Department of Computer Science
Faculty of Applied Sciences
University of Sri Jayewardenepura
Sri Lanka

M.Sc. Program in Computer Science
Program Details
Intake 3 (2017/2018)

November, 2016

Contents

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1 Introduction

This program has been designed for those who are interested in pursuing higher studies in the field of Computer Science. The curriculum of this program is designed to provide students with a good grasp of core contents of Computer Science which any professional in the subject is expected to know, to foster logical and analytical thought, independent study, self motivation and communication skills, to make aware of research results and latest trends in the key areas of the subject, to provide opportunities to gain practical experience of computing, using modern hardware and software, in order to provide motivation for and deeper understanding of material taught in formal lectures, to produce graduates with sound knowledge in both theory and practice in Computer Science, including current emerging technologies and experimental learning, to prepare students to contribute to the computing profession upon graduation and to provide the necessary background required to read for a Ph.D. in Computer Science.

2 Target group

- Those who need academic qualifications in Computer Science.

- Those who are planning to start a career or already employed in a computing environment.

- Those who teach Computer Science or ICT in schools or universities or other educational institutes.

3 Minimum admission requirements

1. A Bachelors Degree in Computer Science, Computer Engineering, Software Engineering, Information Technology, Information and Communication Technology, Information Systems, Physical Sciences or Engineering from a recognized university, <u>or</u>

2. Any other degree with 30 credits in computing from a recognized university, <u>or</u>

3. Any other equivalent qualification in computing that would be acceptable to the Faculty of Graduate Studies (FGS) and the senate of the university.

4   Selection procedure

A written examination and/or an interview will be held to select candidates when the number of applicants exceeds the maximum number that can be accommodated.

5   Student intake

Maximum 50 students per batch. However, the program will be started only if at least 30 candidates are registered.

6   Correspondence

Student should provide her permanent address, telephone number and the email address at the time of registration. Student should immediately inform to the coordinator of the program and Faculty of Graduate Studies in written if any of these information is changed subsequently. The main mode of correspondence will be via email and the department website. Students are advised to check their email and the department website regularly, especially every Friday by noon.

7   Teaching panel

Academic staff

- Dr. T. G. I. Fernando
  B.Sc.(Math)(USJP), M.Sc.(Industrial Mathematics)(USJP), M.Sc.(Comp. Sci.)(AIT)(Thailand),
  Ph.D.(Intelligent Systems)(UK)
  Coordinator (M.Sc. in Computer Science)/Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Dr. E.A.T.A. Edirisuriya
  B.Sc.(Math)(USJP), Dip.(Stat.)(Colombo), M.Sc.(Comp. Sci.)(China), Ph.D.(Comp. Sci.)(Sweeden)
  Head/Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Prof. R.G.N. Meegama
  B.Sc.(Comp. Sci.)(Colombo), M.Sc.(Comp. Sci.)(AIT, Thailand), Ph.D.(Comp. Sci.)(NTU, Singapore)
  Professor in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Ms. G.S. Makalanda
  B.Sc.(Math)(USJP), M.Sc.(Stat)(USJP), M.Sc.(Comp. Sci.)(UK)
  Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Mr. P. Dias
  B.Sc.(Math)(USJP), Dip.(Stat.)(Colombo), M.Sc.(Stat.)(Aus)
  Senior Lecturer in Statistics
  Department of Statistics
  University of Sri Jayewardenepura

- Mr. D.D.A. Gamini
  B.Sc.(Math)(USJP), M.Sc.(Comp. Sci.)(AIT)(Thailand)
  Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Dr. Prasad Jayaweera
  B.Sc.(Comp. Sci.)(Colombo), Ph.D.(Comp. Sci.)(Sweeden)
  Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Dr. N.C. Ganegoda
  B.Sc. (Mathematics)(SJP)(Sri Lanka), Ph.D.(Mathematics)(SJP)(Sri Lanka)
  Senior Lecturer in Mathematics
  Department of Mathematics
  University of Sri Jayewardenepura

- Mr. M. D. R. Perera
  B.Sc. (Comp. Sci.)(SJP, Sri Lanka), M.Phil. (Comp. Sci.)(SJP, Sri Lanka)
  Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Ms. M. D. R. L. Silva
  B.Sc. (Comp. Sci.)(SJP, Sri Lanka), M.Phil. (Comp. Sci.)(UOM, Sri Lanka)
  Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Dr. P. Ravindra S. De Silva
  B.Sc. (Comp and Stat)(Colombo, Sri Lanka), M.Sc. (Aizu, Japan), Ph.D. (Aizu, Japan)
  Senior Lecturer in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

- Mr. T.M.K.K. Jinasena
  BIT (Hons)(Colombo, Sri Lanka), B.Sc. (Comp. Sci.)(SJP, Sri Lanka), M.Sc. (Comp. Sci.)(Colombo, Sri Lanka)
  Lecturer (Probationary) in Computer Science
  Department of Computer Science
  University of Sri Jayewardenepura

Academic support staff

- Mr. D. A. P. Peiris
  B.Sc.(SJP, Sri Lanka), M.Sc. (Comp. Sci.)(SJP, Sri Lanka)
  (Instructor - Computer Technology)
  Department of Computer Science
  University of Sri Jayewardenepura

- Ms M.C.Weerawardana
  B.Sc.(Special) (Kelaniya, Sri Lanka) (Instructor - Computer Technology)
  Department of Computer Science
  University of Sri Jayewardenepura

8 Medium of instructions

Medium of instructions shall be English.

9 Program structure

The duration of the M.Sc. program in Computer Science is approximately two years. The program is divided into 4 semesters. Semester 1 consists of 3 foundation course units (non-credit) and 5 course units. Semester 2 consists of 9 course units. Semester 3 consists of optional course units. The total number of credits for these three semesters is 30 (one credit is equivalent to 15 hours of lectures or 45 hours of practical). During semester 4, candidates who are eligible to do the thesis engage in at least 450 hours of independent research and submits a thesis.

Lectures and practical sessions are conducted on Saturdays (between 8.00 am to 5.30 pm) and Sundays (between 8.00 am to 12.15 pm). In addition, candidates must be able to spend a considerable amount of time for self-studies, homework and assignments, etc., throughout the program.

This program is primarily an M.Sc. program. All candidates are recruited as M.Sc. candidates and they are required to follow the course units offered in the first, second and third semesters. At the end of the third semester, those candidates who obtain a GPA (see 10-VII) not less than 3.0 and a 'C' or higher grade for each foundation course unit are eligible to do the M.Sc. thesis.

Those who satisfy the requirements mentioned in (10-X) are awarded the M.Sc. degree in Computer Science with a research component. Those who satisfy the requirements mentioned in (10-XI) are awarded the M.Sc. degree in Computer Science by course work. Those who satisfy the requirements mentioned in (10-XII) are awarded the postgraduate diploma in Computer Science. Those who satisfy the requirements mentioned in (10-XIII) are awarded the postgraduate certificate in Computer Science.

10   Assessment process

I) Methods of continuous assessments
Students will be assessed during the program by written examinations, quizzes, assignments, viva voce examination, practical and tutorials as appropriate.

II) Eligibility requirement for an examination of a course unit
A student will be eligible to sit the end of semester examination of a course unit if she has maintained a minimum of 60% attendance at lectures/practical of the course unit. Any student who fails to fulfil the eligibility requirement for any course unit will be allowed to sit the examination of the course unit but the maximum grade she can earn for that course unit is restricted to 'B' (see the grading system defined in 10-VI).

III) Valid reasons for absence from an examination of a course unit
Excuse will be granted only for serious ill health or death of immediate family member or any other cause acceptable to the Faculty of Graduate Studies (FGS) subsequently approved by the university senate. A candidate absent due to medical reasons shall submit a medical certificate from a registered medical officer within two weeks from the date of the examination. She may sit the examination with the next batch and is considered as a first time candidate. However, if the course unit is not available in the current M.Sc. program, the candidate must sit the examination of an alternative course unit offered in the respective semester of the current academic year.

IV) Carrying forward continuous assessment marks
In case of a repeated candidate or an absentee of a course unit, marks obtained for the continuous evaluation of that course unit shall be carried forward for the next examination if the lecturer in charge of the course unit agreed.

V) Duration of a written/practical examination
Duration of an end of semester written/practical examination can vary depending on the requirements of each course unit.

VI) Grading system
The Grade point system for course units and thesis/dissertation are given as in Table 1.

Table 1: Grade Point System

Grade	Grade Point (GP)	Interpretation
A+	4.0	Outstanding
A	4.0	Excellent
A-	3.7	Excellent
B+	3.3	Very Good
B	3.0	Good
B-	2.7	Good
C+	2.3	Fair
C	2.0	Sufficient
C-	1.7	Insufficient
D+	1.3	Unsatisfactory
D	1.0	Poor
E	0.0	Very Poor
ab	0.0	Absent
M	0.0	Absent on medical reasons

VII) Calculating the GPA of course units

The GPA of course units is calculated as follows:

$$GPA = \frac{\sum_i C_i * GP_i}{\sum_i C_i}$$

where GP_i and C_i are grade point and number of credits of the ith course unit respectively.

VIII) Completion of a course unit

A candidate needs a minimum of 'C' grade to pass the examination of a course unit. Those who do not meet the above criterion may repeat the final examination of the course unit and maximum grade in such an attempt will be limited to the grade 'B.'

IX) M.Sc. thesis

At the end of the third semester, those candidates who obtain a GPA (see 10-VII) not less than 3.0 and a 'C' or higher grade for each foundation course unit are eligible to do a research project and submit an M.Sc. thesis based on the research project. It is student's responsibility to provide a suitable research topic before the beginning of fourth semester. Students should discuss with academics in any university or qualified personnel in the industry to choose a research topic and students are encouraged to select a topic from her work environment.

Research project will be evaluated on the basis of written M.Sc. thesis and the oral presentation (viva-voce examination). The examination panel consists of supervisor(s) of the research project and two other examiners as recommended by the Board of Study in Physical Sciences and approved by the Senate of University of Sri Jayewardenepura.

X) Completion of the M.Sc. degree in Computer Science **with a research component**

To award the M.Sc. degree in Computer Science with a research component, a candidate should obtain

(a) A GPA of not less than 3.0 for 30 credits (that should include 20 credits from the first two semesters <u>and</u> 10 credits from the third semester) at the end of the third semester of the program <u>and</u>

(b) A 'B' or higher grade for the M.Sc. thesis <u>and</u>

(c) A 'C' or higher grade for each foundation course unit.

XI) Completion of the M.Sc. degree in Computer Science **by course work**
To award the M.Sc. degree in Computer Science by course work, a candidate should obtain

(a) A GPA of not less than 2.7 for 30 credits (that should include 20 credits from the first two semesters <u>and</u> 10 credits from the third semester) at the end of the third semester of the program <u>and</u>

(b) A 'C' or higher grade for each foundation course unit.

XII) Completion of the Postgraduate Diploma in Computer Science
To award the postgraduate diploma in Computer Science, a candidate should obtain

(a) A GPA of not less than 2.0 for 25 credits (that should include 20 credits from the first two semesters <u>and</u> 5 credits from the third semester) at the end of the third semester of the program <u>and</u>

(b) A 'C' or higher grade for each foundation course unit.

XIII) Completion of the Postgraduate Certificate in Computer Science
To award the postgraduate certificate in Computer Science, a candidate should obtain

(a) A GPA of not less than 2.0 for 20 credits of the first two semesters of the program <u>and</u>

(b) A 'C' or higher grade for each foundation course unit.

XIV) Exit points
The following exit points are offered to a candidate of the program:

(a) A candidate who fulfills the requirement given in 10-XIII has the option of exiting at the postgraduate certificate level and obtaining the Postgraduate Certificate in Computer Science.

(b) A candidate who fulfills the requirement given in 10-XII has the option of exiting at the postgraduate diploma level and obtaining the Postgraduate Diploma in Computer Science.

(c) A candidate who fulfills the requirement given in 10-XI has the option of exiting at the M.Sc. by course work level and obtaining the M.Sc. in Computer Science by course work.

(d) A candidate who fulfills the requirement given in 10-X has the option of exiting at the M.Sc. by research level and obtaining the M.Sc. in Computer Science with a research component.

Note: However, no candidate is allowed to obtain more than one certificate from the above exit points of the M.Sc. program in Computer Science from the University of Sri Jayewardenepura.

XV) Merit pass

(a) Merit Pass in M.Sc. in Computer Science with a research component
Those who obtain a GPA of not less than 3.5 for 30 credits (that should include 20 credits from the first two semesters <u>and</u> 10 credits from the third semester) at the end of the third semester of the program <u>and</u> obtain a 'B+' or higher grade for her thesis <u>and</u> obtain a 'C' or higher grade for each foundation course unit will be awarded a merit pass.

(b) Merit Pass in M.Sc. in Computer Science by course work
Those who obtain a GPA of not less than 3.5 for 30 credits (that should include 20 credits from the first two semesters <u>and</u> 10 credits from the third semester) at the end of the third semester of the program <u>and</u> obtain a 'C' or higher grade for each foundation course unit will be awarded a merit pass.

XVI) Repeating a course unit
A candidate is allowed to repeat a course unit only two times. A separate repeat examination will not be held under any circumstance. The maximum grade that could be obtained for a repeated course unit is restricted to 'B' (see the grading system defined in 10-VI). If a student obtains a lower grade at a repeat attempt than the grade received in an earlier attempt, the better will be used to compute the GPA. However, if the course unit is not available in the current M.Sc. program, the candidate must sit the examination of an alternative course unit offered in the respective semester of the current M.Sc. program and the maximum grade that could be obtained for this alternative course unit is also restricted to 'B.'

XVII) Release of results of examinations
The result of each course unit will be reported to each candidate with the grade earned as indicated in the grade system in (10-VI). The examination results sheet signed by the course coordinator will be issued to each candidate after the release of results of each semester.

XVIII) Effective dates of certificates

(a) M.Sc. in Computer Science with a research component
The date of viva voce examination of the M.Sc. thesis will be considered as the effective date of the M.Sc.

(b) M.Sc. in Computer Science by course work
The date of the final end of semester examination of semester 3 will be considered as the effective date of the M.Sc. in Computer Science by course work.

(c) Postgraduate Diploma in Computer Science
The date of the final end of semester examination of semester 3 will be considered as the effective date of the Postgraduate Diploma in Computer Science.

(d) Postgraduate Certificate in Computer Science
The date of the final end of semester examination of semester 2 will be considered as the effective date of the Postgraduate Certificate in Computer Science.

XIX) Course structure
The course units offered for the M.Sc. program in Computer Science are given in Table 2. However, course units given in the list could be replaced by other suitable course units, without prior notice, depending on the availability of visiting lecturers and/or with the intention of improving the program.

11   Fees

I) Course fee for local candidates - Rs. 300,000/-

II) Course fee for foreign candidates

- SAARC countries - US$ 3500/-

Table 2: Course Structure

Semester	Course Code	Course Name	No of Credits	Lecture Hours
Foundation Courses				
1	CSC 501 0.0	Mathematics for Computing (f)	0.0	23
1	CSC 502 0.0	Statistics for Computing (f)	0.0	22
1	CSC 503 0.0	Computer Applications Laboratory (f)	0.0	15
Total			**0.0**	**75**
First Year				
1	CSC 504 1.5	Computer Architecture (c)	1.5	23
1 & 2	CSC 505 3.0	Computer Programming (c)	3.0	45
1 & 2	CSC 506 1.0	Computer Programming Laboratory (c)	1.0	15
1	CSC 507 1.0	Object Oriented Analysis and Design (c)	1.0	15
1	CSC 508 1.5	Operating Systems (c)	1.5	23
2	CSC 509 1.5	Software Engineering (c)	1.5	22
2	CSC 510 2.0	Database Management Systems (c)	2.0	30
2	CSC 511 1.5	Computer Networks (c)	1.5	22
2	CSC 512 2.0	Data Structures and Algorithms (c)	2.0	30
2	CSC 513 2.0	Web Programming (c)	2.0	30
2	CSC 514 1.5	Computer Graphics and Animations (c)	1.5	22
2	CSC 515 1.5	Mobile Computing (c)	1.5	23
Total			**20.0**	**300**
Second Year				
3	CSC 601 1.0	Academic Writing (o)	1.0	15
3	CSC 602 2.0	Artificial Intelligence (o)	2.0	30
3	CSC 603 2.0	Nature Inspired Algorithms (o)	2.0	30
3	CSC 604 2.0	E-commerce (o)	2.0	30
3	CSC 605 2.0	Digital Image Processing (o)	2.0	30
3	CSC 606 2.0	Multimedia Technology (o)	2.0	30
3	CSC 607 2.0	Computer Security (o)	2.0	30
3	CSC 608 2.0	Bioinformatics (o)	2.0	30
3	CSC 609 2.0	Robotics Applications (o)	2.0	30
3	CSC 610 2.0	Machine Learning (o)	2.0	30
3	CSC 611 2.0	Embedded Systems and IOT (o)	2.0	30
3	CSC 612 2.0	Natural Language Processing (NLP) (o)	2.0	30
3	CSC 613 1.0	Special Topics in Computer Science (o)	1.0	15
Total			**10.0**	**150**
4		M.Sc. Thesis	**30.0**	**450**

f - foundation course unit, c - core course unit, o - optional course units

- Non SAARC countries - US$ 4000/-

Note: Students are not allowed to attend lectures or sit examinations if the payments were not made on time. Those who haven't paid will not be considered as postgraduate students of the University of Sri Jayewardenepura.

12   Important notes

I) The program will be started only if at least 30 candidates were registered, if the program is not started due to any reason, the payments (except for the application fee) will be refunded to those who were registered.

II) Students are not allowed to sit lectures or examinations if they have not paid the required fees on time. Those who have not paid in full will not be considered as postgraduate students of University of Sri Jayewardenepura.

III) Fees will not be returned after the commencement of the program.

IV) A candidate is only eligible to receive Postgraduate Certificate or Postgraduate Diploma or M.Sc. degree by course work or M.Sc. degree with a research component. One can receive only one certificate of these qualifications.

13   For Further Information

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