

**Far Western University  
Faculty of Science and Technology**

**Master of Science in Computer Science and Information Technology**

**M.Sc. (CSIT)**

**Course of Study**

**Prepared by**

**Computer Science and Information Technology Subject Committee  
Far Western University, Kanchanpur**



## Introduction

The Master of Science in Computer Science and Information Technology (M.Sc. CSIT) curriculum is designed to produce highly skilled manpower in the sector of computer science and IT. The program is designed to meet the market needs of IT at national and international levels. In addition to the standard core and elective Computer Science and Information Technology courses, the program offers several courses that provide knowledge for both research and development in computer science and information technology areas. The foundation and core courses are designed to meet the graduate program requirement, and the service courses are designed to meet the needs of fast-changing computer technology and applications. Students enrolled in the graduate program are required to take courses in the design and implementation of computer software systems, a foundation in the theoretical model of computer science, and a functional background in computer hardware. This course is designed by focusing on the B.Sc.CSIT (4-years) program in FWU. The objective of the M.Sc.(CSIT) programme is to prepare graduate students for productive careers in the software industry and academia by providing an outstanding environment for teaching and research in the core and emerging areas of the discipline. The programme's thrust is on giving the students a thorough and sound background in theoretical and application-oriented courses relevant to the latest computer software development. The programme emphasizes the application of software technology to solve mathematical, computing, communications/networking problems.

## Programme Objectives

- Understand and apply mathematical foundation, computing and domain knowledge for the conceptualization of computing model of problems.
- Identify, analyze the computing requirements of a problem and solve them using computing principles.
- Design and evaluate a computer based system, components and process to meet the specific needs of applications
- Use current techniques and tools necessary for complex computing practices.
- Use suitable architecture or platform on design and implementation with respect to performance.
- Develop and integrate effectively system based components into user environment.

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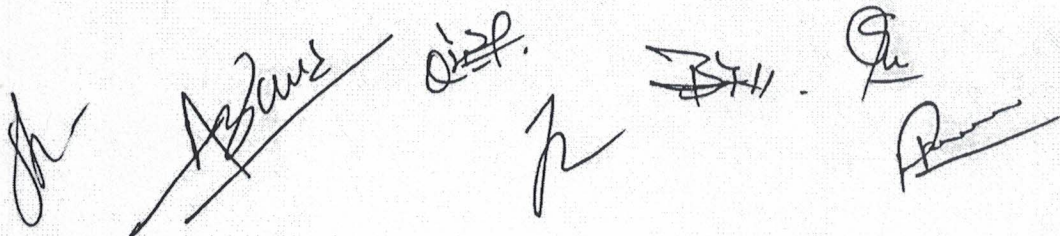
- Understand and commit to cyber regulations and responsibilities in professional computing practices.
- Recognize the need for and develop the ability to engage in continuous learning as a computing professional.
- Understand societal, environmental, health, legal, ethical issues within local and global contexts and the consequential responsibilities relevant to professional practice.
- Use knowledge to analyze, interpret the data and synthesis the information to derive valid conclusions using research methods.
- Expertise in developing application with required domain knowledge.

### Justification of program

- To excel in problem solving and programming skills in the various computing fields of IT industries.
- To develop the ability to plan, analyze, design, code, test, implement & maintain a software product for real time system.
- To promote students capability to set up their own enterprise in various sectors of Computer applications.
- To experience the students in finding solutions and developing system based applications for real time problems in various domains involving technical, managerial, economical & social constraints.
- To prepare the students to pursue higher studies in computing or related disciplines and to work in the fields of teaching and research.
- To provide higher level study in computer science in far western region and produce skilled man power for teaching computer science in school and college level.
- To aware the people towards IT and make digital society and recognize the Far western region in global map of IT.

### Duration of the Programme

Masters of Science in Computer Science and Information Technology (M.Sc. CSIT) is a two-year four-semester program. The M. Sc. Computer Science and Information Technology curriculum is designed by closely following the courses practiced in accredited international universities, subject to the condition that the intake students are B.Sc. CSIT and B. Sc.





Computer Science. To fulfill the requirements for acquiring the M.Sc. (CSIT), a student may clear all the courses in a minimum of two years and a maximum of 5 years.

### Eligibility

A degree in B.Sc. in Computer Science; B.Sc. CSIT, B. Sc. Computer Science, B.E. Computer, B.E. Electronics, B. Tech in Computer Science or equivalent is required for admission. The selection for admission is based on the entrance examination.

### Medium of Instruction

The medium of instruction is only in English. The course material is also in English.

### Hours of Instruction

Working days: 70 days in a semester

#### Class hours:

- 3 credit hours courses with theory and labs is equivalent to 3 lecture hours and 3 × 4 lab hours = 15 working hrs per week.
- 3 credit hours theory-only course is equivalent 3 lecture hrs and 3 × 2 assignment hrs = 9 working hrs per week.
- Assignment hrs include library work, homework, problem solving session, literature searching etc.

Attendance: 80 percent attendance in each paper is compulsory.

### Examination

Institute of Science and Technology, Far Western University will conduct the final examination at the end of each semester. 60% weightage will be given to the final examination and 40% for the internal assessment to be conducted by the concerned college.

### Instructions for the Students

The students seeking admission to M.Sc. Computer Science course is hereby informed that they are supposed to adhere to the following rules:

- A minimum of 80 % attendance for lectures / practical is the pre-requisite for grant of term.

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A large signature on the left, possibly "Anand".  
A signature in the middle, possibly "R".  
A signature on the right, possibly "S. H. S.". Below it, another signature, possibly "A".



- There shall be tutorial / practical / surprise test / home assignment / referencing of research papers / seminar / industrial visits as a part of internal assessment in each semester. The students are supposed to attend all the tests. The students should note that re-test will not be given to the student absent for the test/s.
- The students opting for dissertation course shall follow the rules framed for the same.

**1. Continuous Assessment:**

Internal assessment for each course would be continuous and dates for each tutorials/practical tests will be pre-notified in the time table for teaching or placed separately as a part of time table. Department / College Internal Assessment Committee will coordinate this activity.

**Theory Courses:** Conducting written tests should not be encouraged. More focus should be on non-written tests. Students should be encouraged to conduct various academic activities. A teacher must select a variety of the procedures for internal assessment suggested as follows.

- Mid-term test
- On-line test
- Open book test (concerned teacher will decide the allowed books)
- Tutorial
- Surprise test
- Oral
- Theory Assignments
- Review of Research paper
- Seminar presentation
- Journal/Lecture/Library notes
- Group Discussion
- Programming Assignments
- Field/ Company Visits

Student has to preserve the documentation of the internal assessment except Midterm test answer script. It is the responsibility of the student to preserve the Documents.

**Project Courses:** The Project can be platform, Language and technology independent. Project will be evaluated by project guide. Assessment will be done weekly in the respective batch. Evaluation will be on the basis of weekly progress of project work, progress report, oral, results and documentation.

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 A large signature "Arshad" is written across the bottom left. To its right are several other signatures and initials, including a large "R" and some scribbled marks.



2. **University Examination:** End-Semester examination for 60 marks per course would be held as per the scheduled given by Far Western University. Student has to obtain 50% marks in the each examination of In-Semester and End-Semester.

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## Course Structure

First Semester	
Course Title	Course code
Advanced Operating System	CSIT.511
Object Oriented Software Engineering	CSIT.512
Computational Complexity	CSIT.513
Python for Data Science	CSIT.514
Research Methodology for Computer Science	CSIT.515
Seminar I	CSIT.516
Second Semester	
Compiler Optimization	CSIT.521
Soft Computing	CSIT.522
Machine Learning	CSIT.523
Principles of Programming Language	CSIT.524
System Programming	CSIT.525
Seminar II	CSIT.526
Third Semester	
Cyber Security and Ethical Hacking	CSIT.611
Deep Learning	CSIT.612
Elective I	
Elective II	
Extra Elective I	
Term paper I	CSIT.613
Fourth Semester	
Web Intelligence	CSIT.621
Extra Elective II	
Dissertation	CSIT.622
Elective Subjects	
Quantum Computing	CSITE.651
Natural Language Processing	CSITE.652
Data Warehousing and Data Mining	CSITE.653
Multi-media Computing	CSITE.654
Image Processing	CSITE.655
Computational Geometry	CSITE.656
Cloud and Distributed Computing	CSITE.657
Big Data Analytics	CSITE.658
Embedded Systems	CSITE.659
Digital Governance	CSITE.660
Digital Marketing and Digital Economy	CSITE.661
Information and Coding Theory	CSITE.662
Advanced Computer Architecture	CSITE.663
Advanced Database Management Systems	CSITE.664
Internet of things	CSITE.665
Block chain Technology	CSITE.666

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# M. Sc. CSIT Course Structure

## Far Western University, Nepal

<b>First Semester</b>	
Course Title	Credit Hour
Advanced Operating System	3
Object Oriented Software Engineering	3
Computational Complexity	3
Python for Data Science	3
Research Methodology for Computer Science	3
Seminar I	1
<b>Second Semester</b>	
Compiler Optimization	3
Soft Computing	3
Machine Learning	3
Principles of Programming Language	3
Systems Programming	3
Seminar II	1
<b>Third Semester</b>	
Cyber Security and Ethical Hacking	3
Deep Learning	3
Elective I	3
Elective II	3
Extra Elective I	3
Term Paper I	2
<b>Fourth Semester</b>	
Web Intelligence	3
Extra Elective II	3
Dissertation	8

### List of Electives

1. Quantum Computing
2. Natural Language Processing
3. Data Warehousing and Data Mining
4. Multimedia Computing
5. Image Processing
6. Computational Geometry
7. Cloud and Distributed Computing
8. Big Data Analytics

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9. Embedded Systems
10. Digital Governance
11. Digital Marketing and Digital Economy
12. Information and Coding Theory
13. Advanced Computer Architecture
14. Advanced Database Management Systems
15. Internet of Things
16. Blockchain Technology

Shay

Ju

Q.01

Q.02

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## Course Structure

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Object Oriented Software Engineering	CSIT.512
Computational Complexity	CSIT.513
Python for Data Science	CSIT.514
Research Methodology for Computer Science	CSIT.515
Seminar I	CSIT.516
Second Semester	
Compiler Optimization	CSIT.521
Soft Computing	CSIT.522
Machine Learning	CSIT.523
Principles of Programming Language	CSIT.524
System Programming	CSIT.525
Seminar II	CSIT.526
Third Semester	
Cyber Security and Ethical Hacking	CSIT.611
Deep Learning	CSIT.612
Elective I	
Elective II	
Extra Elective I	
Term paper I	CSIT.613
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Big Data Analytics	CSITE.658
Embedded Systems	CSITE.659
Digital Governance	CSITE.660
Digital Marketing and Digital Economy	CSITE.661
Information and Coding Theory	CSITE.662
Advanced Computer Architecture	CSITE.663
Advanced Database Management Systems	CSITE.664
Internet of things	CSITE.665
Block chain Technology	CSITE.666

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