

STUDENTS' GUIDE TO HIGHER DIPLOMA IN SOFTWARE ENGINEERING



2020

DEPARTMENT OF COMPUTING &
INFORMATION SYSTEMS
FACULTY OF APPLIED SCIENCES
WAYAMBA UNIVERSITY OF SRI LANKA



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Wayamba University of Sri Lanka

Wayamba University of Sri Lanka (WUSL) is one of the latest and modern learning and research institutions in Sri Lanka. The programmes offered at Wayamba University are different from others as it offers students much more than a mere educational qualification. Curricular of the University aim at providing students a total holistic approach to one of a kind educational experience that enables them to achieve career goals along with creativity and innovativeness. The graduates are expected be employable individuals as well as valuable citizens who will be of benefit to the society. The high practical content and knowledge implementation opportunities are characteristic features of our undergraduate study programmes which results in a good record of graduate employment.

Faculty of Applied Sciences

The Faculty of Applied Sciences of the Wayamba University of Sri Lanka was established with effect from 01st October, 1999 by the Government Notification in the Extraordinary Gazette No. 1093/8 of Tuesday, 17 August, 1999. The Faculty is located at Kuliypitiya Premises of the University and was assigned with four Departments of Study namely, **Computing & Information Systems**, Electronics, Industrial Management and Mathematical Sciences.

Department of Computing & Information Systems

The Department of Computing & Information Systems contributes to the academic programme of the Faculty of Applied Sciences by offering Computing and Information Systems (CMIS) as a major subject for the B.Sc. (General) Degree and the B.Sc. (Joint Major) Degree programmes which fulfills industry needs. From year 2017, they extended their service by offering a B.Sc. (Special) Degree in computer science to cater to the current needs of the industry as well as to ensure a path towards academia.

Presently, the Department offers more than twenty course modules including projects and industrial training. Courses range from introductory level to advanced and high demanding course modules coupled with practical components covering all essential areas for an undergraduate computer science degree.

Students are provided opportunities to gain theoretical knowledge in the major areas of Computer science and acquire practical competence in computer programming, gain hands on experience in using different operating systems and varied software including open source software, and to develop transferable skills; thus laying a firm in IT for career opportunities and for higher studies.

Today the Department is functioning on its own resources, and contributes to the academic programmes of the Faculty by offering above mentioned degrees. As of this year, the Department has eight permanent lecturers and three computer laboratories with 110 networked computers to conduct practical classes and examinations. Measures are also underway to expand the laboratory facilities to meet requirements of the increased student intakes.

The Department has also introduced two new external study programs, The Diploma in Software Engineering and The Higher Diploma in Software Engineering.

The Vision of the Department...

“To be a leading higher education institute in Sri Lanka recognized for its outstanding Computer Science programmes, innovative research, scholarship and outreach with the ultimate target of serving the mankind.”

The Mission of the Department...

“To develop highly qualified and responsible citizens who contribute to the improvement of society and sustainable development of the country through Computer Science and outreach with the ultimate target of serving the mankind.”

Overview of the Higher Diploma in Software Engineering

Wayamba University of Sri Lanka has been offering several diplomas related to computer science and information technology, through the Department of CMIS of the Faculty of Applied Sciences and the ICT Centers at both Kuliyaipitiya and Makandura premises. These courses provide quality education to learners coming from different educational backgrounds. The attraction from the public to these programmes over the years is evidence of their need for quality education and opportunities to obtain recognized academic qualification from a reputed educational institute. Wayamba University being the highest level educational institute and the only state university in the North Western province is in a strong position to provide such education.

The Department of CMIS is in the view that introducing a Higher Diploma adhering to the latest SLQF standards would open a progressive educational avenue to address such educational needs, while providing an opportunity to advance the academic qualifications already provided by other related diploma programmes of the University. The Department is also in the process of developing an external degree programme progressively, to provide completeness to the external academic qualification path as well as to provide comprehensive graduate level education to the suitable general public at a reasonable cost.

The Higher Diploma in Software Engineering (HDSE) ensures that participants will have comprehensive skills in systematic designing and development of software applications. Essential skills and techniques are taught and practiced to perfection in a creative atmosphere with a strong emphasis on Software Engineering concepts.



THE AIM OF THE PROPOSED PROGRAM IS TO;

- PRODUCE SKILLED SOFTWARE SOLUTION PROVIDERS WITH SOUND THEORETICAL AND PRACTICAL KNOWLEDGE IN SOFTWARE ENGINEERING THEORIES AND PRACTICES, WITH THE EMPHASIS ON SOFTWARE DESIGN AND DEVELOPMENT AS WELL AS PROJECT MANAGEMENT,
- DEVELOP PROFESSIONAL QUALITIES, TRANSFERABLE AND SUBJECT SPECIFIC SKILLS AND RIGHTFUL ATTITUDE TO PURSUE A CAREER IN SOFTWARE ENGINEERING.



AT THE END OF THE PROGRAM, THE PARTICIPANT WILL BE ABLE TO;

- APPLY PRINCIPLES AND TECHNIQUES OF SOFTWARE ENGINEERING TO THE DEVELOPMENT AND SUPPORT OF SOFTWARE SYSTEMS,
- DEVELOP SIMPLE SOFTWARE PROJECTS TO APPLY KNOWLEDGE IN ANALYZING, DESIGNING AND IMPLEMENTING COMPUTING SOLUTIONS,
- DEMONSTRATE PROFESSIONAL ATTITUDES WITH NECESSARY LEADERSHIP AND TEAMWORK SKILLS,
- SHOWCASE IN INDEPENDENT SOFTWARE DEVELOPMENT TASKS.

The Structure and Content of the Course

Higher Diploma in Software Engineering emphasizes in developing basic skills into the area of Systems Analysis & Design, Database Design, Software Engineering and Business Information Systems. The course has a marked practical emphasis to ensure that participants reach a level of programming competence sufficient to develop semi-advanced level software applications individually.

The HDSE is a program with total credit weighting amounting to 60. A credit is defined as the workload of 15 lecture hours. The participants are required to follow all the course modules mentioned in the course curriculum in four terms, including two comprehensive Projects at the end of each second term. A minimum of 100 hours of study is recommended for each module. Also, a minimum 200 hours of study recommended for a project.

1. Duration of the Course

Two Academic Years [Total 840 student contact hours and 1050 student directed study hours, over 104 weeks which includes a two Comprehensive Projects at the second semester of each academic year (weekend classes)]

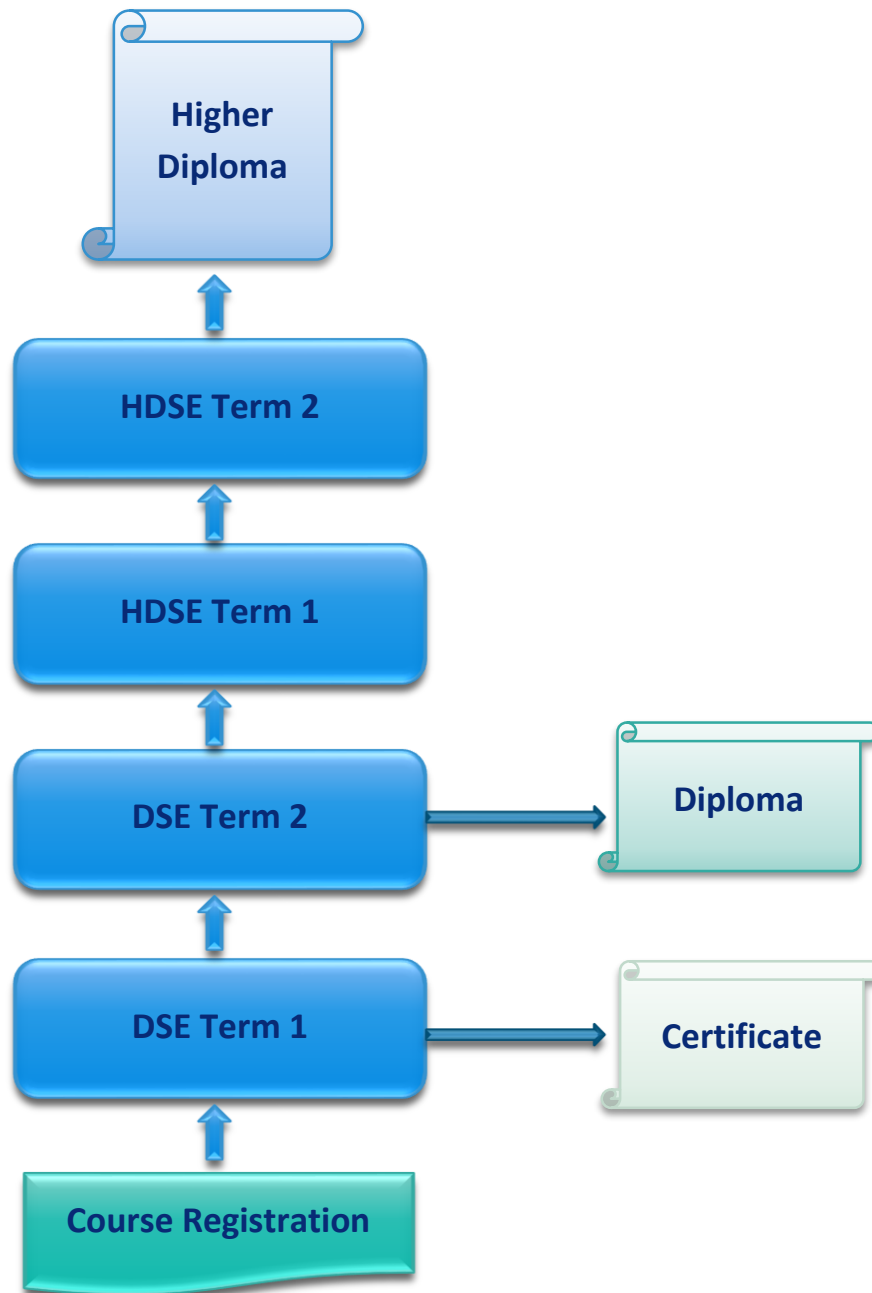
2. Location

Department of Computing and Information Systems, Faculty of Applied Sciences located at the Kuliapitiya premises of the Wayamba University of Sri Lanka.

3. The Syllabus

The participants are required to follow all the subjects mentioned in course curriculum in both academic years, including comprehensive projects at the second semester of each year.

4. The HDSE path



5. Course Curriculum - Higher Diploma in Software Engineering

Course Code	Course Name	Credits	Pre-requisites	
DSE 113	Principles of Computing	3	-	Academic Year 1
DSE 123	Fundamentals in Software Engineering	3	-	
DSE 132	Software Engineering Methodologies	2	-	
DSE 143	Principles of Database Management Systems	3	-	
DSE 152	Database Development Practices	2	-	
DSE 163	Computer Programming Concepts	3	-	
DSE 173	Data Communication and Computer Networks	3	-	
Number of Credits in Semester I		19		
Exit Point 1: Certificate in Software Engineering				
DSE 213	Advanced Computer Programming Concepts	3	-	
DSE 222	Computer Architecture	2	-	
DSE 232	Mathematics for Computing	2	-	
DSE 244	Computer Project I	4	-	
Number of Credits in Semester II		11	-	
Total Number of Credits at Diploma Level		30		
Exit Point 2: Diploma in Software Engineering				
HDSE 113	Software Engineering Theories and Practices	3	DSE 123	Academic Year 2
HDSE 123	Advanced Database Management	3	DSE 143	
HDSE 132	Database Management Systems Development	2	DSE 143,DSE 152	
HDSE 143	Object Oriented Programming	3	DSE 163, DSE 173	
HDSE 153	Web Development Techniques	3	-	
Number of Credits in Semester I		14	-	
HDSE 213	Data Structures and Analysis of Algorithms	3	-	
HDSE 222	Data Structures and Algorithms Practices	2	HDSE 213, HDSE 143	
HDSE 233	E-Commerce	3	DSE 213	
HDSE 242	Report Writing Skills	2	-	
HDSE 252	Probability and Statistics for Computing	2	DSE 232	
HDSE 264	Computer Project II	4	-	
Number of Credits in Semester II		16		
Total Number of Credits at Higher Diploma Level		60		
Exit Point 3: Higher Diploma in Software Engineering				

6. Teaching & Learning Methods

The program contents are delivered through lectures, classroom discussions, presentations, practical sessions and group projects. The material for all modules except independent project is taught through lectures. In most of the cases supporting materials, including notes, slides and sometimes videos, are made available to participants. Lecturers may also direct participants to recommended reading to supplement the lecture material. Online resources and online learning platform or LMS will be used throughout the course for submission of tutorials, quizzes, lecture notes and presentations and assignments. The lecturer may also choose to conduct lectures online as well.

Examinations and Evaluations

Evaluation will be done at the end of each course module. Evaluation consists of a term end examination AND continuous evaluation component comprised of assignments, reports, presentations and classroom tests, etc.

1. Eligibility for the end of course examination

- i. A person shall not be permitted to take the end course examination unless:
 - a. he/she has been duly registered as a Higher Diploma course candidate as from the commencement of the academic year/term in which that examination is held.
 - b. he/she has obtained a mark of forty percent (40%) or more in the continuous evaluation in the respective course of study.
 - c. he/she has followed at least eighty percent (80%) of the classes held.
- ii. All rules relating to the Examination Procedure, Offenses and Punishment of the Wayamba University of Sri Lanka apply to the Higher Diploma examination.
- iii. Without prejudice to the generality of rule relating to the continuous assignment shall be formulated and implemented by the Course Director and matters relating to such tests shall be decided by the Board of Study on the recommendation of the Course Lecturer of the programme.

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- iv. If a candidate fails to obtain the prescribed attendance in any subject he/she has to repeat it at the repeat exam.
 - v. Medical leave will only be accepted for a maximum of five (5) class days per semester.

2. Evaluation Criteria

- i. Evaluation will be done at the end of each course module
- ii. Evaluation consists of a term end examination AND continuous evaluation component comprised of assignments, reports, presentations and classroom tests, etc.
 - a. End of term examination carries a weight of minimum 50% of the final marks assigned to a subject.
 - b. Continuous evaluation component carries a weight of maximum 50% of the final mark assigned to a subject. This may comprise marks from one or more of the continuous evaluation modes.
 - c. Project Report shall be evaluated according to the guidelines prepared by the Higher Diploma in Software Engineering.
- iii. To pass a subject, participant must obtain 40 percent from both the continuous assessments and the final examination.
- iv. With the consent of the Board of Study, the percentages assigned to the continuous assignments and the end-semester examination can be altered.

NOTE: Medical certificates will not be taken in to account for continuous assessments. Students will not receive marks for such components if he/she fails to attend the regular continuous assessments or to meet the requirements due to any reason.

3. Subject Grading System

Marks	Grade
85 - 100	A+
70 - 84	A
65 - 69	A-
60 - 64	B+
55 - 59	B
50 - 54	B-
45 - 49	C+
40 - 44	C
35 - 39	C-
30 - 34	D+
25 - 29	D
0 - 24	E
0	I (MC/DFR/AB)*

- i. The University shall display on the notice board the names of candidates who have obtained the Higher Diploma. In addition, all candidates shall be informed individually of the results of the examinations.
- ii. The results of each term will be reported to the candidates at the end of each term with the grades earned by the candidate for each course as indicated in grading scale (see above). The results sheet will be issued to each candidate after the release of results of each term by the Examination Branch of the university.

* A student who fails to sit for a semester end examination or part of the semester end examination components of a course will receive a Grade of I, and the student is required to sit only for the missed component in the next attempt. The maximum grade given for the course module when the student has sat for the missed component in the next attempt is C, unless the reason for absence is accepted by the Board of Study and Faculty Board.

4. Overall Grading System

The following grading scale is used to evaluate the overall performance of the student in the Diploma considering the total average marks obtained.

Grading Scales

Total Average Marks	Overall Grade
70 – 100	Distinction Pass
60 – 69	Merit Pass
50 – 59	Credit Pass
40 – 49	Ordinary Pass
0 – 39	Fail

5. Award of Diploma

- i. “HIGHER DIPLOMA IN SOFTWARE ENGINEERING” will be awarded for those who pass his/her course works and the comprehensive project. To be eligible to pass the Higher Diploma in Software Engineering, student:
 - a. must complete the required number of credits, i.e. 60 credits,
 - b. must have at least “C-” grade in all courses,
 - c. must obtain Ordinary Pass or above in overall average marks,
 - d. complete the relevant requirements within a period of four academic years after the registration.
- ii. If a candidate is absent from an examination of a course unit after completing continuous evaluation, the following symbol will be indicated appropriately.
 - e. Absent due to medical reason, which has been approved*, will be given symbol of “MC” (Medical).
 - f. Absent due to valid reasons, which has been approved*, will be given symbol of “DFR” (Deferred).
 - g. Absent without valid reasons will be given symbol of “AB” (absent).

6. Repeating a Term End Examination

A candidate, who fails the term end examination, shall obtain the 40 percent mark from the allocated marks for that course within 04 academic years of duration.

i. *Repeat examination*

- a) The candidates, who fail to score 40 percent from allocated marks for each continuous assessment and end of term examination in any subject is deemed to have partly completed the examination. They can sit for failed subjects in the repeat examination. An immediate repeat examination will be held after the pre-releasing of the results, approved by the Board of Study. They are expected to pay the examination fee for relevant subjects. The failures of the repeat examination will have to sit for the proper examination in the following year. The examination fee is to be paid for every attempt.
- b) A candidate can repeat an examination only within the maximum allocated period of registration. The highest grade obtainable in such an attempt will be “C” pass. The grace attempt will be subject to the approval of the Faculty Board and the Senate.

7. Postponement of the Academic Year

- a) If a candidate who has been registered for the course applies for a postponement of the academic year he/she may be given an opportunity to follow within the next two years of course. The application fee and the course fee paid are transferable only if the candidate has not attended a single lecture. Such candidates are required to pay the registration fee for the new academic year. However, if the course fee of the next course has been increased, he/she has to pay the balance of the course fee or any other relevant fees determined by the board of study, to get registered for the new intake.
- b) If a candidate applies for a postponement after attending lectures, he/she is not allowed to postpone the academic year.
- c) The request for postponement should be made to the Course Director within a month after the registration.
- d) The selected candidates are not allowed to transfer their registration to any other candidates.

8. Keeping Away from Classes

- i. No candidate shall keep away from classes or leave the island or withdraw from examination or from any other aspect of evaluation without the prior approval of the Board of Study
- ii. Excuses will be granted only if the absence is due to a grave cause such as the student's serious ill health, or death of a member of the immediate family or any other cause which is accepted by the Board of Study and approved by the Senate. Even though excuse is granted to a student, he/she can sit for the examination only in the current occasion or next immediate occasion as a proper candidate.
- iii. If student fails to attend academic activities or examinations due to a medical reason, such absence should be reported to the Academic Coordinator by a valid medical certificate immediately. 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 medical officers.
 - a. University Medical Officer (UMO)
 - b. District Medical Officer
 - c. Consultant Specialist in the relevant field
 - d. Head of a Government Base Hospital
 - e. Medical Superintendent of a Provincial Ayurvedic Government Hospital
 - f. Ayurvedic Physician registered in the Ayurvedic Medical Council
- iv. Board of Study will accept medical certificates which are certified by the University Medical Officer. However, if acceptable to the Board of Study, special requests can be considered.
- v. Under exceptional circumstance, medical certificates issued by private hospitals or registered private practitioners could be considered by the University Medical Officer or the Medical Board.
- vi. When students fall ill during an examination session, such illness should immediately be reported to the University Medical Officer at the University Medical Centre.

Absence of a candidate from an examination in the event of death of an immediate family member will be excused if approval is obtained from the Board of Study and the senate by submission of death certificate and appropriate proof of relationship. In that event, the student will receive a symbol of “DFR” (Deferred) for that course.

Teaching Panel

Director – HDSE



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