Diploma in Software Engineering – 2020

Student Handbook

Department of Computing and Information Systems

Faculty of Applied Sciences

Wayamba University of Sri Lanka

Wayamba University of Sri Lanka (WUSL)

WUSL is one of the latest and modern learning and research institutions in Sri Lanka. Wayamba University is located at two premises- Kuliyapitya and Makandura. The University has initiated several research activities with industry collaborations. Currently the WUSL has six faculties, the Faculty of Agriculture & Plantation Management, the Faculty of Applied Sciences, the Faculty of Business Studies & Finance, the Faculty of Technology, the Faculty of Livestock, Fisheries & Nutrition and the Faculty of Medicine.

Faculty of Applied Sciences (FAS)

The Faculty of Applied Sciences of the Wayamba University of Sri Lanka was established with effect from 01 October, 1999 by the Government Notification in the Extraordinary Gazette No. 1093/8 of Tuesday, 17 August, 1999. The Faculty is located at Kuliyapitiya 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 and Information Systems

CMIS is one of the key departments of the university servicing the undergraduate community in teaching and research. With a legacy of eighteen years, the department has been the popular destination for many high performing and motivated young undergraduates over the years and further it has been the most sought after field of study since its inception. Currently the department is heading towards impactful innovations to contribute towards wealth creation and thereby support development of the country.

OUR VISION

"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"

OUR MISSION

"To develop highly qualified and responsible citizens who contribute to the improvement of society and sustainable development of the country through Computer Science"

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Overview

Diploma in Software Engineering emphasizes in developing basic skills into the areas 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 simple software applications individually.

It is widely recognized in Sri Lanka as an academic qualification which fulfills entry requirements to a degree earning pathways. It is also considered as a professional qualification which provides superior recognition for practicing computer professionals.

AIM

- 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.

Programme Learning Outcomes

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.

Program Structure

Course Duration : One Academic Year [52 weekend classes]

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

The DSE is a program with total credit weighting amounting to 30. 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 both terms, including a comprehensive Project at the end of the second team. A minimum of 100 hours of study is recommended for each module. Also, a minimum 200 hours of study recommended for project.

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          DIPLOMA
           (DSE)
             ↑
          Pass All
    ┌──────────────────┐
    │     Term II      │
    │ EXAMINATIONS+ PROJECT │
    └──────────────────┘
             ↑
    ┌──────────────────┐            Pass All
    │     Term I       │ ─────────────────────▶   CERTIFICATE
    │  EXAMONATIONS    │
    └──────────────────┘
             ↑
    ┌──────────────────┐
    │  Registration    │
    └──────────────────┘
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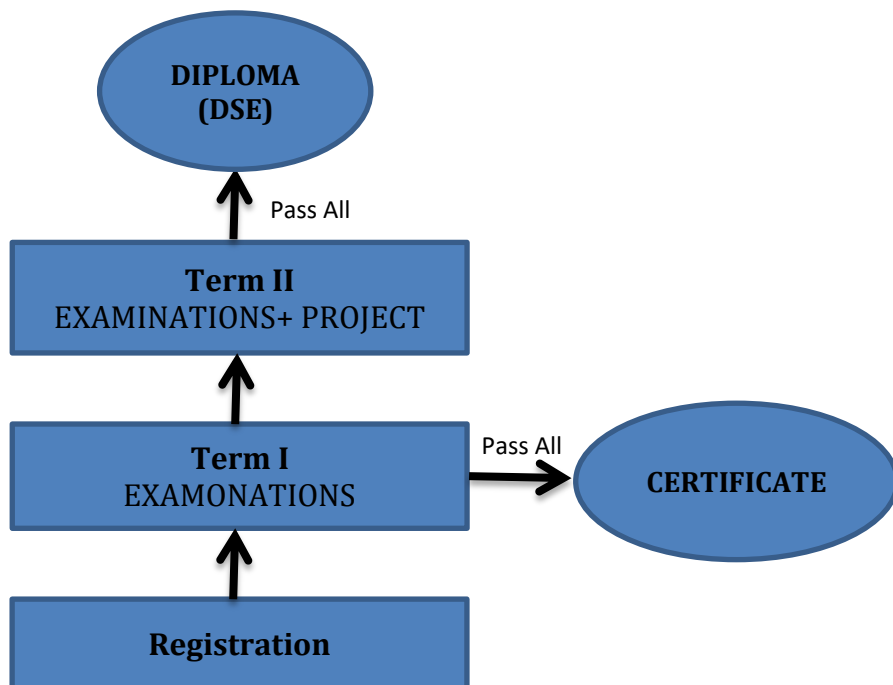
Figure 1: Diploma Path

MODULES AND CREDITS

Module Code	Module Title & Content	Credit Value
DSE 113	**Principles of Computing:** Evolution of computers; Computer organization; Introduction to Operating Systems and Computer Systems; Introduction to Networks	3
DSE 123	**Fundamentals in Software Engineering** Introduction to Systems Development; Systems Development Life Cycle; Systems planning; Determining requirements; Evaluating alternatives; Systems design; Systems implementation; Software Maintenance	3
DSE 132	**Software Engineering Methodologies** Systems Development Approaches; Introduction to structured design of data, systems and user interfaces; Practical aspects and issues in software implementation and maintenance	2
DSE 143	**Principles of Database Management Systems** Introduction to DBMS; DBMS design concepts and architecture; Relational Model and Entity Relationship(ER) Modelling; Relational Database Design; Normalization; Sequential Query Language (SQL)	3
DSE 152	**Database Development Practices** Representing information with the relational database model; Mapping Conceptual Design to relation schema; Keys and Data Integrity Rules; SQL Statements in Implementing the Database; SQL statements in querying the database	2
DSE 163	**Computer Programming Concepts** Introduction to programming; Algorithms and Flowchart; Overview of C language; Constants, Variables and Data types; Operators and Expressions Managing; Input / Output operations	3
DSE 173	**Data Communication and Computer Networks** Physical Network composition; Network Protocols and Communications; Network Access; The medium access sub-layer; The data link layer; The network layer ;Transport and Application layers	3
Exit Point 1: Certificate in Software Engineering		*19*
DSE 213	**Advanced Computer Programming Concepts** Language Fundamentals; Overview of Java language; Introduction to Java Programming; Introduction to Packages; Exception Handling; Input/output Streams; Use of different IDEs in Java programming	3
DSE 222	**Computer Architecture** Introduction to Computer architectures; Introduction to the inner workings of computer systems; Memory System Design; Processing Unit design; I/O Design and Organization; Logic gates and design of combinational logic circuits; Assemble a simple computer with hardware design	2
DSE 232	**Mathematics for Computing** Sets and Logic; Matrices and Vectors; Differentiations and integration; Permutations & Combinations; Graphs	2
DSE 244	**Computer Project I** Introduction to Project; Beginning a project; Data collection methods; Questionnaire Designing; Introduction to Project Management	4
Exit Point 2: Diploma in Software Engineering		**30**

TEACHING AND 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 also direct participants to recommended reading to supplement the lecture material.

EVALUATION CRITERIA

i. Evaluation will be done at the end of each course module.
ii. The method of evaluation is based on written examinations, assignments, practical examinations, reports, presentations and projects.
iii. The % of each component of the evaluation will be given by each Lecturer at the beginning of each course to the final exam carrying a minimum 50 % and continuous assessment carries maximum 50%

iv. **Computer Project** (DSE 244) shall be evaluated according to the guidelines prepared for the Diploma in Software Engineering Program.

GRADING CRITERIA

i. The results of each term will be reported to the candidates at the end of each term. A candidate's performance in each module will be graded according to the following grading scheme.

Range of 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
00 - 24	E

MODULE COMPLETION

I. For successful completion of a course module, a participant must obtain **40** percent for the final mark assigned to the module.

II. If a candidate is absent from an examination of a course modules after completing continuous evaluation, the following symbols will be used to indicate each case appropriately.

    a. Absent due to medical reason, which has been approved, will be given the symbol of "**MC**" (Medical).

    b. Absent due to valid reasons, which has been approved, will be given the symbol of "**DFR**" (Deferred).

    c. Absent without valid reasons will be given symbol of "**AB**" (Absent).

AWARDING CRITERIA

Eligibility for the award of Diploma in Software Applications Development

    a. Complete the required number of credit, i.e. **30** credits.

    b. Obtain a grade of "**C-**"or better in each module.

    c. Obtain Ordinary pass or above in the overall average marks.

    d. Complete the relevant requirements within a period of **three** academic years after the registration.

GRADING SYSTEM

The following grading scale is used to evaluate the overall performance of the student in the Diploma Program.

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

ELIGIBILITY FOR END OF MODULE EXAMINATION

i. A person shall not be permitted to take the end of module/semester examinations unless:

    a. He/she has been duly registered as a 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 each course module,

    c. He/she has followed at least eighty percent (**80%**) of the classes held.

ii. 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.

iii. Medical leave will only be accepted for a **maximum** of five (**5**) class days per semester.

REPEAT EXAMINATION

i. A candidate, who fails to score **40** percent from the final mark allocated mark for a course module is deemed to have failed the examination. They can sit for failed modules in the repeat examination.

ii. If a candidate fails to obtain eligibility for a course module, he/she has to earn the required marks for continuous assessment and sit for that course module at the next examination as a repeat candidate.

iii. If a candidate fails to obtain attendance of eighty percent (**80%**) in any subject he/she has to repeat it at the repeat exam.

iv. An immediate repeat examination will be held after releasing the results. They are expected to pay the examination fee for relevant modules. The failures of the repeat examination will have to sit for the proper examination in the following year. The examination fee should be paid for every attempt.

v. A candidate can sit only for **2** repeat examinations. The highest obtainable grade in such an attempt will be "C" pass. The grace attempt will be subject to the approval of the Board of Study and the Senate.

vi. All the examination rules and regulations of Wayamba University of Sri Lanka will apply to the diploma level examinations as well.

PERIOD OF REGISTRATION

The minimum period of registration for the Diploma shall be **one** academic year and the maximum period shall not be exceeded **three** academic years. The period of registration shall be reckoned from the date of commencement of the programme. Any registration after the lapse of the first period of registration shall be for a period of one academic year at a time.

POSTPONEMENT OF THE ACADEMIC YEAR

i. 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 the next immediate 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 to get registered for the new intake.

ii. If a candidate applies for a postponement after attending lectures, he/she is not allowed to postpone the academic year.

iii. The request for postponement should be made to the Course Director within a month after the registration.

iv. The selected candidates are not allowed to transfer their registration to any other candidates.

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 an immediate family member 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 immediately reported to the Academic Coordinator with a valid medical certificate. 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.

[University Medical Officer (UMO), District Medical Officer, Consultant Specialist in the relevant field, Head of Government Base Hospital, Medical Superintendent of a Provincial Ayurvedic Government Hospital, Ayurvedic Physician registered in the Ayurvedic Medical Council]

iv. Board of Study will accept medical certificates only if they are certified by the University Medical Officer.

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.

vii. Absence of a candidate for 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 module.

EXIT AT THE CERTIFICATE LEVEL

i. If a student decides to exit from the course at the end of first term, he/she can claim for a Certificate after successful completion of all the examinations and other relevant requirements of **Term I**.

ii. If he/she wants to re-enter into the "Diploma Level", the Certificate obtained for the **Term I** must be surrendered to the Board of Study. Such cases will be handled by the Board of Study on a case-by-case basis and the decision of the Board of Study subject to the approval of the Senate, will be final.

TEACHING PANEL - 2020

Director – DSE

Mr. T. Arudchelvam
B.Sc. (Hons) in Computer Science (Jaffna),
M.Sc. (Peradeniya),
MPhil (Peradeniya, SL)(Bath, UK) (RPI,US)
E-mail: tarudchelvam@gmail.com, arul@wyb.ac.lk

Academic Coordinator - DSE

Dr. V.G.T.N. Vidanagama
B.Sc. (Hons) in Computer Science (Peradeniya),
M.Sc., Ph.D. In Global Information & Telecommunication Studies (Waseda
University, Japan)
e-mail: tharinda@wyb.ac.lk

Lecturers – DSE

Mrs. R.P.T.H. Gunasekara
B.Sc. (Hons.) in Statistics and Computer Science (Kelaniya),
M.CS. (UCSC) (Colombo)

E-mail: hansikag@wyb.ac.lk

Mrs. W.H.C. Wickramaarachchi
B.Sc. (Hons.) in Computer Science (Peradeniya)
E-mail: helani@wyb.ac.lk

Mr. W.C.C. Premarathna
B.Sc. (Hons.) in Computer Science (Wayamba)
E-mail: ccchamidu24@gmail.com

Ms. R.J. Suhirthamalar
B.Sc. (Joint Major) in Industrial Management and Computer Science
(Wayamba)
E-mail: josephina.r.s@gmail.com