, vanilla, coffee), desiccated coconut, and cashew.

Contact hours

Lectures 20 h, Laboratory 20 h

Assessment

Mid Semester Examination – (Theory)	10 %
End Semester Examination – (Theory)	50 %
End Semester/In course Examination (Practical)	40 %

FST 2242 Food Safety and Quality Management

Aim

To provide necessary knowledge on concept and regulations on food quality management required to produce wholesome food

Learning outcomes

Students should be able to;

1. be aware of the food laws, regulations & food standards used in food industry.
2. elucidate the quality tools and management techniques used in food industry.
3. propose suitable layout of a factory with due consideration to the factory sanitation, waste disposal and utilization.

Contents

Food safety: safe foods vs. hazardous foods, public health, food borne illnesses, laws & regulations related to food safety; Food regulatory systems (ISO 22000, HACCP), food labelling regulations, food inspection, good safety practices; basic concepts of quality: Total Quality Management (TQM), Japanese tools in productivity improvement (5-S concept), Sri Lanka National Quality policy;

Organization for Quality: Quality organization, Leadership for Quality, vendor relations, customer relations; management techniques in quality: new seven tools in quality management; System approach for Quality: ISO 9000:2000, EMS, Six sigma; Factory design: lay out of factory, design and construction of food facilities, regulatory requirements; Factory sanitation: contamination sources, personnel hygiene and sanitary handling, cleaning compounds and equipments, plant sanitation; waste disposal & utilization: treatment and storage of food waste, principles of disposal and handling of waste.

Contact hours
Lectures and tutorials 25 h, Assignments/field visits 10 h

Assessment

Continuous assessment / theory/practical	40 %
End semester examination - theory	60 %

FST 2253 Fish, Meat & Egg Products Technology

Aims

1. To provide knowledge on technologies of processing, and quality control of meat, fish & egg required to produce variety of products.
2. To provide practical experience in processing of selected meat and fish products.

Learning outcomes
Students will be able to;

1. describe the chemical and functional properties of eggs.
2. record the common types of microorganisms associated with eggs, meat, fish and their products.
3. discuss the quality of meat and fish with respect to ante-mortem and post-mortem handling practices.
4. demonstrate the processing of selected meat and fish products.
5. compare the effectiveness of processing and preservation techniques applied in selected products.

Contents
Post-mortem changes and quality deterioration; chemical, Microbiological and physical methods of quality evaluation, Wet fish handling and preparation; chilling and freezing of fish, traditional preservation techniques, fermented fish products, minced fish products and value addition, fish by-products, processing of some commercially important aquatic plant products, toxins and contaminants in fish and shellfish; Sea food export market & Quality Management composition and nutritional value of meat, slaughtering of animals, muscle structure and composition, post mortem changes, quality of meat, processing of meat products: smoking, curing, fermentation, dehydration, packaging and storage, microbiology of meat, safety of meat and meat products; composition and functional properties of eggs, quality of eggs, storage of eggs, processing of eggs.

Contact hours
Lectures 35 hrs; Practical - laboratory 10 h, field visits: 15 h

Assessment

Continuous Assessments/Quizzes/Presentations	25 %

End semester examination (Theory) 65 %
End semester examination (viva-voce) 10 %

FST 2263 Cereal Chemistry & Bakery Products Technology

Aims

1. To provide the knowledge on physico-chemical properties of cereal flours and their contribution in attaining the specific properties of cereal based products.
2. To provide the knowledge and hands-on experience on processing of different bakery products.

Learning outcomes

Students should be able to;

1. describe the physico-chemical properties of cereal flour and flour constituents.
2. evaluate the chemical functionality of cereal flour constituents in flour based products.
3. explain the principles of methods used in determining the physicochemical properties of cereal flours and starches.
4. compare the techniques of processing bakery products.
5. discuss the quality control practices applied in bakery industry.
6. practice the preparation of basic bakery products.

Contents

Physico-chemical properties of cereal flour and flour constituents; analysis of physico-chemical properties of cereal flour; functionality of cereals/flours during processing of cereal based products: cooking, baking, fermentation, extrusion, etc; wheat milling and effect of wheat milling on quality of bakery products; dough rheology and Brabender equipment; bakery products: bread, biscuits, cookies, cakes, pastries, etc; their technology of processing, ingredient functionality, machinery and quality control.

Contact hours

Lectures 30 h, Laboratory/field visit 30 h

Assessment

Practical assignment 15 %
Quizzes 10 %
End semester examination- Theory 55 %
End semester examination- Practical 20 %

FST 2273 Spectroscopic Methods for Structure Determination

Entry prerequisite: Chemistry I, Chemistry II, Principles of Biochemistry and Genetics, Food Analysis and Quality Assurance

Aims

- To offer the fundamental knowledge on the theories of spectroscopic methods (absorption spectroscopy, emission spectroscopy, infrared spectroscopy, nuclear magnetic resonance spectroscopy, and mass

spectroscopy) and their subsequent applications enabling the structure determination of compounds.

Learning outcomes
Students should be able to;

1. describe the theories of spectroscopic methods.
2. describe the role of components of related spectroscopic instruments.
3. interpret spectral data of molecules and propose structures.
4. predict spectra for given molecules
5. propose appropriate method(s) to determine the structure of a given compound.
6. describe the role of mass spectrometry in chromatography.

Contents
Theory and instrumentation of molecular absorption spectroscopy; Theory and instrumentation of Nuclear Magnetic Resonance Spectroscopy (^{1}H and ^{13}C), introduction to two dimensional NMR: Theory and instrumentation of molecular absorption and fluorescence spectroscopy; Theory and instrumentation of Infrared spectroscopy; Theory and instrumentation of Mass spectroscopy; Interpretation of spectral data resulted from the above methods; Mapping of the structures of molecules.

Contact hours
Lecture 35 hrs, Class room exercise 07 hrs, Practical 07 hrs, Self-learning 12 hrs

Assessment
Continuous assessment 40%
End semester Examination 60%

FST 2281 Indigenous Food Technology

Aims

1. To provide knowledge on principles and technologies applied in preparation of selected indigenous foods in Sri Lanka
2. To provide hands on experience related to processing of selected indigenous food products

Learning outcomes
Students should be able to;

1. find out traditional foods inherent to different areas in Sri Lanka.
2. explain the functionality of different ingredients used in selected indigenous food.
3. describe the significance of the processing steps.
4. design technologies to commercialize the traditional foods.

Contents
Introduction to indigenous foods; processing techniques behind indigenous food production and conservation of technology for future; nutritional aspects and health benefits associated with indigenous foods; develop technologies for commercialization of indigenous foods in the local/international market.

Contact hours
Lectures 10 h, Laboratory practical and field visits 10 h

Assessment

Assignment	20 %
Student report	60 %
Presentation	20 %

FST 3118 Research Project in Food Science & Technology

Pre-requisites: All compulsory course units prescribed for Food Science & Technology specialization in Level 2

Aims

To apply research techniques and integrate knowledge in the identification, description, analysis and solving of problems within their specialization.

Learning outcomes

Students should be able to,

1. identify and understand the problems in related fields.
2. state the hypothesis that needs to be tested.
3. write the objectives of the study.
4. select the appropriate methods to carryout the research project considering the available resources and to suggest alternative research approaches when facilities are limited.
5. design the experiment or study.
6. collect data in an accurate, methodological and honest manner.
7. present the results in a logical sequence and use figures, tables, etc. for clarity of the results.
8. select and apply correct statistical analytical tools.
9. interpret the findings scientifically.
10. cite references to build on the existing knowledge.
11. make logical suggestions, recommendations and conclusions in relation to observed results.
12. write an abstract to highlight major findings of the research.
13. prepare a dissertation based on the findings of the research/ research survey on the project which meets acceptable standards for scientific writing.
14. communicate to scientific audience the summery of the whole project during specified time duration in an easy and comprehensive manner.
15. defend research findings and the interpretations with confidence.

Contents

Students will select a project and develop and perform it under the supervision of a member of academic staff of the Department. Students are first required to search the literature relevant to their project and to plan their project work, including identifying the hypothesis to be tested. Students are expected to submit & present abstracts at the Undergraduate Research Symposium of the Faculty in conjunction with their academic supervisor.

Time Allocation
Students will work fulltime independently or as a member of a research team during the semester.

Assessment

Research Project Report	50%
Oral presentation	20%
Viva-voce examination	10%
Student's profile	15%
UReS / Abstract	05%

FST 3214 In-plant Training

Aims

1. To give students an insight into the operation of a company / organization / institute and the opportunity to relate their academic discipline to the workplace.
2. To make the student aware of the nature and purpose of the organization and how the department to which they are attached relates to the rest of the organization.
3. To contribute to the development of the student by providing responsibility appropriately matching with their level of knowledge, experience, potential and degree of maturity.
4. To develop the student's personal skills as well as their scientific knowledge and technical competence.

Learning outcomes
Students should be able to;

1. recognize scientific and technical issues relevant to the company /organization and their products/service
2. build up the awareness about economic and commercial considerations within an organization, consumer food choice and approaches to consumer and market research, human resource management, finance and marketing management and business management.
3. demonstrate intellectual skills enabling to solve problems.
4. demonstrate practical skills.
5. identify quality assurance procedures in food processing.
6. perform economic analyses of food production systems, assist the management of food business and marketing of their products.
7. build own profile to the required standards of the Food industry
8. consider and manage career choices.

Contents
Students will be placed in an industrial or other relevant work environment for 10 weeks, and will be expected to make a significant contribution to a relevant project under the supervision of industrial and Departmental personnel. Students will be place in private sector industry, non-government organization or government institute. Students are obliged to actively participate in the work placement programme and to attend scheduled interviews. Students are required

to prepare a final report on their placement, and make a presentation on their work.

Time Allocation

Ten weeks

Assessment

Training plan	05 %
General performance	10 %
Report on in-plant training	40 %
In-plant training Diary	20 %
Presentation	10 %
Viva-voce Examination	15 %

9. 2 Course Units Offered under Applied Nutrition (NTN)

NTN 1114 Principles of Biochemistry & Genetics

Aims

1. To provide the fundamental biological chemistry of living systems.
2. To give an appreciation of the structures of carbohydrates, proteins, lipids and vitamins, their properties and reactions.
3. To develop basic understanding of genetic principles and their application in biology.

Learning outcomes

Students should be able to;

1. describe major features of the structure and functions of cells and cellular organelles.
2. describe chemical properties of macro and micro molecules.
3. demonstrate knowledge of the diversity of biomolecules and their metabolic and structural roles in cellular function.
4. demonstrate knowledge of the sources of energy for cells, and how cells utilise this chemical energy for growth and maintenance
5. demonstrate an understanding of how chemical reactions are mediated, integrated and regulated in the cell.
6. describe the involvement of genetic information in utilization of nutrients is stores and transmitted from generation to generation.
7. demonstrate satisfactory experimental laboratory skills on biochemistry of macro and micro molecules

Contents

The cell: prokaryotes and eucaryotes, sub cellular organelle, structure and functions of cell membranes; chemistry of carbohydrates; chemistry of proteins; chemistry of lipids; chemistry of vitamins; hormones and their functions; Enzymology: classification of enzymes, mechanism of action, enzyme kinetics; key elements in genetics; revision of Transmission (Mendelian) Genetics; molecular genetics; recombinant DNA technology: components of technology and applications

Contact hours

Lectures 45 h, Tutorials 14 h, Practical 16 h

Assessment

Continuous assessment	30 %
End semester examination	70 %

NTN 1214 Biochemistry of Energy and Metabolism

Aims

1. To provide knowledge in digestion and absorption of macro and micro molecules in food.
2. To explain how living systems derive energy from nutrients and utilize it for their functions.
3. To explain how nutrients – carbohydrates, fats and proteins – are broken down, and the interrelationships that exist between the pathways.

4. To explain how the simple compounds derived from complex nutrients are used to build the macromolecules essential to life.
5. To provide an understanding of micronutrient metabolism and the interrelationships exist between the pathways.
6. To review the metabolic regulation of various compounds in the body.

Learning outcomes

Students should be able to;

1. describe digestion and absorption of food in the body.
2. describe the complex reactions of metabolism that different macro and micro molecules undergo inside the human body.
3. compare anabolic and catabolic metabolic pathways.
4. state the enzymes and cofactors which have central roles in intermediary metabolism especially the regulatory enzymes.
5. perform basic laboratory procedures used in the study of metabolism
6. relate metabolic processes to the functioning of whole organisms.

Contents

Digestion and absorption of carbohydrates, proteins and lipids, overview of absorption physiology, biochemical mechanisms; glucose as a metabolic fuel; amino acids as metabolic precursors; amino acids as metabolic fuel; metabolism of nucleic acids; fat as metabolic fuel; integration of carbohydrate, lipid and protein metabolism; digestion, absorption and metabolism of vitamins and minerals; metabolism of Xenobiotics; specialized carbohydrates; specialized lipids; specialized amino acids.

Contact hours

Lectures 45 h, Tutorial 18 h, Laboratory 14 h

Assessment

Continuous assessment 30 %
End semester examination 70 %
(Quiz/Tutorial/Term paper/Assignment/Laboratory reports)

NTN 1224 Human Physiology

Aims

1. To lay the foundation for understanding Systemic and Integrated Physiology
2. To provide integrated views of system approaches to homeostatic functions during normal, abnormal and pathological states.

Learning outcomes

Students should be able to;

1. describe the basic functional organization of the major physiological systems in the human body in sufficient detail to include basic cellular and molecular processes where appropriate.
2. appreciate the contributions made by physiological systems to the maintenance of overall homeostasis in the body.
3. describe the principles of nutrient transfer in the foetus and adult.
4. demonstrate competency in using laboratory techniques for a range of physiological measurements

Contents
Distribution of body water; plasma membrane and control of the internal environment; excitable tissues: structure, molecular mechanism of muscle contraction and source of energy, neuromuscular transmission; cardiovascular system; respiratory system; special senses: ear, eye, smell, taste and common chemical sense; renal physiology; formation of urine; gastrointestinal function; physiochemical principles of digestion and absorption; regulations of gastrointestinal functions; central nervous system; endocrinology; reproduction; maternal/ foetal homeostasis; electrolyte and fluid balance; acid/ base regulation; Haemoglobin and protein buffering; inputs to the internal environment: water and electrolyte absorption, non-electrolyte absorption-carbohydrates and proteins, biliary system and fat digestion and uptake.

Contact hours
Lectures 45 h, Tutorials 20, Laboratory 10 h

Assessment

Continuous assessment	25 %
End semester examination	75 %

NTN 1314 Introduction to Foods & Nutrition

Aim
To provide students with the nutrition information of foods consumed, how they are altered during processing and nutritional consequences of some common dietary practices and food habits.

Learning outcomes
Students should be able to;

1. describe the nutritional composition in major food groups.
2. identify the nutrients deficient in a particular food item and how these deficiencies could be over come.
3. name the anti-nutritional factors present in some food items and explain how they could be eliminated.
4. discuss the nutritional consequences of some dietary practices and food habits.
5. explain the effect of different food processing methods on the nutrients in foods.

Contents
Food and nutrients: energy giving, body building and protective foods, major food groups, stability of nutrients; cereal and cereal products and nutrients; starchy roots and legumes and their nutrition composition; meat and meat products, and nutrients; eggs, fish and other sea foods: chemical composition and nutritive value; milk and milk products: composition, nutritive properties, effect of processing on nutritional properties, milk and health; nutritive properties of fruits and vegetables; fats, oils and beverages: role of dietary lipids in nutrition; nutritive properties of unconventional foods: single cell proteins, leaf protein concentrates and other sources; introduction to food composition tables; introduction to toxic compounds present in foods; organic foods, natural foods and health foods; vegetarian diet: nutritional considerations; fast foods and junk foods; nutritional role of complex carbohydrates; nutrients as drugs; natural vs.

synthetic vitamins; effect of home food preparation practices on nutrients; effect of commercial food processing practices on nutrients:; fortification of foods.

Contact hours
Lectures 45 h, Tutorial 14 h, Laboratory 16 h

Assessment

Continuous assessment	40 %
End semester examination	60 %

NTN 1414 Human Nutrition

Aims

1. To provide a sound understanding of nutritional principles in relation to the macro and micronutrient components of the diet.
2. To develop an understanding of the derivation and application of dietary nutrient requirement values for individuals and populations.
3. To develop the concepts of energy and nitrogen balance in terms of metabolic demand and efficiency of utilization.
4. To develop the concept of food quality and an optimum diet with reference to animal and plant sources of macronutrients and to highlight the role of macronutrients in the aetiology of diseases.
5. To enable students to acquire an understanding of the importance of micronutrients in the maintenance of human health.

Learning outcomes
Students should be able to;

1. describe the interrelationships between macronutrients in both energy and substrate provision in maintenance, growth and development.
2. outline the potential influences of macronutrient intakes on chronic disease states.
3. state the factors that determine requirements for energy and individual macro and micronutrients, and explain how these requirements are estimated and how they change during different stages of the human life cycle.
4. discuss various nutrients, their dietary sources and metabolic functions in the body.
5. describe the symptoms of micronutrient deficiencies and toxicities, and suggest remedies to overcome them.
6. identify the components of a healthy diet and discuss techniques utilized in diet planning.

Contents
Nutritional concepts; composition of the body; Nutrient requirements: Dietary reference values (DRVs): basis of determining requirements RDI, RDA, RNI, etc.; energy balance, energy content of food; measurement of energy expenditure: direct and indirect calorimetry; rate of energy expenditure; carbohydrates, lipids and proteins: the essentiality, functions, deficiencies, health effects, recommended intakes; energy and substrate balance, and weight regulation; water-soluble and fat soluble vitamins: functions, deficiencies, toxicities and food sources; water: water balance and recommended intakes; major and trace minerals: roles in the

body, deficiencies, toxicities, recommendations and intakes; polyphenols and phenylpropanoids; compounds with vitamin-like actions (carnitine, choline, myoinositol); interrelationships between micronutrients; use of vitamin and mineral supplements; alcohol: metabolism and effects; current consumer issues in nutrition; planning a healthy diet; nutrition for athletes.

Contact hours
Lectures 45 h, Tutorials 10 h, Laboratory 10 h, Group work 10 h

Assessment

Continuous assessment	40 %
End semester examination	60 %

NTN 2113 Nutrition in Lifecycle

Aims

1. To provide an understanding of nutritional needs for different stages in life cycle.
2. To extend the understanding of the importance of applying good nutritional practice for health and quality of life throughout the life cycle.

Learning outcomes
Students will be able to;

1. discuss the physiological changes associated with each stage of the life cycle and the impact of these changes on nutritional needs.
2. be aware of the importance of the provision of optimal energy and nutrient intake to ensure good health and an excellence in quality of life.
3. identify major nutrient recommendations for each age group and the roles that these nutrients have in the body.
4. examine nutrition-related concerns of each stage of the life cycle.
5. describe and apply assessment parameters and tools relevant to each stage of the life cycle.
6. describe the factors influencing food choices and nutritional status during the various stages of life.
7. apply the basic nutrition principles to suggest ways of providing optimal nutrient levels in specific population groups and sub-groups.

Contents
Nutrition for pregnancy; nutrition for the lactating mother; feeding and caring of infants; feeding and caring of premature infants; formula feeding; complementary feeding practices; nutritional needs of the pre-schoolers and school children; nutrition for the adolescents; nutrition for adults; caring for sick adults; nutrition for elderly.

Contact hours
Lectures 45 h, Tutorial 10 h, Field visits / observations tours 6 h, Individual case studies 4 h, Seminar presentation 10 h.

Assessment

Continuous assessment	40 %
End semester examination	60 %

NTN 2122 Diet & Diseases

Aims

1. To provide knowledge of pathophysiology of non-communicable diseases in which diet has a major influence.
2. To examine the role of nutrition in health and disease throughout the lifecycle.
3. To provide an understanding of the concepts of the contribution of foetal nutrition to later disease development

Learning outcomes

Students should be able to;

1. describe the mechanisms involved in the pathogenesis of selected diseases.
2. critically evaluate scientific literature on epidemiological associations between diet and disease.
3. appreciate multifactorial nature of nutrition-related chronic diseases
4. describe specialized aspects of macro and some micronutrient metabolism in health and disease.
5. explain the role of nutrition in obesity, hypertension, cardiovascular diseases, cancer, osteoporosis, dental health.
6. assess public health issues arising from the relationship between diet and disease.

Contents

Nutrition deficits in modern lifestyles, implication for health; pathophysiology, aetiology, modifiable and non-modifiable risk factors and prevention of diet related diseases will be discussed in this course unit. Diet and cancer; diet and obesity; diet and aetiology of diabetes and metabolic syndrome; diet and cardiovascular disease: nutrition in hypertension; dietary fibre and bowel disease; nutrition for bone health; nutrition for oral and dental health; genetic polymorphisms, progression of disease and the responsiveness to dietary change: diet-genotype interaction – cancer, CHD, obesity; foetal origin of adult diseases.

Contact hours

Lectures 28 h, Tutorial 16 h

Assessment

Continuous assessment	30 %
End semester examination	70 %

NTN 2133 Nutrition Assessment

Aims

1. To provide an understanding of the importance of nutritional screening and assessment.
2. To provide an understanding of food composition tables.
3. To develop an understanding of various methods used to measure dietary intake and physical activity.
4. To introduce students to the physical, biochemical and anthropometric methods of nutritional assessment.

5. To provide practical experience in assessing nutritional status using various methods.

Learning outcomes

Students should be able to;

1. use current recommendations in relation to diet and physical activity as benchmarks for assessment of the diets and physical activity of healthy individuals.
2. interpret and evaluate data from specific dietary assessment exercises, using appropriate analytical methods and dietary reference values.
3. choose the most appropriate methods for assessment of physical activity in individuals and population groups.
4. undertake accurate anthropometric assessment of individuals and calculate individual energy requirements.
5. explain the meaning and uses of recommended dietary intake values.
6. competently use software with Sri Lankan nutrient database to assess an individual diet record.
7. make recommendations to healthy individuals on how to improve their diet and physical activity patterns.
8. make recommendations on how to establish monitoring and surveillance of the levels and quality of diet and physical activity in communities and populations.

Contents

Nutritional imbalance and nutritional screening; Assessing nutrition status: historical information - medical, social, medication and nutritional histories; Nutrient drug interactions; food composition tables and nutritional databases; nutrient intake analysis: daily food record/diary, food frequency, 24-hour recall, usual intake observing food intake (calorie count), duplication diet method, validity and measurement error; biological markers; physical examination; anthropometry; anthropometric assessment of body composition; anthropometric reference data; bioelectrical impedance analysis; functional measures of nutrition status; biochemical analysis; methods to measure individual physical activity; assessing energy expenditure and activity with direct and indirect calorimetry and accelerometry; nutrition surveillance.

Contact hours

Lectures 35 h, Tutorials 7 h, Laboratory practical 10 h, presentation of a journal article 6 h

Assessment

Continuous assessment	50 %
End semester examination	50 %

NTN 2142 Sociology of Food & Nutrition

Aims

1. To provide an understanding on culture and being aware of folk ways
2. To provide an understanding on nature of groups and social interactions
3. To provide an understanding of role of man and moulding of the environment

4. To provide an understanding on the social behaviours and indigenous systems
5. To provide students with knowledge and understanding of the psychological theory and principles relevant to be professional practice of health care and health related research.

Learning outcomes

Students should be able to;

1. define the key terms of sociology of food and nutrition.
2. describe the way of sociological concepts becoming detrimental in food and nutrition behaviours of the society.
3. explain the nature of complexity of the concept of nutrition in the society.
4. describe gender related aspects and how they affect on man's food and nutrition.
5. explain the way of social behaviour patterns associated with man's food and nutrition.
6. demonstrate in class discussion and examination an awareness and understanding of health and illness behaviour, psychological issues in disease, disability and handicap and the interactions between lifestyle, stress, behaviour and illness.

Contents

Definitions in sociology; organization of the society: nature of groups, social institutions - family, religion, government and education; relationship between people (social, institutions and environment); food, man and culture; food paths and causes of malnutrition; food patterns, habits and food ways; changing food habits uses of foods; population, food and nutrition; demographic concepts related to food and nutrition; gender issues of nutrition; introduction to medical sociology, medical anthropology; health professionals and their role in changing society: patients and health professionals: consultation and communication; models of health and illness; understanding health: health beliefs and behaviours; understanding illness: illness cognitions, chronic illness; pain: theories and treatments; placebos: theories and effects; behavioural medicine: addiction, alcohol, smoking and drugs; behavioural medicine: obesity.

Contact hours

Lectures 26 h, Classroom activities, Field practicum: 2 day visit to the field and report back

Assessment

Continuous assessment	40 %
End semester examination	60 %

NTN 2153 Public Health & Community Nutrition

Aims

1. To introduce the theoretical concepts of public health and community nutrition including national and international food and nutrition policies.
2. To provide knowledge on assessing the community's nutrition-related problems and assets.

3. To introduce the students to the main Sri Lankan and international data sources, and scientific approaches to studying, relationships between diet and health as the basis for government policy on diet and health.
4. To provide an overview of the policies related to health, food and nutrition, management of nutrition services, provision of nutrition information/education to the public and legislative processes.
5. To provide students with concepts and application of methodologies in the planning, management and evaluation of food and nutrition programmes.

Learning outcomes

Students should be able to;

1. explain key factors that influence public health nutrition policy and planning both nationally and internationally.
2. describe and discuss key principles employed in developing health promotion strategies.
3. describe and critically evaluate current nutrition programmes and services at the national and provincial level, with emphasis on those for pregnant women, infants, children, adolescents and those with special health care needs.
4. describe the main sources of recent Sri Lankan data on diet and nutritional status for the population and high risk sub groups and outcomes from recent international and national policy documents and reports.
5. identify and describe community resources for health and nutrition.
6. use national and local assessment and surveillance data to assess the nutritional status of the community at large and of individuals with emphasis on at-risk groups.
7. identify and apply the steps to assessing community nutrition problems and the steps to planning, implementing, and evaluating community nutrition programs
8. plan a community food and nutrition programme for a given situation.
9. understand the scientific basis of and recommendation from government policy relating diet and health.

Contents

Public Health Nutrition: definitions, concepts, principles; food & nutrition policy, public health nutrition cycle; public health nutrition strategies for intervention; dietary guidelines; key public health & nutrition problems: Over nutrition, Under nutrition (PEM – stunting, wasting & underweight), Micronutrient deficiencies - Anaemia, Vitamin A deficiency, Iodine deficiency, Zinc deficiency; other health & nutrition problems of pregnant mothers, lactating mothers, adolescents & elderly; foetal programming & adult chronic diseases, tobacco smoking & drugs; diet related non-communicable diseases – prevalence, risk factors, nutritional determinants, prevention (CVD, diabetes mellitus, insulin resistance, metabolic syndrome, cancer, osteoporosis & hip fractures); immunization; nutrition education and behavioural changes; family planning; nutrition & media; hunger & food security;

Approaches to food and nutrition policy planning: food and nutrition policies, agricultural policies, import export policies, food subsidies, food prices, price

controls, policies influencing food production, food laws, food standards, food safety, food quality, food labelling and advertising, food hygiene and sanitation; challenges and opportunities in international nutrition;
Food and nutrition programmes planning and management; food and nutrition planning process; provisions for programme implementation and management; monitoring and evaluation of food and nutrition programmes.

Contact hours
Lectures 35 h, Classroom activities 20 h, Field practicum: 2 day visit to the field and report back; Institutional visits

Assessment

Continuous assessment (Case study, presentations, assignment)	50 %
End semester examination	50 %

NTN 2162 Functional Foods

Aims

1. To provide students with an advanced understanding of functional foods and their role in promoting health, including recent research advances
2. To provide understanding of natural anti-microbial substances in human nutrition; the role of intestinal flora in human health; prebiotics, probiotics, probiotic bacteria and symbiosis.
3. To provide understanding of the basic scientific principles necessary to evaluate benefits of and claims for nutraceuticals and functional foods.

Learning outcomes
Students should be able to;
1. recall the functional foods commonly encountered in foodstuffs, and their nutritional roles.
2. critically evaluate literature to determine health claims of functional foods.
3. be aware of current topics, terms and products in this emerging field.

Contents
Nutraceuticals and functional foods: phytochemicals: phenolics (flavonoids, phenolic acids, coumarins; carotenoids, organosulfur compounds; health benefits of fruits and vegetables-cardiovascular disease and cancer; bioactive compounds from beverages; lipid-based functional foods: plant oils and nuts, conjugated linoleic acid (CLA) omega-3 fatty acids; blood lipid-lowering nutraceuticals and fat replacers; soybean and soy products; carbohydrate-based functional foods; low-glycemic index and glycemic load; probiotics, probiotic foods, and prebiotics; dietary supplements, fortification, botanicals and herbal remedies; whole grain-based functional foods; dietary patterns and food synergy: health benefits of whole foods; safety and regulations; application of nutrigenomics in functional food development; protein and peptide-based functional foods; effect of processing on functional ingredients; formulating special products for special needs; future nutraceuticals and functional foods, and research needs.

Contact hours
Lectures 25 h, practical 12, Tutorial 6 h, Seminar 6 h

Assessment

Continuous assessment	30 %

End semester examination 70 %

NTN 2214 Medical Nutrition Therapy

Aims

1. To provide a sound understanding of the nutritional principles in relation to the way diet may be modified for the treatment of disease.
2. To develop an understanding of the concept of nutrient interaction in the use of dietary manipulation in the treatment of disease.
3. To provide an understanding of the biochemical and physiological basis of dietetic therapy in the treatment of disease throughout the lifecycle.
4. To provide an understanding of the specific nutrient modifications those are appropriate for a range of disease states and how can be achieved on a practical basis by a range of methods.

Learning outcomes

Students should be able to;

1. identify the physiologic basis, abnormal laboratory parameters, complementary/alternative therapies, and appropriate medical nutrition therapy including parenteral or enteral nutrition for the disorders listed on the syllabus.
2. assess nutritional status and determine nutritional risk beginning with nutritional screening and progressing to a full nutritional assessment.
3. calculate Calorie, protein, fluid, and electrolyte needs and nitrogen balance.
4. calculate enteral and parenteral nutrition formulations and modify them for individual dietary needs.
5. explain the pathophysiology, biochemical abnormalities, and behavioural abnormalities and medical nutrition therapy for each disorder in the syllabus.
6. determine appropriate medical nutrition therapy for disorders on the list of topics using information on a simulated patient medical record.
7. determine and calculate an appropriate medical nutrition therapy (food intake, recipe/formula alterations; parenteral and enteral feedings; fluid and electrolytes etc.).

Contents

The nutritional plan of care: nutritional care process - identification of nutritional risk, care plan, assessment; nutritional intervention and diet modification: nutritional care for the hospitalised patients, discharge planning and home care; nutrition counselling; Enteral and parenteral nutrition support; nutrition for weight management; medical nutrition therapy (MNT) for upper gastrointestinal tract disorders, disorders of the stomach, lower gastrointestinal tract disorders ; medical nutrition therapy for liver, bilary system and exocrine pancreas disorders; MNT for intensive care, diabetes mellitus, anaemia, health failure, hypertension, hyperlipidaemia and CHD; MNT for pulmonary diseases, renal disorders, cancer, HIV infection and AIDS, food allergy and food intolerance; MNT for paediatrics.

Contact hours

Lectures 45h, Case studies 10 h, Meal planning sessions 10 h, Hospital visits 10 h

Assessment

Continuous assessment 40 %
End semester examination 60 %

NTN 2223 Sports & Exercise Nutrition

Aims

1. To provide an understanding of the link between nutrition and training & competition for sport performance.
2. To empirically study the effect of nutritional strategies on sports performance across a range of performance types (e.g., strength, power, endurance).
3. To examine the efficacy of the nutritional strategies in relation to findings of previous studies.

Learning outcomes

Students should be able to;

1. critically discuss the factors affecting substrate utilization.
2. discuss and apply knowledge of nutrition including hydration in relation to specific sporting disciplines in order to maintain and enhance training and performance
3. discuss factors that may influence nutritional requirements of specific sporting disciplines including, age, gender, disability, training, nutritional status, competitive pressures, the environment, religion and cultural factors
4. discuss how supplementation/ergogenic aids can affect exercise performance
5. demonstrate practical skills in gathering relevant nutritional information from an athlete and translate nutritional requirements into food based dietary advice, menus, strategies and policies of individual teams performance
6. interpret and apply current physiological and nutritional research findings into dietary recommendations for individual athletes and teams.

Contents

Overview of energy metabolism; fuel selection: Glucose homeostasis, Glucose/ Fatty acid cycle, Fuel selection and management for different sports and events; energy, carbohydrates, protein and fat requirements; effect of macro elements in exercise and sports; effect of microelements on exercise performance; fluid and electrolyte balance in exercise, temperature regulations; nutritional concerns of exercise: good health, good nutrition, the importance of activity levels, energy consumption of various activities, body weight and composition, weight loss for exercise; sports and environment – hot, cold and high altitude; dietary manipulation for sports performance: Food issues that may impact athletes - food guide pyramid recommendations, fast foods and snack foods, nutrient supplements, problem nutrients for athletes, especially female athletes; eating disorders, female athlete triad; sports anaemia; antioxidants; immune functions and overtraining; legal nutritional supplements; introduction to the use of illegal drugs in sports-effects of drug abuse in sportsmen/women; current international Olympic committee (IOC) work; effects of doping; nutritional requirements of different athletes – case studies.

Contact hours

Lectures 30 h, Problem based learning case studies/tutorials 20 h, Seminar 4 h, Laboratory practical 6 h.

Assessment

Continuous assessment 40 %

End semester examination 60 %

NTN 2233 Nutritional Epidemiology & Research Methods

Aims

1. To introduce the important scientific concepts in study design and research protocol development.
2. To introduce students a range of key areas of research in human nutrition.
3. To introduce the important design strategies and interpretation of nutritional epidemiological studies and other relevant data and databases together with an understanding of key statistical issues including sampling, study size and statistical power.

Learning outcomes

Students should be able to;

1. outline the important design strategies of nutritional epidemiological studies and explain their relative strengths and weaknesses to assess population health status, determinants of health and health system utilization.
2. interpret the results of nutritional epidemiological studies.
3. describe and discuss the issues associated with causality, bias and differentiate between bias, confounding and effect modification.
4. given relevant data, calculate and interpret measures of disease occurrence and association between exposure and disease and deal appropriately with confounders and effect modifiers.
5. demonstrate integration of information of published studies and the use of methods to assess design, interpretation of results and conclusions of flaws and bias.
7. appreciate the advantages and disadvantages of a range of techniques used in nutritional research and select experimental methods appropriate to a particular experimental objective and design.

Contents

The concept of epidemiology and nutritional epidimiology, uses, the epidemiologic approach to disease; epidemiologic concept of diseases; mortality statistics, classification of cause of death, measures of mortality (crude and standardized death rates), epidemiological studies of mortality; morbidity statistics; measurements of morbidity (prevalence and incidence); retrospective studies, cross-sectional studies, surveys, sampling, survey bias; selection of cases and controls, odds ratio; prospective studies – measures of association (relative risk, absolute risk).; experimental epidemiology: Clinical trials, problems of clinical trials; data collection; analysis of results; ethical consideration; interpretation of the results.; community trials.

Research methods: statistics; sampling, study size and power, calibration of methods of investigation; uses of standards, reference materials and statistical quality control: appropriate analytical techniques including: spectrophotometric, chromatographic, electrophoretic; immunochemical, isotopes and radioisotopic, molecular biology; tissue culture techniques, electrical impedance; Survey methods; interview studies, case study method; research proposals and ethics in nutrition research; overview of statistical methods used in nutrition research (workshop).

Contact hours
Lectures 35 h, Tutorials 12 h, Seminar presentation 5 h

Assessment
Continuous Assessment 40 %
End semester examination 60 %

NTN 2242 Communication & Health Promotion

Aims

1. To introduce the theory and practice of communication in the professional nutrition/dietetic work environment
2. To emphasize successful communication in a range of contexts (eg. client counselling, small group education, community nutrition, participation in meetings, working with the media and conflict resolution).
3. To develop both written and oral communication skills within the healthcare setting.

Learning outcomes
Students should be able to;

1. outline contemporary theory on how people learn, and apply this to both an individual counselling and a small group education session in a healthcare setting.
2. plan, facilitate and evaluate a small group education session and plan a communication campaign to promote nutrition practices in the community.
3. analyse the communication processes displayed in healthcare counselling.
4. conduct a dietary counselling session at a basic level.
5. prepare for media interviews and write press releases.
6. participate constructively in group discussions in a range of settings.
7. explain issues of ethics standards of professional practice and client rights.

Contents
Communication: meaning and purpose, types of communication; effective message; channels of communication; process of communication: steps involved in the two way communication process; process of adult learning; extension process: philosophy, principles and methods of extension; factors affecting response to communication; barriers to effective communication; conveying nutrition message to the community; planning a nutrition campaign: steps in planning, strategies in media use, multimedia approach implementation, training; process of diffusion and innovation.

Contact hours
Lectures 24 h, Interactive workshop 4 h, Field and classroom training sessions 6 h, Video shows, group activities (Discussion on communication materials prepared by students): 6 h

Assessment
Continuous assessment 50 %
End semester examination 50 %

NTN 2252 Food Toxicology

Aims

1. To give an understanding about the basics of chemical and biological aspects of food toxicology.
2. To provide a broad appreciation of the sources of potentially toxic substances in food and the relative risks associated with different classes.
3. To provide a knowledge about the nutritional implications of toxic substance in foods
4. To give an introduction to the food safety issues concerning additives, contaminants and the migration of chemicals from packaging materials into food

Learning outcomes

Students should be able to;

1. describe the basic concepts in food toxicology.
2. explain methods of identification and evaluation of toxic substances.
3. describe how toxic substances in foods affect the metabolism of nutrients and explain metabolic handling of natural toxins in the body
4. describe natural toxins in animals and plant foods, mycotoxins and their action in humans
5. explain the toxicants formed during food processing and their action
6. describe the detrimental effects of food additives

Contents

Introduction to natural toxins: important body systems of detoxication, immune system and toxins, free-radicals and antioxidants; combating toxins; avoidance of natural toxins; toxicological testing; principles of toxicology: dose response, safety pharmacokinetics (absorption, translocation, storage, excretion); natural toxins in animal food products: toxins occurring in animal liver; toxins occurring in marine animals; natural toxins in plant foods; food contaminants from industrial wastes; pesticide residues in foods; food additives; toxicants formed during food processing: heterocyclic amines produced in cooked foods, nitrates, nitrites and N-nitroso compounds; novel foods and processes including GMOs, trans-fatty acids and lipid oxidation products, D-amino acids/lysinoalanine/toxic amino acids, contaminants (pesticide residues), toxicology and food packaging materials; contaminants - heavy metals; mycotoxins; food borne diseases.

Contact hours

Lectures 26 h, Tutorials 6, Laboratory 8 h

Assessment

Continuous Assessment	30 %
End semester examination	70 %

NTN 2262 Special Topics in Nutrition

Aim

To provide an understanding and in-depth examination of recent research advances and concepts in nutrition.

Learning outcomes

Students should be able to;

1. critically evaluate the important issues related to nutrition.

2. critically evaluate studies relating to the latest concepts of nutrition.
3. discuss current controversies regarding nutritional issues.

Contents
Assigned readings and discussions of topics of current concern and broad interest in contemporary nutrition.

Contact hours
Lectures 24 h, Tutorials 6 h, Seminar/debate/discussions 6 h

Assessment

Continuous assessment	40 %
End semester examination	60 %

NTN 2272 Food & Beverage Service Management

Aims

1. To introduce the food service operations and management of institutes.
2. To develop small and large scale cooking skills, menu planning and standard recipe manipulation.
3. To develop the necessary skills and knowledge base to assist in and/or manage the provision of meals via an institutional food service.
4. To develop skills in organisational design, leadership, motivation, negotiation, resource management, decision making and power.

Learning outcomes
Students should be able to;

1. demonstrate a thorough knowledge of food service systems.
2. plan menus for groups including the formulation and modification of suitable recipes and serving methods.
3. demonstrate an ability to review and evaluate a small food service operation.
4. demonstrate a basic knowledge and application of the theories of organisation and management.
5. demonstrate an understanding of kitchen layout and workflow consistent with a standard commercial kitchen operation.

Contents
History and nature of the modern foodservice industry; basic principles of purchasing, production, and service; food service systems and nutrient losses: modern foodservice industry, operations, methods of food preparation, nutrient losses; menu planning: principles of menu planning, factors influencing menu planning, cost factors in menu planning; quality assurance; customer satisfaction; kitchen design and layout, occupational health and safety; Management: Introduction and organisational frames, financial management, integrating organisational frames, and leadership, human resource management; food safety Systems/HACCP; management considerations on quantity food service: schools, health care, hotels and other large volume institutions.

Contact hours
Lectures 25 h, tutorials 5 h, large-scale kitchen orientation (1 visit), food service site visit. Menu Planning practical (4h)

Assessment

Assignments, quiz, consultancy report (individual/ group work), Practical reports	50 %
End semester examination	50 %

NTN 3118 Research Project in Applied Nutrition

Pre-requisites: All compulsory course units prescribed for Applied Nutrition specialization in Level 2

Aims

To apply research techniques and integrate knowledge in the identification, description, analysis and solving of problems within their specialization.

Learning outcomes

Students should be able to,

1. identify and understand the problems in related fields.
2. state the hypothesis that needs to be tested.
3. write the objectives of the study.
4. select the appropriate methods to carryout the research project considering the available resources and to suggest alternative research approaches when facilities are limited.
5. design the experiment or study.
6. collect data in an accurate, methodological and honest manner.
7. present the results in a logical sequence and use figures, tables, etc. for clarity of the results.
8. select and apply correct statistical analytical tools.
9. interpret the findings scientifically.
10. cite references to build on the existing knowledge.
11. make logical suggestions, recommendations and conclusions in relation to observed results.
12. write an abstract to highlight major findings of the research.
13. prepare a dissertation based on the findings of the research/ research survey on the project which meets acceptable standards for scientific writing.
14. communicate to scientific audience the summery of the whole project during specified time duration in an easy and comprehensive manner.
15. defend research findings and the interpretations with confidence.

Contents

Students will select a project and develop and perform it under the supervision of a member of academic staff of the Department. Students are first required to search the literature relevant to their project and to plan their project work, including identifying the hypothesis to be tested. Students are expected to submit & present abstracts at the Undergraduate Research Symposium of the Faculty in conjunction with their academic supervisor.

Time Allocation

Students will work fulltime independently or as a member of a research team during the semester.

Assessment

Research Project Report	50 %
Oral presentation	20 %
Viva-voce examination	10 %
Student's profile	15 %
UReS / Abstract	05%

NTN 3212 Field Assignment in Nutrition

Aims

1. To gain practical experience in nutrition related problems and issues in the community.
2. To motivate students to suggest feasible and practicable solutions for identified issues in the community.
3. To develop analytical thinking and communication skills.
4. To give experience in working as part of a team.

Learning outcomes

Students should be able to;

1. identify community nutrition problems being addressed at the assigned agency with specific target populations.
2. through participation in the agency's nutrition-related activities, identify effective assessment, planning, implementation, and evaluation strategies used or needed.
3. through participation in the agency's nutrition-related activities, identify client needs as they relate to nutrition education and food security.
4. identify community resources that are available or needed to address nutrition problems in the community with the target population.
5. identify areas of improvement in your own nutrition and physical activity behaviours.

Contents

The students will be assigned to a family / several families in a community through government healthcare centres or community agencies to study nutrition and health –related issues. This will be done by visiting the target family / community for at least two days per week. Students have to present their case study as a presentation.

Contact hours

Field work – for 2 days per week for 4 weeks (16 h)
Library/literature search – 3 hrs per week for 4 weeks (12 h)
Preparation for presentation and report
Presentation – in the 5th week

Assessment

Case study presentation/report 100 %

NTN 3222 Practical Dietetics

Pre-requisite: Medical Nutrition Therapy, Nutrition Assessment, Sociology of Food & Nutrition, Communication and Health Promotion.

Aims

1. To provide an orientation to the hospital environment and an awareness of procedures and protocols used within the health system in Sri Lanka.
2. To gain information of products available for clients whose dietary requirements cannot be met by food alone.
3. To introduce the concept of a client/professional relationship and knowledge of how to document necessary information.
4. To provide further knowledge of the practical aspects of diseases of which dietary modification is of utmost importance.
5. To introduce the food service operations and management of hospital dietetic departments.
6. To develop small and large scale cooking skills, menu planning and standard recipe manipulation in keeping with dietetic modifications.
7. To sharpen nutrition counselling skills further.

Learning outcomes

Students should be able to;

1. assess the nutritional status and requirements of hospital patients
2. be aware of the range of the enteral feeds and prescribable food items available, and conditions for which they can be prescribed.
3. identify the correct medical term when presented with its meaning or description.
4. develop interpersonal kills needed for productive counselling responses and intervention.
5. planning and deciding diets for patients by modifying domestic standard recipes to be lower in fat, sodium, sugar, higher in fibre, and gluten free or low protein in the following food types: meat/poultry/seafood/ fruit/vegetables/desserts/cereal foods.
6. apply principles of food hygiene standards to a food service operation.

Contents

This limited miniment course unit consists of hospital visits in order to receive training in the field of dietetics. Students will work 2-3 days per week under a trained dieticians in recognized government and private sector hospitals. Students will familiarize with catering practices, and will be trained to take histories of patients, determine portion sizes and prepare diet sheets, interview patients and health professionals and observe enteral and parenteral feeding practices.

Theory & practical: menu planning, food service management in hospital and institutional setups, a series of lectures on medical and dietary management of diseases (complementary to Medical Nutrition Therapy)

Contact hours

Practical work in hospital setup	48 h
Problem based learning	15-20 h
Lectures	10 h

Assessment

Assignments – Case study, Quiz	20 %
Viva-voce examination	40 %
Practical reports (menu planning)	40 %

NTN 3234 In-plant Training

Pre-requisite: Field Assignment in Nutrition and Level 2 compulsory course units for the Nutrition specialization

Aims

1. To give students an insight into the operation of a company/ organization/institute and the opportunity to relate their academic discipline to the workplace.
2. To make the student aware of the nature and purpose of the organization and how the department to which they are attached relates to the rest of the organization.
3. To contribute to the development of the student by providing responsibility appropriately matching with their level of knowledge, experience, potential and degree of maturity.
4. To develop the student's personal skills as well as their scientific knowledge and technical competence.

Learning outcomes

Students should be able to;

1. recognize scientific and technical issues relevant to the company /organization and their products/service
2. build up the awareness about economic and commercial considerations within an organization, consumer food choice and approaches to consumer and market research, human resource management, finance and marketing management and business management.
3. demonstrate intellectual skills enabling to solve problems.
4. demonstrate practical skills.
5. identify quality assurance procedures in food processing.
6. perform economic analyses of food production systems, assist the management of food business and marketing of their products.
7. build own profile to the required standards of the Food industry
8. consider and manage career choices.

Contents

Students will be placed in an industrial or other relevant work environment for 10 weeks, and will be expected to make a significant contribution to a relevant project under the supervision of industrial and Departmental personnel. Students will be place in private sector industry, non-government organization or government institute. Students are obliged to actively participate in the work placement programme and to attend scheduled interviews. Students are required to prepare a final report on their placement, and make a presentation on their work.

Time Allocation

Ten weeks

Assessment

Training plan	05 %
General performance	10 %
Report on in-plant training	40 %

In-plant training Diary	20 %
Presentation	10 %
Viva-voce Examination	15 %

NTN 3244 Dietetic Internship

Pre-requisites: Medical Nutrition Therapy, Practical Dietetics and compulsory course units for Nutrition specialization.

Aims

1. To develop the students' skills and competencies in a range of areas including specialized therapeutic diets and the provision of community nutrition programmes.
2. To provide students with opportunities to rehearse and demonstrate both interviewing and counselling skills, as well as information and behaviours required to allow the Dietician to operate as an independent professional.
3. To contribute to the development of the student by providing responsibility appropriately matching with their level of knowledge, experience, potential and degree of maturity.
4. To develop the student's personal skills as well as their scientific knowledge and technical competence.

Learning outcomes

Students should be able to;

1. apply theoretical knowledge in a professional setting.
2. do the work of a dietician while under supervision.
3. to manage situations and problems appropriately.
4. demonstrate entry level competencies of a dietician.
    - (i) Collect data pertinent to the nutritional care of the patient
    - (ii) Interpret relevant data and its impact on the nutrition care plan
    - (iii) Assess the level of existing knowledge of the patient, their ability and desire to be educated, pinpointing particular factors for motivation.
    - (iv) Integrate all relevant data in order to plan the nutrition management
    - (v) Negotiate case management goals
    - (vi) Plan the correct diet and appropriate meal plan
    - (vii) Develop and or utilises specific tools to assist in food behavioural changes and select appropriate education strategies and tools
    - (viii) Counsel patient and family
    - (ix) Arrange appropriate follow up and evaluation of outcomes and interventions
    - (x) Document all the steps of the process
    - (xi) Manage time, resources and personnel
    - (xii) Work effectively within the structure of the organisation

Contents

Each student will spend at least 10 weeks in a hospital, community health centre, and other food-related organizations. Students will be under the supervision of experienced practitioners appropriate to the placement requirement.

Time Allocated

Ten weeks

Assessment

Attendance	05 %
General performance	10 %
Report on Internship training	40 %
Clinical Diary	20 %
Presentation	10 %
Viva -voce Examination	15 %

9.3 Course Units Offered under Faculty of Livestock, Fisheries and Nutrition (LFN)

LFN 1114 Food Production Systems I

Aims

1. To provide a schematic introduction to world and Sri Lankan farming systems.
2. To provide an introduction to the factors that determine geographical distribution of plant and animal food production.
3. To provide a knowledge of the major Sri Lankan and world farming systems.
4. To provide an understanding of the systems approach to agro-food systems.
5. To generate awareness of wider policy issues and debates (e.g., climate change, pollution, food shortages).

Learning outcomes

Students should be able to;

1. identify the factors that determine the geographical distribution of agriculture
2. discuss the systems approach to agro-food systems.
3. aware of wider policy issues and debates (e.g., climate change, pollution, food shortages).
4. describe and discuss the contribution made by livestock and livestock products to human livelihoods
5. describe and discuss genetic and environmental factors affecting animal performance
6. describe and discuss the relative merits and demerits of extensive and intensive livestock production systems.

Contents

Agriculture and food as a system; environmental, economic and social determinants of agriculture; world agriculture, Sri Lanka: agriculture and food status; agroclimate of Sri Lanka; climatic requirements for crop production; effect of landlessness on food systems: land tenure, land reforms, land classification; water management and sustainable food production: water resources, problems related to water; plant nutrition, fertilizers and organic manure; soil fertility and sustainable food production – major soil groups in Sri Lanka and their agricultural potential, soil conservation and management; plant protection and food systems - pests and weed management, major pest and diseases and their control, effects of pesticides; forest food resources, effects on food systems due to exploitation and conservation of forests, role of forest and tree plantations in food system development; cropping systems, strategies for maintaining crop diversity and increasing food production; global climate and climate change and agriculture in the tropics; future challenges of our agriculturalists.

History of the development of animal production and contribution of livestock to human livelihoods; species of domestic animals and their diversity; animal production systems; Importance of animals to the rural sector; animal production – global and regional trends.

Contact hours
Lectures 45 h, Field visits and Practical 30 h

Assessment

Continuous assessment	20 %
End semester examination	80 %

LFN 1120 Mathematics & Computing

Aims
To familiarise the students with the basic concepts, theories and principles in mathematics and apply them successfully in their discipline.

Learning outcomes
Students should be able to;

1. plot a graph and extract relevant information.
2. define a set and perform relevant operations.
3. use matrices as a convenient structure for linear equations and inequalities.
4. demonstrate the knowledge of calculus.
5. derive derivatives of basic algebraic and trigonometric functions.
6. find integral of algebraic and trigonometric functions.
7. apply the mathematical skills in real situations.

Contents
Analytical geometry - distance between two points in a plane, slope of a straight line, equation of a straight line, point intersection of two lines; Sets, relations and functions - basic concepts, sub sets, operations on sets and applications, Cartesian product of a two sets, Relations properties of relations, functions and graphs; Differential calculus - idea of limit and continuity, differential coefficient, average concept and marginal concept, the techniques of differentiation, rules of differentiation, higher order derivatives, geometric meaning of "dy/dx", increase and decreasing functions, criteria for maxima and minima, applications of derivatives; Integration - rules of integration, definite integral, meaning of a definite integral, applications; Matrices - basic concepts, addition of a matrices, scalar multiplication, multiplication of matrix, inverse of a matrix, solutions for a system of linear equations.

Contact hours
Lectures 20 h, Tutorials 20 h

Assessment

Mid semester test	20 %
End semester examination	80 %

LFN 1130 Introduction to Information Technology

Course Overview
Computer technology is becoming more and more pervasive in our lives as computers become cheaper and more powerful. Hence the knowledge of computer applications is an essential skill for anybody in any discipline and further it will help to ensure their

job security. This course facilitates the IT necessary for undergraduates to meet the challenges in rapidly developing IT and communication system in their relevant field of study.

Aims

1. To enhance basic computer skills
2. To provide the proficiency in computer office applications
3. To improve the knowledge of on line communication and information searching through the web.
4. To encourage the self-learning through Learning Management System (LMS) and online resources
5. Enhance the career prospects and employability of the undergraduates.

Learning outcomes

On successful completion of this course students should be able to:

1. identify the structure of a computer and computer related items
2. handle the basic operations in a computer
3. do word processing and produce documents for course work submission
4. prepare tables, manipulate data and produce graphs using spreadsheets
5. prepare visuals/slides for graphical presentations using PowerPoint
6. prepare a simple database and manage records
7. use internet & email for communication
8. use internet based databases to search scientific information
9. use LMS for self-learning & assignments
10. use e-resources (CD/DVD ROMs, Flash Drives, LMS) to retrieve information
11. show ability to select the appropriate computer program from the job in hand

Contents

Module 1 – Understand basic concepts of Information Technology: Define IT/ICT, General Concepts, Hardware, Software, Information Network, IT in society, Health, Safety & Environment and Livestock, Fisheries & Nutrition areas, copyright & Laws

Module 2 - Use the Computer & Manage file: computer Environment, The Desktop, Operating System, File & folder handling, Print Management, Computer maintenance and Management.

Module 3 – Word Processing using MS Word: Getting started with Word; formatting a document: page setup, margins, layout, tab settings, paragraph setting, bullets & numbering, borders & shading, change case; Styles & formatting, Reveal formatting; Insert symbols, pictures and Clip Art; Create Tables and Lists; Edit Headers and Footers; Check spelling, Grammar & Word Count, Auto text, Drop caps, Speech; Create tables and table formatting; Insert Page break and Section breaks, Footnote, Table of content; Print documents, Mail merge; Comments, Track Changes; Use templates & add-ins

Module 4 – Spreadsheet applications using MS Excel: Getting started with Excel; Create, open and save workbooks; Manipulating data & contents; Auto format & Conditional format; Creating Formulas; Use functions; Worksheet Layout and Management: Working with multiple worksheets; Formatting Rows, Columns & Cells; Creating & Formatting a Chart; Print Management; Use Auto Filter; Sorting Lists.

Module 5 – Understand & Use a database with MS Access: Database System, Database Management System, Database Design Techniques; Data types, Create table using Design view, primary Key, Relationships; Create forms, Reports, Relational Database

Model, Object Oriented Database Model, Normalization, SQL, Retrieve Data, Format Output, Use Switchboard Manager

Module 6 – Graphical presentation using MS PowerPoint: Creating a Blank Presentation; Applying a slide layouts, Design Template, Colour scheme, Background; Creating a slide Master; Adding Charts, Diagrams, Tables, Clip Art and Pictures; Animating Slides, Adding Transition; Customizing Slide Design, Colour Scheme; Ordering Objects on a Slide; Setting the timing and Rehearse Timing Features; Inserting Movies & Sounds, Adding Background Music; PowerPoint Packaging a Presentation for CD.

Module 7 – Internet, e-mail & Information search techniques: Internet; Web, Uniform Resource Locator, Internet Service Provider, Protocol, Web browser, Web credibility, Search engines, Subject directories, Meta search; email: web mail, POP3, SMTP, email software.

Module 8 – Introduction to Computer Networking: Data communication, Data com methods, classification of network, network equipments & their functions, software use in networking, network management.

Method of teaching/learning
Lectures Practical Tutorials & self-learning
Self-learning contents will be delivered through LMS

Contact hours
Lectures 20 h, Tutorials 20 h

Assessment

Continuous Assignments (through LMS)	30 %
End semester examination	70 %

LFN 1224 Food Production Systems II

Aims

1. To provide a schematic introduction to world and Sri Lankan farming systems.
2. To provide further understanding of the factors that determine geographical distribution of animal food production.
3. To provide knowledge of the major Sri Lankan and world aquatic and fisheries farming systems.
4. To provide further understanding of the systems approach to agro-food systems.

Learning outcomes
Students should be able to;

1. describe and discuss the environmental issues related to animal food production.
2. describe health issues related to animal products.
3. demonstrate an awareness about Acts and regulations in the animal production sector.
4. re-state the global/regional/ local status of fisheries and aquaculture and future predictions.
5. describe the desirable characteristics of culturable aquatic faunal species.

6. identify the commonly cultured aquatic fauna of Sri Lanka and describe their food and feeding behaviour.
7. propose suitable culture systems and /or species that could be cultured under given conditions.

Contents

An overview of animal production in Sri Lanka; environmental challenges in animal production; animal and human well-being; trade in animal and animal products; Acts, regulations and agreements covering the animal production sector.

Aquaculture production systems, key aquatic fisheries resources in Sri Lanka; role of fisheries and aquaculture in sustaining food security and livelihood; properties and characteristics of aquatic food resources; selection of species for aquaculture and fisheries - marine, brackish water, fresh water; semi-intensive and extensive aquaculture systems, integrated farming systems; coastal, off-shore and deep sea fisheries; potentials and problems of fisheries management.

Assessment

Continuous assessment	20 %
End semester examination	80 %

LFN 1232 Concepts and Practice of Statistics

Aims

1. To provide an understanding on the links between science and statistics, especially science as a discipline of probability
2. To explain basic concepts of types of data and data exploration
3. To introduce different types of distributions of data.
4. To illustrate the graphical representation of data

Learning outcomes

Students should be able to;

1. identify different types of data
2. describe main character of qualitative and quantitative data
3. calculate and compare values of central tendency and variability
4. judge the correct graphical presentation for different data types and use R and excel software in illustrating basic graph.
5. define probability and recognize main features of normal poison and bimodal distribution
6. test a given a set of data to compare the means using test and explore the associations using simple linear regression.

Contents

Data types of data and variability in observations; frequency distributions, scatterplots, stem and leaf box plots, histograms; measure of central tendency in data, mean, median; dispersion of data; populations and samples and sampling theory; probability theory, normal curve and calculation of areas; variance of data and introduction to analysis of variance - T tests, one-way ANOVA; correlations and linear regression.

Contact hours
Lectures 20 h, Group work 6 h, Practical (Computer based) 10 h, individual mini project work 4 h

Assessment

End semester examination (theory)	55 %
End semester practical examination	20 %
Group based data collection report	10 %
Poster (Individual)	10 %
Practical reports	5 %

LFN 1X10 Social Harmony and Conflict Resolution

Aims
This short-course is designed;

1. to provide simple analytical and practical knowledge on social and intercultural harmony, gender and human rights for the university students.
2. to provide an understanding on the consequences of social disharmony and alternative strategies to solve such problems within the university system.
3. to promote wider participation of students in aesthetic and interactive socio-cultural activities

Learning outcomes
Students should be able to;

1. identify causes of social disharmony in the society.
2. describe the role of university students and future graduates in the national development.
3. demonstrate skills of negotiation, mediation and conflict management strategies in activities.
4. appreciate human rights.
5. evaluate cases related to social disharmony and propose mitigation methods.
6. perform individual or group events in social and intercultural aesthetic activities.

Contents
Self-realization and vision building, Human Principles and philosophy of life, Social disharmony and aggressive behaviour, Cross cultural understanding & understanding of human differences, Responsibilities (duties) and rights of a University Student as a civil person and basic human rights human dignity, Conflict management, negotiation and mediation skill, Techniques for building social harmony and Communication - Concept at SH, Aesthetic and interactive activities

Students organize and take part in outreach activities to serve diverse cultural groups in the country. Students organize group learning exercises to introduce norms and values in their culture to other ethnic groups in the faculty. Few participatory research tools, that would be useful for understanding these concepts will be adopted. Practical work will be carried out to assess the self and

the level of harmony and integration. Students would be taken to culturally important sites in the country (both in north and south). As a part of the course unit students of different social groups will have to produce cultural item as a group that will be staged or performed at the end of the semester. Participation in the cultural events and aesthetic performance should be open to every student. Academic and non-academic staff may also perform in intercultural events

Assessment
Students' participation will be monitored through student portfolio. Mentors should endorse the students' role in activities and attendance of student in the special page of the student portfolio. Students should obtain 'Satisfactory' Grade for this course unit as prescribed by the Faculty.

LFN 1414 Information Systems & Data Handling

Aims

1. To familiarize the world wide web (WWW) as a key source for retrieving, storing and manipulating scientific data
2. To introduce software such as Endnote and Ref man for data storage.
3. To introduce the key parametric and non-parametric data analysis techniques using software Minitab, R and Genstat.

Learning outcomes
Students should be able to;

1. design appropriate experimental designs, implement, analyse and interpret data collected for analysis of variance (parametric data).
2. design, pre-test and collect data for biological and socio-economical research using questionnaires.
3. design appropriate experimental designs, implement, analyse and interpret data for non-parametric data.

Contents
Data, data storage, retrieval and handling; search engines and their use; reference management using Endnote and Ref man; conversion of data and reports to PDF
Analysis of parametric data with statistical software. Principles of experimental design, randomization, blocking, replication, completely randomized designs (CRD), randomized complete block design (RCBD), Latin square designs, blocking techniques in animal experiments, convenience analysis, factorial experiments, designs for special situations in animal experiments, incomplete block design (IBD), balance incomplete block design, nested factor design, confounding factorial design, split plot design, exercises in analysis using statistical packages (SAS and Minitab). Analysis of nonparametric data with R and Minitab: Scale of measurements - nominal or classificatory scale, ordinal or ranking, interval scale, ratio scale. Categorical data analysis: two-way contingency tables, test of association and goodness of fit. Introduction to non-parametric statistics: Wilcoxon Rank Sum Test , Sign Test, Mann-Whitney Test; Kolmonogorov-Smirnov Test, rank correlation; Questionnaire construction; sampling techniques: random, stratified, systematic, cluster and multistage sampling. Introduction to multivariate methods: multiple linear regression, linearization of model, cluster analysis, discriminate analysis; multivariate data analysis – Principle component analysis, Hierarchical analysis, Bipot, Canonical Variate Analysis.

Contact hours
Lectures 40 h, Practical 30 h, Project work 10 h

Assessment

End semester examination	40 %
Practical examination	20 %
Project reports	20 %
Mid-semester examination	20 %

LFN 2212 Community Link (LinkCom)

Aims

1. To obtain required skills and knowledge to observe and comprehend the actual situation of food production, security and nutrition at community level.
2. To improve sense of risk, risk assessment and health and safety at field level.
3. To create awareness regarding legal requirements in day to day operations and sensitivity to the impact of food production on the environment and stakeholders.
4. To bring out a sense of belonging among the community and students to bring out and an improved idea the relevance of modules that they follow under study programme.

Learning outcomes

Students should be able to;

1. plan, conduct, and report on investigations, including the use of secondary information such as existing knowledge.
2. evaluate and analyse economic, social and other management information and use it in decision making.
3. respect socio-economic and cultural background of the relevant communities.
4. contribute constructively to group discussion.
5. show willingness to involve in community work

This course will also improve a number of values and soft skills such as;

1. Act according to professional codes of conduct where applicable.
2. Assume responsibility for one's actions.
3. Develop an adaptable and flexible approach to study and work.
4. Develop the skills necessary for self-managed and lifelong learning (eg. Working independently, time management and organization skills)
5. Contribute constructively to group discussions.

Contents

The two degree programs produce graduates that would have direct and indirect relationships with the grass root level food producers, processor and distributors, etc. However, none of the study modules have activities that enable students to understand the actual behaviour and the characteristics at the grass root level. Each student will be placed with a household that engages in food production,

processing and marketing or a community set up. In addition students will also be placed in households selected considering their food and nutritional security. The locations of placements will be determined for each year by the faculty and would be informed to students. Students will be given a certain level of freedom in selecting placements; however, the final decision of placement will be taken by the faculty.

Contact hours

A total of 60 hrs from the allocated time slot plus extra 60 hours from weekends of student choice must be spent

Assessment

Diary and e –portfolio	30 %
Oral Presentation	20 %
House hold assessment survey outcome	10 %
Material/ resources developed by student	40 %

LFN 3112 Scientific Communication

Aims

1. To develop a set of knowledge, skills and attitudes to practice scientific communication by avoiding common errors.
2. To develop fundamental knowledge and convention relating to scientific communication and their most important methodologies.
3. To improve skills of writing reports, dissertations, manuscripts and other scientific communications.
4. To enhance the oral presentation skills.
5. To develop the ability to construct and evaluate technical and scientific papers.

Learning outcomes

Students should be able to;

1. describe the scientific writing process and its key stages.
2. reflect on what extent a research problem is to be addressed in a scientific paper.
3. analyse and review scientific papers in terms of key message and consistency.
4. reflect on the benefits of working in teams in scientific writing and describe the rules of co-authorship.
5. demonstrate effective, concise oral presentation.
6. reflect on the ethics of scientific writing.

Contents

It is expected to deliver the following contents in workshops to facilitate ongoing final year research work.

Importance in writing in Science: Scientific writing principles; special ESL grammar problems; Ethics of scientific publications; References and plagiarism: Selecting and managing reference; Text citation; reference styles; foot notes and endnotes; Plagiarism; paraphrasing; referencing software; Write research **grant proposals:** good attributes in a proposal, essential parts of a proposal; **Introduction: for research papers/ review articles;** common problems of

introduction; **Materials and methods section: Common problems of materials and methods; How to create effective illustrative materials:** Select the proper illustrative material for different scientific publications; **Results: important writing principles for results; common problems of results section; Discussion and conclusions: results and discussions;** Abstracts: Organization; Applying basic scientific principles; **Key words; Concept of 2 min drill; Titles for different scientific publications; Authorship**; Acknowledgements**;** Posters and presentations: organization; sections; Oral presentation: voice and delivery; vocabulary and style; action and motion; body language; **How to handle questions from the audience; Ethic in speaking to media (2 hrs)**

Contact hours
Lectures 25 hrs, Class room exercises/activities 10 hrs

Assessments

Class room exercises/activities	35 %
Two minutes drill on the final year research outcome -Participants must be able to summarize their entire research blend into the abstract and present by reading within two-minutes.	20 %
Poster presentation (Not to be evaluated by the respective supervisors) -Research proposal will be presented in a poster	45 %

LFN 3212 Human Resource Management

Aim

To provide knowledge on utilization and management of human resources required to deal with related issues in real working place.

Learning outcomes
Students should be able to;

1. identify the human resource management trends, key terms used and their relevance to successful operation and sustainable development of work organizations.
2. apply human resource management theories to the successful management of people within organizations.
3. identify the legal and ethical issues in human resources management.
4. analyse the human resource management practices used in a business organization.

Contents
Introduction to human resource management; team working/culture; HRM planning, recruitment, selection and retention; career development and training; leadership; appraising and improving performance; human resource management in small firms; collective bargaining and labor relations; legal and ethical issues in human resource management.

Contact hours
Lectures- 30 h

Assessment

Report	40 %
End semester examination - Theory	60 %

LFN 3222 Organizational Management

Aim

To provide knowledge on concepts and principles of management of an organization required to resolve managerial problems to create an environment conducive for improvement of the organizations.

Learning outcomes

Students should be able to;

1. identify the key management principles that motivate employees in an organization to achieve organizational goals.
2. apply organizational management principles and concepts to create effective organizations
3. analyse information systematically, taking a holistic approach to addressing issues facing an organization (Based on case studies).
4. listen to and respect the ideas of others and present own ideas & recommendations in a group setting while effectively defending own positions (Based on the case studies)

Contents

Development and history of management science and profession; definition of management and its applications; development of organizations; human resource development in organizations; motivation of employees and application of motivation theories; team working/culture; supervision and control; office management; effectiveness in management; public relations.

Contact hours

Lectures-30 h

Assessment

Case study	40 %
End semester examination	60 %

9.4 Course Units Offered under Career Guidance (CGU)

CGU 3211 Mass Communication

Aims

1. To train learner for composing scientific communication for media.
2. To induce creativity of generating/compiling of information for the interest of general public/selected ordains.

Learning outcomes

Students should be able to;

1. communicate effectively using a variety of means to address a range of audiences.
2. prepare documents/short communications for awareness, training and outreach.
3. write articles to mass media and journals.

Contents

This course unit will comprise a series of workshops, seminars and lectures about communicating through electronic and print media to masses.

Contact hours

Workshops, lectures, student activities 30 h

Assessment

Writing newspaper articles, essays, assignments, group work, presentations 100 %

CGU 3221 Entrepreneurship Development

Aim

To promote confidence of graduates for self-employability and to develop qualities of entrepreneurship.

Learning outcomes

Students should be able to;

1. prepare project proposal for banks/other financing agent.
2. identify opportunities, critically evaluate potentials and constrains for proposed projects.
3. demonstrate qualities of being self-critical, seeking and responding to feedback.
4. identify goals and marketing of own competencies.

Contents

This course unit will comprise a series of workshops, seminars and lectures about entrepreneurship and self-employment.

Contact hours

Workshops, lectures, student activities 30 h

Assessment

Project report 80
Presentations 20

9.5 Course Units Offered under English Language (ELT)

ELT 1110 English for Science I

Aims

This course unit aims to provide the following English language skills:

1. Recognizing meaning through lexical and grammatical understanding.
2. Reading scientific and academic texts more efficiently.
3. Writing concise and meaningful write ups in the appropriate style
4. Understanding, and contributing appropriately to group discussions.

Learning outcomes

Students should be able to;

1. apply linguistic features in conversations.
2. utilize a range of general vocabulary and range of grammatical structures when speaking
3. listen and take notes with an acceptable accuracy from academic lectures.
4. use correct pronunciation, stress and intonation in speaking.
5. communicate ideas with colleagues and lecturers.
7. read and comprehend academic texts, through skimming, and scanning
8. organize and present ideas within a framework provided.

Contents

Basic grammar structures, pronouncing key words (related to the academic subjects) clearly, using word stress, rhythm and intonation satisfactorily in speech, clarifying meaning when involved in spoken dialogue, taking turns appropriately (linguistically and functionally), when involved in spoken dialogue, summarizing in both speaking and writing; reading academic texts; writing descriptions and essays in English.

This course unit will be conducted as repeated cycles involving a vocabulary session, reading and listening tasks, and a related writing task.

Contact hours

Classroom contact hours 20 hrs, language centre activities 20 h

Assessment

Continuous assessment	40 %
End-semester examination	60 %

ELT 1210 English for Science II

Aims

This course unit aims to further improve English language skills developed in ELT 1110 English for Science I and to develop skills in:

1. participating actively in seminars on subject-related topics.
2. selecting what to read/research in an appropriate way.
3. incorporating information from sources into writing.
4. developing awareness of the value of re-drafting and editing.

Learning outcomes
Students should be able to;

1. actively participate in seminars by asking and answering questions.
2. do presentations related to general issues and subject-related topics.
3. find out information and incorporate them in writing essays and assignments.
4. summarise texts and write explanatory notes on a given topic.

Contents
This course unit consists of classroom activities involved in reading, writing, speaking and listening. The texts and situations related to science will be used to familiarize the vocabulary and the tasks will be given to them to use appropriate language in communicating ideas with others.

Contact hours
Classroom contact hours 20 hrs, language centre activities 20 h

Assessment

Continuous assessment	40 %
End-semester examination	60 %

ELT 1310 Academic English I

Aim
This course unit aims at developing English language skills and techniques, enabling students to demonstrate them in full potential in their academic work including examinations.

Learning outcomes
Students should be able to;

1. comprehend technical texts relevant to their chosen subjects in English for the purpose of completing assignments.
2. write coherent and meaningful essays or reports relevant to their chosen subjects in English.
3. do effective oral presentations.
4. ask and answer questions posed in an oral presentation.

Contents
Structure and cohesion, process description, describing physical features, definitions, narrations, exemplification, cause and effect, classifications, writing assignments and essays (this task will require students to investigate the topic independently or within a small group, produce an independently written summary, report or analysis-approx. 500-800 words); oral presentations.

Contact hours
Classroom contact hours 20 hrs, language centre activities 20 h

Assessment

Continuous assessment	40 %
End semester examination	60 %

ELT 1410 Academic English II

Aim

This course unit aims at developing English language skills required for sharpening both oral and written communicative skills.

Learning outcomes

Students should be able to;

1. paraphrase and summarise technical texts (in English) relevant to the subjects
2. compose essays and reports in English using appropriate and formal language
3. do effective oral presentations

Contents

Comparisons and contrasts, survey and data collections, generalizing and interpretation of data, discussion, drawing conclusions, writing assignment and essays – this task will require students to investigate the topic independently or within a small group, produce an independently written summary, essay, report or analysis-approx. 500-800 words, oral presentation.

Contact hours

Classroom contact hours 20 hrs, language centre activities 20 h

Assessment

Continuous assessment	40 %
End semester examination	60 %

Inquiries & Contacts

Please forward any inquiries arising from this handbook to:

Faculty Office
Faculty of Livestock, Fisheries & Nutrition
Wayamba University of Sri Lanka
Makandura,
Gonawila 60170

Tel: 031-2299429 /2299870
Fax: 031-2299870
e-mail: flfn@mkd.wyb.ac.lk
Web: http://www.wyb.ac.lk

Important contacts

Kuliyapitiya Premises

	Telephone	Fax	e-mail
General	037-2281412	-	-
Vice Chancellor	037-2282758	037-2281392	vc@wyb.ac.lk
Registrar	037-2283165	037-2284663	registrar@wyb.ac.lk
Bursar	037-2283168	037-2283168	bursar@wyb.ac.lk

Makandura Premises

Dean Faculty of Livestock, Fisheries & Nutrition	031-2299429	031-2299870	deanflfn@mkd.wyb.ac.lk
Assistant Registrar Faculty of Livestock, Fisheries & Nutrition	031-2299870	031-2299870	arflfn@mkd.wyb.ac.lk
Head Department of Applied Nutrition	031-2298120	031-2298120	nutrition@mkd.wyb.ac.lk
Head Department of Aquaculture & Fisheries	031-2299874	031-2299870	aqua@mkd.wyb.ac.lk
Head Department of Food Science & Technology	031-2299871	031-2299870	dfst@wyb.ac.lk
Head Department of Livestock & Avian Sciences	031-2299873	031-2299870	livestock@mkd.wyb.ac.lk
Director Information Communication Technology Centre	031-2299247	-	wjskweera@gmail.com
Deputy Registrar	031-2298111	031-2298111	dr.wusl@gmail.com
Senior Assistant Librarian	031-2298112	031-2298112	lib@mkd.wyb.ac.lk
University Medical Centre	031-2298111	-	-
Coordinator – English Language Teaching Unit	031-2298222	-	eltu@mkd.wyb.ac.lk
Security Office	031-2298114	-	-

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