



University of Swat

Department of Computer & Software Technology

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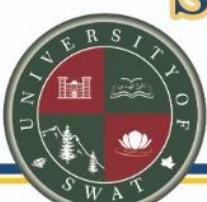
The main gate of the University of Swat, featuring two towers and a central archway. The sky is blue with some clouds. The gate is set against a backdrop of mountains.

University of Swat

4th Board of Studies Meeting 2021

at the

Department of Computer and Software Technology

The logo of the University of Swat, featuring a circular design with four quadrants containing symbols: a building, a river, a tree, and a lotus flower. The text "UNIVERSITY OF SWAT" is written around the perimeter.

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No.UoS/Acad/2021-95

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(Academics Section)University of Swat
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Dated: 01/03/2021

NOTIFICATION

In supersession of Notification No. UoS/Acad/2020-424 dated; 06/10/2020 followed by UoS/Acad/2020-500 dated; 18/11/2020, the Vice Chancellor under provision of Section-3 (2) of the Constitution, Functions and Powers of Authorities of the University of Peshawar Statutes, 2016 has been pleased to constitute Board of Studies for Department of Computer and Software Technology, University of Swat comprising of the following:

- | | |
|--|----------|
| 1. Dr. Sanaullah,
Chairman, Department of Computer and Software Technology, University of Swat. | Convenor |
| 2. Dr. Kifayat Ullah,
Department of Computer and Software Technology, University of Swat | Member |
| 3. Dr. Muzammil Khan,
Department of Computer and Software Technology, University of Swat | Member |
| 4. Dr. Amjad Ali,
Department of Computer and Software Technology, University of Swat | Member |
| 5. Mr. Umar Ali,
Department of Computer and Software Technology, University of Swat | Member |
| 6. Prof. Dr. Jamil Ahmad,
Chairman, Department of Computer Science and IT, University of Malakand | Member |
| 7. Dr. Arif ur Rahman,
Department of Computer Science, Bahria University, Islamabad | Member |
| 8. Dr. Sehat Ullah,
Department of Computer Science, University of Malakand | Member |
| 9. Prof. Dr. Shah Khusro,
Chairman, Department of Computer Science, University of Peshawar | Expert |
| 10. Dr. Pervez Khan,
Department of Computer Science, University of Malakand | Expert |

Terms of Reference:

1. The term of office of members of the Board of Studies, other than ex-officio members, shall be three years.
2. The quorum for meetings of the Board of Studies shall be one-half of members, a fraction being counted as one.
3. Functions of the Board of Studies shall be:
 - (I) To advise the Authorities on all academic matters connected with instruction, research and examination in the subject or subjects concerned.
 - (II) To propose curricula and syllabi for all degrees, diplomas and certificates courses in the subject or subjects concerned
 - (III) To suggest a panel of names of paper-Setters and Examiners in the subjects or subjects concerned; and
 - (IV) To perform such other functions as may be prescribed by Regulations.

(Khurshid Alam)
Deputy Registrar (Academics)
(Khurshid Alam)
Deputy Registrar (Academics)

Copy for Information to the:

1. PS to Vice Chancellor
2. PS to Registrar
3. Members Concerned through Convenor
4. File



Department of Computer and Software Technology

Vision

To impart quality education at all levels to contribute to the national pool of computer scientists who can meet the demands of the industry and the academia, and to excel in research by developing linkages with national and international organizations.

Mission

To train students towards critical thinking and enable them to contribute to IT industries to national and international levels, and to engage students in workshops, seminars, and other research activities to prepare them for job market.



Annexure -A

BS Computer Science Scheme of Study

Aims

The program should also provide an excellent foundation for further formal learning and training. The Computer Science curriculum is expected to provide environments to put into practice, the principles and techniques learnt during the course of implementation of academic program. As a result, the graduate should be able to assume responsible positions in business, government, and education at the research, development, and planning levels.

Objectives

- The program should provide a broad understanding of the field via introducing concepts, theory, and techniques.
- Intensive education/training in focused areas of Computer Science is desirable.
- The program may encourage students to develop and use abstract models in addition to apply respective technology in practical situations.
- Computer Science graduates require special communication skills both orally and in writing. They must be able to produce well-organized reports, which clearly delineate objectives, methods of solution, results, and conclusions for a complex task.
- Analyze the local and global impact of computing on individuals, organizations, and society.
- Recognize the need for and an ability to engage in continuing professional development.
- Use the current techniques, skills, and tools necessary for computing practice.
- Use and apply the latest technical concepts and practices in the core information technologies.
- Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

Understand the best practices and standards and their application. Assist in the creation of an effective project plan.

Programme Model:

The programme is designed to achieve systematically the objectives set out above. It has been structured to suit the needs of the students, the demands of the market and trends. During the first two years of the programme the students will be given core understanding of the programme. The students will be exposed to the discipline in a systematic, gradual and definite way. Students will also be trained in the skills and techniques which are rooted in the basic sciences like mathematics and physics. These areas will be taken care of in the supporting courses which have been allocated reasonably sufficient space. Students' personal traits and personality polishing will be cared for by the general education courses including communication and writing skills. A host of slots for elective courses have also been proposed to give to the students an opportunity to move towards their areas of interest. During the senior years the students will be given exposure to the more specialized aspects



of the discipline. They will also be given training in at least one application domain which will help institutions to prepare human resource well suited to the needs of different segments of the job market. In order to inculcate among them a scientific attitude they will go through a substantial lab work, which will prepare them for the industry and for further research oriented studies. The final year project will mark the crystallization and culmination of the students' four-year learning experience.

The programme structure is given as under:

Program Duration	8 semesters spread over 4 years
No of Semesters per year	2 semesters (Fall semester & Spring semester)
Minimum Credit Hours required	130

Eligibility:

The eligibility criterion for admission to BS Computer Science is given as under:

FSc (Pre-Medical/Pre-Engineering/Intermediate in Computer Science (ICS)) or FA with mathematics or equivalent with 50% marks.

Program Structure:

As per HEC guidelines of BS Computer Science 2017, the following table gives the credit hour distribution of the core and elective courses:

#	Category	Credit Hours
1	Computing Courses	51
	Core Courses	39
	Mathematics and Science Foundation	12
2	Computer Science Courses	51
	Computer Science Core Courses	24
	Computer Science Supporting Courses	09
	Computer Science Electives Courses	18
3	General Education Courses	19
4	University Elective Courses	12
5	Non-Credit Courses	00
	Total Credit Hours	133

Computing Core Courses

S.#	Course Code	Courses Title	Credit Hours
01	CS-102	Programming Fundamental	4 (3+1)
02	CS -151	Object Oriented Programming	4 (3+1)
03	CS -201	Data Structure and Algorithms	4 (3+1)
04	CS -152	Discrete Structures	3 (3+0)



06	CS -301	Operating Systems	4 (3+1)	
07	CS -251	Database Systems	4 (3+1)	
08	SE -302	Software Engineering	3 (3+0)	
09	CS -352	Computer Networks	4 (3+1)	
10	CS -452	Human Computer Interaction	3 (3+0)	
11	CS -404	Final year Project-I	3 (0+3)	
12	CS -404	Final Year Project-II	3(0+3)	

Computer Science Supporting Courses

13	MATH-201	Differential Equations	3 (3+0)	
14	MATH-	Multi-variate Calculus	3 (3+0)	
15	CS-304	Graph Theory	3 (3+0)	
16	CS-305	Theory of Programming Languages	3 (3+0)	
17	MATH-302	Numerical Computing	3 (3+0)	

General Education Courses

18	ENG-101	English Composition and Comprehension	3 (3+0)	
19	ENG-151	Communication and Presentation Skills	3 (3+0)	
20	ENG-351	Technical and Business Writing	3 (3+0)	
21	ISL-101	Islamic Studies	2 (2+0)	
22	PS-151	Pakistan Studies	2 (2+0)	
23	MGT-201	Professional Practices	3 (3+0)	
24	CS-101	Introduction to Information and Communication Technologies	3 (2+1)	



Computer Science Core courses

#	Course Code	Course Title	Credit Hours
25	CS-303	Compiler Construction	3 (3+0)
26	CS-203	Computer Organization & Assembly Language	4 (3+1)
27	CS-202	Digital Logic Design	4 (3+1)
28	CS-252	Design & Analysis of Algorithms	3 (3+0)
29	CS-403	Parallel & Distributed Computing	3 (3+0)
30	CS-351	Artificial Intelligence	4 (3+1)
31	CS-253	Theory of Automata	3 (3+0)

Mathematics and Science Foundation Courses

32	MATH-101	Calculus and Analytical Geometry	3 (3+0)
33	STAT-151	Probability and Statistics	3 (3+0)
34	MTH-251	Linear Algebra	3 (3+0)
35	PHY-101	Applied Physics	3 (3+0)

Computer Science Elective Courses

#	Course Code	Course Title	Credit hours
36	CS-353	Modern Programming Languages	3 (2+1)
37	IT-451	Web Technologies	3 (2+1)
38	CS-401	Visual Programming	3(2+1)
39	CS-402	Network Strategies	3 (3+0)
40	SE-352	Advance Software Engineering	3 (3+0)
41	CS-453	Web Engineering	3 (2+1)
42	IT-454	Information System Audit	3 (3+0)
43	IT-455	Cloud Computing	3(3+0)
44	CS-354	Introduction to Soft Computing	3 (3+0)
45	CS-454	Real Time Systems	3 (3+0)
46	CS-355	Data Warehousing	3 (3+0)
47	CS-455	Data Mining	3 (3+0)
49	CS-456	Data Encryption and Security	3 (3-0)
50	CS-356	Advance Database Management Systems	3 (2+1)
51	CS-357	Introduction to Bioinformatics	3 (3+0)
52	SE-353	System Analysis and Design	3 (3+0)
53	SE-354	Event Driven Programming	3 (2+1)
54	IT-456	Social Networks	3 (3+0)



55	CS-358	Wireless Sensor Networks	3 (3+0)
56	SE-355	Functional Programming	3 (2+1)
57	CS-359	Mobile Computing	3 (3+0)
58	IT-457	Cyber Law	3 (3+0)
59	CS-457	Computer Graphics	3 (2+1)
60	CS-458	Big Data Analytics	3 (3+0)
61	IT-458	E-Commerce	3 (3+0)
62	CS-360	Game Application Development	3 (2+1)
63	SE-356	Global Software Development	3 (3+0)
64	IT-459	Management Information System	3 (3+0)
65	CS-361	Mobile Application Development	3 (2+1)
66	IT-460	Multimedia Communication	3 (3+0)
67	CS-459	Natural Language Processing	3 (3+0)
68	CS-460	Semantic Web	3 (3+0)
69	CS-362	System Programming	3 (2+1)
70	SE-357	Topics in Software Engineering	3 (3+0)

University Elective Courses

71	MGT-151	Principles of Accounting	3(3+0)
72	MGT-251	Organization Behavior	3(3+0)
73	PSY-401	Principles Psychology	3(3+0)
74	MGT-451	Entrepreneurship	3(3+0)

Non-Credit Courses

75	MATH-103	Mathematics-I	3 (3+0)
76	MATH-154	Mathematics-II	3 (3+0)

A Student majoring in **Bachelor of Science in Computer Science (BS-CS)** must complete minimum of **130 Credit Hours** courses. The courses semester wise structure is as follows:

Semester I			
Pre-requisite	Course Code	Title	Credit Hours
-	CS-101	Introduction to Information and Communication Technologies	3 (2+1)



-	CS-102	Programming Fundamentals	4 (3+1)
-	MATH-101	Calculus and Analytical Geometry	3 (3+0)
-	ISL-151	Islamic Studies	2 (2+0)
-	ENG-101	English Composition and Comprehension	3 (3+0)
-	PHY-101	Applied Physics	3 (3+0)
	MATH-103	Mathematics-I	3 (3+0)*
Total Semester Credit Hours			18 (16+2)

* Non-Credit Course for Pre-Medical Students

Semester II

Pre-requisite	Course Code	Title	Credit Hours
CS-102	CS-151	Object Oriented Programming	4 (3+1)
-	CS-152	Discrete Structures	3 (3+0)
ENG-101	ENG-151	Communication and Presentation Skills	3 (3+0)
-	STAT-151	Probability and Statistics	3 (3+0)
-	PS-151	Pakistan Studies	2 (2+0)
-	MGT-151	Principles of Accounting	3 (3+0)
	MATH-154	Mathematics-II	3 (3+0) *
Total Semester Credit Hours			18 (17+1)

* Non-Credit Course for Pre-Medical Students

Semester III

Pre-requisite	Course Code	Title	Credit Hours
CS-151	CS-201	Data Structure and Algorithms	4 (3+1)
-	CS-203	Computer Organization and Assembly Language	4 (3+1)
PHY-101	CS-202	Digital Logic Design	4 (3+1)
-	MGT-201	Professional Practices	3 (3+0)
-	MTH-201	Differential Equations	3 (3+0)
Total Semester Credit Hours			18(15+3)

Semester IV

Pre-requisite	Course Code	Title	Credit Hours
CS-201	CS-252	Design and Analysis of Algorithms	3(2+1)
	CS-253	Theory of Automata	3(3+0)
	CS-251	Database Systems	4(3+1)
	MATH-251	Linear Algebra	3 (3+0)
	MGT-251	Organization Behavior	3 (3+0)
Total Semester Credit Hours			16(14+2)



Semester V			
Pre-requisite	Course Code	Title	Credit Hours
CS-253	CS-303	Compiler Construction	3 (3+0)
	CS-304	Graph Theory	3 (3+0)
CS-201	CS-301	Operating Systems	4 (3+1)
	CS-302	Software Engineering	3 (3+0)
	MATH-302	Numerical Computing	3 (2+1)
Total Semester Credit Hours			16 (14+2)
Semester VI			
Pre-requisite	Course Code	Title	Credit Hours
CS-202	CS-351	Artificial Intelligence	4 (3+1)
	CS-352	Computer Networks	4 (3+1)
		CS Elective-1	3 (2+1)
		CS Elective-2	3 (3+0)
ENG-151	ENG-351	Technical and Business Writing	3 (3+0)
Total Semester Credit Hours			17(14+3)
Semester VII			
Pre-requisite	Course Code	Title	Credit Hours
		CS Elective-3	3 (2+1)
		CS Elective-4	3 (3+0)
	PSY-401	Principles of Psychology	3 (3+0)
CS-301	CS-403	Parallel and Distributed Computing	3 (3+0)
	CS-404	Final Year Project – I	3 (0+3)
Total Semester Credit Hours			15 (11+4)
Semester VIII			
Pre-requisite	Course Code	Title	Credit Hours
		CS Elective-5	3 (3+0)
	MGT-451	Entrepreneurship	3 (3+0)
		CS Elective-6	3 (3+0)
	CS-452	Human Computer Interaction	3 (3+0)
	CS-404	Final Year Project-II	3 (0+3)
Total Semester Credit Hours			15(12+3)

*The selection of the CS elective courses from the list will be based on the expertise of faculty member and demand of the market