SUBJECT BENCHMARK STATEMENT

IN

FORESTRY

Quality Assurance and Accreditation Council
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FOREWORD

Subject benchmark statements provide a means for the academic community to describe the nature and characteristics of programmes in a specific subject or subject area. They also represent general expectations about standards for the award of qualifications at a given level in terms of the attributes and capabilities that those possessing qualifications should have demonstrated.

This subject benchmark statement refers to the bachelor's degree. Subject benchmark statements are used for a variety of purposes. Primarily, they are an important external source of reference for higher education institutions (HEIs) when new programmes are being designed and developed in a subject area. They provide general guidance for articulating the learning outcomes associated with the programme but are not a specification of a detailed curriculum in the subject.

Subject benchmark statements also provide support to HEIs in pursuit of internal quality assurance. They enable the learning outcomes specified for a particular programme to be reviewed and evaluated against agreed general expectations about standards.

Subject benchmark statements allow for flexibility and innovation in programme design and can stimulate academic discussion and debate upon the content of new and existing programmes within an agreed overall framework. Their use in supporting programme design, delivery and review within HEIs is supportive of moves towards an emphasis on institutional responsibility for standards and quality.

Subject benchmark statements may also be of interest to prospective students and employers seeking information about the nature and standards of awards in a given subject or subject area. The relationship between the standards set out in this document and those produced by professional, statutory or regulatory bodies for individual disciplines will be a matter for individual HEIs to consider in detail.

SUBJECT BENCHMARK STATEMENT

FORESTRY

1. INTRODUCTION

The purpose of this subject benchmark statement is to make explicit the nature and the standard of degree awards in the subject area of forestry.
The statement will clarify the specific threshold, typical and excellent standards for the award of a general and honours degree. These statements will assist the following;

- HEIs to design and validate programmes of study
- External examiners and academic reviewers to compare and verify standards
- Professional bodies (if and where appropriate) to review processes and content for the purpose of accreditation
- Students and employers to obtain information on the purpose and content of degree courses.

The subject covered in this statement is not taught at all HEIs. It is taught explicitly in the University of Sri Jayewardenepura where it has a national and international recognition for teaching and research in forestry. Forestry is being taught integrated into other subject areas in the undergraduate curriculum in few other universities in the country ie University of Peradeniya, University of Sabaragamuwa, and University of Kelaniya etc. as well as constituent and cognate disciplines.

The subject forestry is essentially interdisciplinary and multidisciplinary. It involves study across more than one discipline, and often integrating aspects of chemical, physical, biological, economic and social sciences.

2. NATURE AND EXTENT OF THE SUBJECT

Forestry is the application of physical, biological, economic and sociological principles to the sustainable management of natural forests and forest plantations for the benefit of society.

Degree programmes in **forestry** are designed to develop the knowledge and skills of those who go on to work in the forestry profession. Graduates will have a thorough understanding of the physical, biological, economic and sociological principles and processes that underpin forestry. They will be able to apply such principles and processes to the sustainable management of natural forests and forest plantations for multiple goods and ecosystem services (for example, carbon accumulation, conservation, landscape, production of wood and nonwood forest products, protection of soil and water resources, recreation). They will understand the social and environmental contexts in which forestry is practised and the consequences of forestry for society and the environment

3. SUBJECT KNOWLEDGE AND UNDERSTANDING

Degree programmes in forestry should address the following:

- the underlying principles of the subject
- DConcepts, theories and methods
- the current knowledge and developments of the subject
- identification of current gaps in knowledge or understanding and current issues of wider concern to society and the world
- the global, regional and local contexts of the topic
- the location of resources, and the management, exploitation and pattern of utilisation of resources within socioeconomic, policy and legal frameworks and crop protection
- subject specific knowledge and key skills, problem solving and a professional approach to study and lifelong learning
- An understanding of issues of sustainability and environmental impacts.

On successful completion of the degree programmes the students should have;

- Acquired a broad and in depth knowledge and a conceptual understanding of the fundamental principles of ecosystem and functions, application of this core knowledge into sustainable forests and other natural resource management
- Gained knowledge and conceptual understanding of the sustainable management of forests.
- Demonstrated familiarity with a wide range of subject specific facts and principles in combination with an awareness of the current limits of theory and applied knowledge
- Been able to identify trees and animals in a wide array of forestry related ecosystems and understand their interrelationships.
  Been able to raise forest plantations successfully for a multitude of end products ie production, protection and aesthetics
- Been able to estimate growing stock and rate of growth in both natural forests and plantations and use this information to prepare management plans which includes tending, harvesting and replanting.
- Been able to identify timber species in Sri Lanka using macroscopic and microscopic anatomical properties using conventional and computer keys.
- Been able to describe physical, chemical and mechanical properties of timber and understand the technology and management of solid wood and wood based panel product industries.
- Been able to identify pests and diseases in forests and plantations and offer remedial/prevention measures.
- Been able to integrate forests with agriculture and/or livestock towards profit maximization and sustainable development
- Been able to estimate the economic value of forests including their products and services
- Been able to integrate forestry practices and conservation of biodiversity in order to prevent depletion of biodiversity

4. ABILITIES AND SKILLS

- The students in both B.Sc. General and B.Sc. Special degree programmes should develop a range of personnel and transferable skills (e.g. critical ability, independence of thought, data handling and interpretation, computer literacy, information management, oral and written communication, team work) and apply them to varied situations. They should;
- Be able to start and develop self employment in forest related field/s
- Be skilled in problem solving, critical thinking and analytical reasoning.
- Be able to model the natural resource in mathematical backgrounds to project the present situation to the future or to predict scenarios using available information.
- Develop a love of the forests and the outdoors, an ethical concern for natural resources and an appreciation of nature, an interest in the complexity of natural ecosystems

The B.Sc, Special Degree programmes encompass a comprehensive research project which is a mandatory course unit. By conducting this course unit the students are expected to gain the following learning outcomes in addition to the ones to be gained at the general degree level. They should be able to;

- Conduct independent research inclusive of designing the experiments, procuring /generating appropriate data, data analysis and interpretation, testing hypotheses and understanding the results and draw conclusions and justifying the results, reporting and defending the research.
- Exhibit ownership of some aspects of the defining elements of the discipline as a result of in-depth study or research
- Display skills in evaluating and interpreting, in a balanced manner, new information provided by others from a range of fields of study
- Display the transferable skills and ability to acquire new competencies required for career progression

The abilities and skills that should be developed in these degree programmes are Subdivided into:

- intellectual skills
- practical skills
- numeracy skills
- communication skills
- information and communication technology (ICT) skills
- interpersonal/teamwork skills
- self management and
- professional development skills.

These skills will normally be developed in a subject specific context, but have wider applications for continuing personal development and in the world of work. The subject skills will encompass technical knowledge and abilities specific and appropriate to the focus of the degree programme. In addition, each individual programme will develop a capacity for holistic and lateral thinking and an appreciation of both inductive and deductive reasoning.

4.1 Intellectual Skills

The following are required in this context;

- recognising and using appropriate theories, concepts and principles from a range of disciplines
- collecting and integrating several lines of evidence to develop balanced arguments
- designing an experiment, investigation, survey or other means to test a hypothesis or proposition
- critically analysing information, synthesising and summarising the outcomes
- applying knowledge and understanding to address multidisciplinary problems
- creativity and innovation
- demonstrating awareness of the provisional nature of the facts and principles associated with a field of study.

4.2 Practical Skills

The following are required in this context;

- planning, conducting, and reporting on investigations, including the use of secondary data
- collecting and recording diverse types of information generated by a wide range of methodologies and summarising it using appropriate qualitative and/or quantitative techniques
- devising, planning and undertaking field, laboratory or other investigations in a responsible, sensitive and safe manner, paying due diligence to risk assessment; ethical and data protection issues; rights of access; relevant health and safety regulations; legal requirements; and the impact of investigations on the environment
- appreciating and analysing financial and other management information and using it in decision-making.

4.3 Numeracy Skills

The following are required in this context;

- appreciating issues of sample selection, accuracy, precision and uncertainty during collection, recording and analysis of data in the field, laboratory or collated from secondary sources
- appreciating the difficulties of having incomplete information on which to base decisions
- understanding the nature of risk
- preparing, processing, interpreting and presenting data, using appropriate qualitative and quantitative techniques and packages
- solving numerical problems using computer based and other techniques.

4.4 Communication Skills

The following are required in this context;

- receiving, evaluating and responding to a variety of information sources (that is electronic, textual, numerical, verbal, graphical)
- communicating accurately, clearly, concisely, confidently and appropriately to a variety of audiences in written, verbal and graphical forms
- contributing constructively to group discussions

- considering, appreciating and evaluating the views of others.

4.5 ICT Skills

- using the Internet critically as a means of communication and a source of information
- demonstrating competence in the use of computer based information handling and data processing tools
- using computer software to communicate information to a range of audiences effectively.

4.6 Interpersonal and Teamwork Skills

- organising teamwork and participating effectively in a team
- setting realistic targets
- identifying individual and collective goals and responsibilities
- planning, allocating and evaluating the work of self, individuals and teams
- performing in a manner appropriate to allocated roles and responsibilities
- recognising and respecting the views and opinions of other team members having positive intent
- reflecting on and evaluating own performance as an individual or as a team member.

4.7 Self Management and Professional Development Skills

- appreciating the need for professional codes of conduct where applicable
- recognising the moral, ethical and social issues related to the subject
- assuming responsibility for one's actions
- identifying and working towards targets for personal, academic and career development
- developing an adaptable and flexible approach to study and work
- developing the skills necessary for self managed and lifelong learning (that is, working independently, time management and organisation skills) demonstrating the competence, behavior and attitude required in a professional working life, including initiative, leadership and team skills

5. TEACHING, LEARNING AND ASSESSMENT

The ultimate goal of student learning will be the considered application of knowledge and skills together with an appreciation of the integrative nature of the subject areas in an appropriate context.

As students progress through a degree programme there will be increasing reliance on student centred modes of learning, which will foster the development of a professional approach to lifelong learning.

Graduates in forestry have wide employment prospects and need to be adaptable as well as having subject specific knowledge and abilities and transferable skills. There will be many different formats for teaching and learning in order to develop these attributes. B. Sc. Special degree programmes will incorporate a research project leading to a thesis. Teaching programmes will contain most (but not necessarily all) of lectures, tutorials and seminars, student led seminars, specialist external lectures, practical classes in and outside the

laboratory (defined broadly and including the computing laboratory and other specialist facilities), field exposures, literature based research database, web based and other e learning technologies, case studies, problem solving and problem based learning, working in groups on realistic/live projects with external organizations, other exercises which require students to integrate information and techniques, visits to commercial and industrial businesses, consumer organisations, public services, policymaking bodies.

As forestry is a field oriented subject, almost all the course units should have a substantial field component. Field knowledge and skills which are mandatory for students following natural sciences.

In addition to the above, opportunities for work experience, for example a managed placement or work based learning will provide the much needed work experience in the world of work related to the discipline of forestry and related areas.

The self learning component should be significant especially with the Special or Honours Degree Courses. The percentage of this should be increased in honours degrees. Final year research projects in honours degrees provides students opportunities to study special topics in depth. These projects stimulate students' independent thinking ability, hands-on experiences, and assist students to be innovative and initiative. The write up of the research dissertation develops students' organizational skills and let students to familiarize themselves to use library facilities and other Internet based data bases. The research component also, helps students to develop their IT skills and under pins students' transferable skills. This helps students to improve their oral and written communication, presentation and information technology (IT) skills.
Industrial training programs which is usually conducted in the final year of the Degree provide opportunity for students to directly expose to a local industry in order to acquire real world experiences. These programs, also, contribute towards developing interpersonal skills, team work, and develop social and personal skills necessary for day today working.

Assessment will be formative as well as summative and is likely to take a number of forms, including examinations (written, oral or practical; closed or open book), and to incorporate continuous assessment. The style of assessment will be linked to clearly defined goals and anticipated learning outcomes. It will be managed to promote deep rather than surface learning.

6. STANDARDS OF ACHIEVEMENT

Standards of achievement are expressed as statements of learning outcomes. These describe what a student should be able to achieve on completion of the degree either general or honors. The outcomes will be demonstrable through appropriate assessment strategies. It is recognized, however, that not all learning outcomes can be objectively assessed.

The multidisciplinary nature of the subject needs to be considered when evaluating levels of student performance. It is important that standards of achievement reflect the shared values of the academic community as moderated internally and externally by academic quality procedures, including the external examiner system.
Table 1 characterize three levels of performance of students;

threshold performance is the minimum required to gain a degree students at this level will be able to demonstrate an acceptable level of ability and skills

typical performance is that expected of students on the boundary between lower and upper second class honours; such students will demonstrate definite competence and skills

excellent performance is demonstrated by students gaining first class honours; these students will have a range of competencies and skills at an enhanced level. Students awarded a 'good honours degree' will have achieved or exceeded typical performance.

Performance levels are defined in Table 1 for the seven main categories of abilities and skills outlined for subject specific skills. Whereas the full range of abilities and skills should feature in undergraduate programmes, their point of introduction and the level of engagement will be decided by curriculum designers.

To reach a given level of performance at the completion of a degree in forestry or related areas, students should demonstrate achievement across the main categories of abilities and skills in Table 1. However, a lower performance in one category may be compensated by a higher performance in another. Table 2 shows the subject specific knowledge of the above categories of performers.

Table 1: Definition of performance levels for degrees in forestry

On completion of the degree students should be able to:			
Type of skills	**Threshold performance (general pass)**	**Typical performance (2nd class lower division)**	**Excellent performance (1st class and 2ndClass Upper Division) including B.Sc. Special Degree**
Intellectual Skills ·	• recall knowledge based on the directly taught programme • demonstrate some understanding of subject specific theories, paradigms, concepts and principles • demonstrate ability to define and solve routine problems • collate and summarise information • integrate lines of evidence from a limited range of sources to support findings and hypotheses • demonstrate some ability to consider issues from a range of multidisciplinary and interdisciplinary perspectives • source academic literature and extract relevant points.	• recall knowledge based on the directly taught programme with some evidence of wider enquiry • demonstrate understanding of subject specific theories, paradigms, concepts and principles, as well as some understanding of more specialised areas • demonstrate ability to define problems, and devise and evaluate solutions to both routine and unfamiliar problems • analyse, synthesise, summarise and evaluate information • integrate lines of evidence from a range of sources to formulate and test hypotheses • demonstrate the ability to consider issues from a range of multidisciplinary	• recall knowledge based well beyond the directly taught programme • demonstrate thorough understanding of subject specific theories, paradigms, concepts and principles as well as in-depth understanding of more specialised areas • demonstrate ability to define problems, devise and evaluate possible solutions, and to solve both routine and unfamiliar problems confidently • seek out, analyse, synthesise, summarise and critically evaluate information • show a well developed ability to integrate lines of evidence from a wide range of sources to formulate and test hypotheses • demonstrate the ability to consider issues from a wide

		and interdisciplinary perspectives and to draw on appropriate concepts and values in arriving at a critical assessment • critically appraise academic literature and other sources of information	range of multidisciplinary and interdisciplinary perspectives and to draw on appropriate concepts and values in arriving at a critical assessment • demonstrate a highly developed ability for critical appraisal of academic literature and other sources of information.
Practical Skills	• plan, conduct and present an independent investigation with reliance on guidance • relate investigations to some prior work and reference it appropriately • use appropriate laboratory and field equipment safely • apply a range of methods to solve problems • use technologies to address problems • describe and record in the field and laboratory • interpret practical results with guidance • present results of investigations in a number of formats	• plan, conduct and present an independent investigation with some reliance on guidance • relate investigations to prior work and reference it appropriately; recognise when information is incomplete • use appropriate laboratory and field equipment competently and safely • select and apply a range of appropriate methods to solve problems • use appropriate technology to address problems efficiently • describe clearly and record accurately in the	• suggest, plan, conduct and present an independent investigation with limited reliance on guidance • relate investigations to prior work, be aware of recent research developments and reference it appropriately • use appropriate laboratory and field equipment highly competently and safely • select, justify and apply a range of appropriate methods to solve challenging problems • select and use appropriate technology to address problems effectively • describe adequately and record accurately in the field and laboratory

		field and laboratory • interpret practical results in a logical manner • present research findings effectively and appropriately in a number of formats.	• interpret practical results with flair • present research findings effectively and with flair in a number of formats.
Numeracy Skills	• select an appropriate sampling procedure • recognise when information is incomplete • appreciate risk • process and interpret data • solve basic numerical problems using appropriate techniques.	• define a suitable and effective sampling procedure • recognise incomplete sets of information and propose appropriate solutions • understand risk • process and interpret data effectively • solve a range of numerical problems using appropriate techniques.	• define a suitable and efficient sampling procedure • recognise incomplete sets of information and suggest solutions • understand and quantify risk • choose appropriate techniques to process data and interpret them effectively • solve challenging numerical problems using appropriate techniques.
Communication Skills	• communicate to a variety of audiences in written, graphical and verbal forms • make contributions to group discussions • listen and respond to others.	• communicate effectively to audiences in written, graphical and verbal forms • contribute coherently to group discussions • listen attentively and respond to others.	• communicate effectively and engagingly to a variety of audiences in written, graphical and verbal forms • contribute constructively to group discussions • listen to, evaluate and respond effectively to the views of others.

ICT skills	• use the Internet for communication and information retrieval • handle computer based information with guidance, using appropriate techniques and software.	• use the Internet critically for communication and information retrieval • handle computerbased information using appropriate techniques and software.	• use the Internet critically and maginatively for communication and information retrieval • handle computer based information confidently and competently using appropriate techniques and software.
Interpersonal and teamwork skills	• make some contribution to teamwork and goals • recognise and respect the views of others • reflect on team performance.	• organise a team effectively • contribute effectively tteamwork • identify individual and collective goals • recognise and respect the views of others • evaluate performance as an individual and team member.	• organise and motivate a team effectively • contribute effectively and enthusiastically to teamwork • identify individual and collective goals and responsibilities • recognise and respect the views of others • evaluate performance as an individual and team member, and learn for the future.
Self management and professional development skills	• recognise the existence of moral and ethical issues associated with the subject • appreciate the need for professional codes of conduct	• recognise and be able to comment on the moral and ethical issues associated with the subject • understand and be able to apply professional codes of conduct	• recognise, explain and evaluate the moral and ethical issues associated with the subject • understand and be able to apply professional codes of conduct • assume responsibility for

	• accept some responsibility for their own learning • identify targets for personal, career and academic development • be adaptable and have a flexible approach to study and work • develop some skills necessary for self managed and lifelong learning (that is, independent study, time management, organisational skills) • recognise personal strengths and weaknesses.	• accept responsibility for their own learning • identify and work towards targets for personal, career and academic development • take a responsible, adaptable and flexible approach to study and work • develop the skills necessary for self managed and lifelong learning (that is, independent study, time management, organisational skills) • analyse personal strengths and weaknesses. professional codes of conduct • assume responsibility for their own learning • identify and work towards ambitious targets for personal, career and academic development • manage a responsible, adaptable and flexible approach to study and work	their own learning • identify and work towards ambitious targets for personal, career and academic development • manage a responsible, adaptable and flexible approach to study and work • develop the skills necessary for self managed and lifelong learning (that is, independent study, time management, organisational skills) to an enhanced level • analyse personal strengths and weaknesses and take account of them.

		• develop the skills necessary for self managed and lifelong learning (that is, independent study, time management, organisational skills) to an enhanced level • analyse personal strengths and weaknesses and take account of them	

Table 2: Subject specific knowledge and understanding in degrees in forestry

Threshold performance (general pass)	**Typical performance (2nd class lower division)**	**Excellent performance (1st class and 2nd Class Upper Division) and Special Degree**
Graduates will have some familiarity with the main scientific and socioeconomic principles underlying forestry. They will be able to: • identify the main physical and biological processes that shape the natural world • Identify the role forest animals and microorganisms play in forests • identify the economic concepts applicable to natural resource management • describe the main social factors that influence the use of natural resources. Graduates will understand the structure and behaviour of forest ecosystems. They will be able to: • describe the distribution and main features of the world's forests with special reference to those of Sri Lanka and also the related ecosystems ie riverine forests, mangroves • describe the main physical and biological components of forest environments • identify the processes that control the structure and function of forest ecosystems. Graduates will understand the main functions and impacts of forests. They will be able to: • describe some of the multiple benefits that forests provide	Graduates will have a well grounded understanding of the scientific and socioeconomic principles underlying forestry. They will be able to: • explain the physical and biological processes that shape the natural world and their modification by human activity • explain the economic concepts applicable to natural resource management and apply them in particular situation • explain the social factors that influence the use of natural resources and identify the relative importance of different factors in particular situations. Graduates will have a well grounded understanding of the structure and behaviour of forest ecosystems. They will be able to: • describe and explain the distribution and features of the world's forests • describe the physical and biological components of forest environments and explain how they vary in time and space	Graduates will have a comprehensive understanding of the scientific and socioeconomic principles underlying forestry. They will demonstrate excellent knowledge of the literature, creative application of the material, and a capacity for synthesis. This will distinguish the manner in which they: • explain the physical and biological processes that shape the natural world and evaluate their modification by human activity • explain the economic concepts applicable to natural resource management and apply them imaginatively in particular situations • explain the social factors that influence the use of natural resources and evaluate the relative importance of different factors in particular situations. Graduates will have a comprehensive understanding of the structure and behavior of forest ecosystems. They will demonstrate excellent knowledge of the literature, creative application of the material, and a capacity for synthesis. This will distinguish the manner in which they:

• Identify the main effects of forestry on society and the environment • identify the main features of National Forestry Policy for Sri Lanka and its implications on the development of forestry in the country Graduates will understand the meaning and some of the practices of sustainable forest management. They will be able to: • define sustainability in a forestry context • identify the main components of forest planning • Be very conversant of the forest measurements • describe some of the forestry practices used to meet management objectives • describe some of the methods used for the economic and environmental appraisal of forestry practices.	• describe the processes that control the structure and function of forest ecosystems and explain how they vary in time and space. Graduates will have a well grounded understanding of the functions and impacts of forests. They will be able to: • explain the multiple benefits that forests provide, and evaluate the relative importance of these benefits in particular situations • explain the effects of forestry on society and the environment, and evaluate the relative importance of these effects in particular situations • explain how forest policy is developed and delivered, and analyse and describe the forestry policy for a particular country or region. • describe and explain in detail the distribution and features of the world's forests • describe the physical and biological components of forest environments and explain how and why they vary in time and space • describe the processes that control the structure and function of forest ecosystems and explain how and why they vary in time and space.	• describe and explain in detail the distribution and features of the world's forests • describe the physical and biological components of forest environments and explain how and why they vary in time and space • describe the processes that control the structure and function of forest ecosystems and explain how and why they vary in time and space. Graduates will have a comprehensive understanding of the functions and impacts of forests. They will demonstrate excellent knowledge of the literature, creative application of the material, and a capacity for synthesis. This will distinguish the manner in which they: • explain the multiple benefits that forests provide, and evaluate the relative importance of these benefits in particular situations • explain the effects of forestry on society and the environment, and evaluate the relative importance of these effects in particular situations developed and delivered, and evaluate the forestry policy for a particular country or region.

	Graduates will have a comprehensive understanding of the functions and impacts of forests. They will demonstrate excellent knowledge of the literature, creative application of the material, and a capacity for synthesis. This will distinguish the manner in which they: • explain the multiple benefits that forests provide, and evaluate the relative importance of these benefits in particular situations • explain the effects of forestry on society and the environment, and evaluate the relative importance of these effects in particular Graduates will have a well grounded understanding of the meaning and practice of sustainable forest management. They will be able to: • explain the meaning of sustainability in forestry and evaluate the sustainability of some forestry practices • explain the process of forest planning, and describe how the process is applied in different situations • explain the forestry practices used to meet different management objectives, and describe how they are applied in particular situations	Graduates will have a comprehensive understanding of the meaning and practice of sustainable forest management. They will demonstrate excellent knowledge of the literature, creative application of the material, and a capacity for synthesis. This will distinguish the manner in which they: • explain the meaning of sustainability in forestry and evaluate the sustainability of different forestry practices • Identify the role forest animals and microorganisms play in forests • explain the process of forest planning, and evaluate the way in which process is applied in different situations • explain and evaluate the forestry practices used to meet different management objectives • explain and evaluate the methods used for the economic and environmental appraisal of forestry practices.

	• explain the methods used for the economic and environmental appraisal of forestry practices.	
		Special reference to Special Degree students as well as excellent performers in both degree types ie B.Sc. General and B.Sc. Special. They will be able to; • suggest, plan, conduct and present an independent investigation with limited reliance on guidance • relate investigations to prior work, be aware of recent research developments and reference it appropriately • use appropriate laboratory and field equipment highly competently and safely • select, justify and apply a range of appropriate methods to solve challenging problems • select and use appropriate technology to address problems effectively • describe adequately and record accurately in the field and laboratory • interpret practical results with flair • present research findings effectively and with flair in a number of formats.
		• define a suitable and efficient sampling procedure • recognise incomplete sets of information and suggest solutions • understand and quantify risk

		• choose appropriate techniques to process data and interpret them effectively • solve challenging numerical problems using appropriate techniques.
		• communicate effectively and engagingly to a variety of audiences in written, graphical and verbal forms • contribute constructively to group discussions • listen to, evaluate and respond effectively to the views of others.
		• use the Internet critically and imaginatively for communication and information retrieval • handle computer based information confidently and competently using appropriate techniques and software.
		• organise and motivate a team effectively • contribute effectively and enthusiastically to teamwork • identify individual and collective goals and responsibilities • recognise and respect the views of others • evaluate performance as an individual and team member, and learn for the future.
		• recognise, explain and evaluate the moral and ethical issues associated with the subject • understand and be able to apply professional codes of conduct • assume responsibility for their own learning • identify and work towards ambitious targets for personal, career and academic

		development • manage a responsible, adaptable and flexible approach to study and work • develop the skills necessary for self managed and lifelong learning (that is, independent study, time management, organisational skills) to an enhanced level • analyse personal strengths and weaknesses and take account of them.

7. ANNEX1. MEMBERS OF THE BENCHMARK GROUP

Prof. Hemanthi Ranasinghe	University of Sri Jayewardenepura
Prof. B. M. P. Singhakumara	University of Sri Jayewardenepura
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Dr. G. A. D. Perera	University of Peradeniya
Prof. K. P. Abeywickrama	University of Kelaniya
Prof. D. M. Sirisena	University of Kelaniya