AGENDA

FOR

10th MEETING OF THE DEPARTMENTAL COUNCIL

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CS & IT),

MIRPUR UNIVERSITY OF SCIENCE AND TECHNOLOGY (MUST), MIRPUR AZAD KASHMIR

The 10th Meeting of the Departmental Council in the Department of Computer Science & Information Technology held on 13-10-2022 at 11:00 a.m. with the following items and subjects.

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Item No. 1

Approval of Program Learning Outcomes (PLOs) for BS (CS) and BS (IT) programs for session 2022-26 and onwards

Program Learning Outcomes (PLOs)

Computing programs prepare students to attain educational objectives by ensuring that students demonstrate achievement of the following outcomes (derived from Graduate Attributes define by Seoul Accord www.seoulaccord.org).

Program Learning Outcomes (PLOs)	Computing Professional Graduate
1. Academic Education	To prepare graduates as computing professionals
2. Knowledge for Solving Computing Problems	Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements
3. Problem Analysis	Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines
4. Design/ Development of Solutions	Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations
5. Modern Tool Usage	Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations
6. Individual and Team Work	Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings
7. Communication	Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions
8. Computing Professionalism and Society	Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice
9. Ethics	Understand and commit to professional ethics, responsibilities, and norms of professional computing practice
10. Life-long Learning	Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional

Item No. 2

Approval of revised scheme of study of BS(CS) Session 2021-25

Eligibility Criteria

The minimum requirements for admission in a Bachelor of Sciences in Computer Science is at least 50% marks in the Intermediate (HSSC) examination with Mathematics or equivalent qualification with Mathematics certified by IBCC.

Program's Goal and Objectives

One of the goals of the program is to equip students with skills and knowledge that enable them to take on appropriate professional positions in the Computer Science field and grow into leading roles. The main objectives are;

1. Educate students with theoretical knowledge of Computer Science.
2. Enhance the programming, analytical, and problem-solving skills of students.
3. Empower students with the future vision of Computer Science and required research abilities.

Proposed Curriculum for BS (Computer Science)
Areas covered in the BS Program

Course Group	Credit hours	% age
General Education	19	15%
University Electives	12	9%
Mathematics & Science Foundation	12	9%
Computing – Core	39	30%
Common courses	**82**	**63%**
Domain CS		
Domain CS Core	24	18%
Domain CS Electives	21	12%
Domain CS Supporting	9	7%
Domain courses	**54**	**37%**
TOTAL	**136**	**100%**

Courses common for all computing BS programs – 82 Credits

Computing Core Courses Course Title	Credit hours
Programming Fundamentals	3-1
Object Oriented Programming	3-1
Data Structures & Algorithms	3-1
Discrete Structures	3-0
Operating Systems	3-1
Database Systems	3-1
Software Engineering	3-0
Computer Networks	3-1

Information Security	3-0
Final Year Project	0-6
Total	**39 (27-12)**

General Education Courses	**Credit hours**
Course Title	
English Composition & Comprehension	3
Technical & Business Writing	3
Communication & Presentation Skills	3
Professional Practices	3
Intro to Info. & Comm. Technologies	2-1
Pakistan Studies	2
Islamic Studies/ Ethics	2
Total	**18-1**

University Elective Courses	
Course Title	**Credit hours**
Foreign Language	2-0
Social Service	1-0
Management Related	3-0
Social Science Related	3-0
Economy Related	3-0
Total	**12-0**

Mathematics and Science Foundation Courses	
Course Title	
	Credit hours
Calculus & Analytical Geometry	3-0
Probability & Statistics	3-0
Linear Algebra	3-0
Applied Physics	3-0
Total	**12-0**

Domain Courses for BS (Computer Science)

Computer Science CORE (Compulsory) courses

Course Title	**Credit hours**
Compiler Construction	3-0
Comp. Organization & Assembly Language	3-1
Digital Logic Design	3-1
Design & Analysis of Algorithms	3-0
Parallel & Distributed Computing	3-0
Artificial Intelligence	3-1
Theory of Automata	3-0
Total	**24 (21-3)**

Computer Science SUPPORTING courses (ANY 3 from following list)

Coverage of relevant pre-requisite must be ensured while offering any

of the following courses from this category

Course Title	Credit hours
Differential Equations	3-0
Multi-variate Calculus	3-0
Graph Theory	3-0
Theory of Programming Languages	3-0
Numerical Computing	3-0
Total (Any three of the above)	**9-0**

Computer Science ELECTIVE courses

Course Title	Credit hours
CS Elective – 1	3+1
CS Elective – 2	3+1
CS Elective – 3	3+1
CS Elective – 4	3
CS Elective – 5	3
CS Elective – 6	3
Total	21

Proposed Study Plan for BS (Computer Science)

4-Years Program (8 Regular Semesters of 18 weeks each)

Semester-1

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-1101		Introduction to Information and Communication Technology	2	1	3
BCS-1102		Programming Fundamentals	3	1	4
PHY-1118		Applied Physics	3	0	3
MAT-1115		Calculus and Analytical Geometry	3	0	3
ENG-1107		English Composition & Comprehension	3	0	3
		Total:	**14**	**2**	**16**

Semester-2

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-1203	BCS-1102	Object Oriented Programming	3	1	4
BCS-1204		Digital Logic Design	3	1	4
ENG-1207		Communication & Presentation Skills	3	0	3
PSY-1219		Psychology	3	0	3
STA-1220		Statistics and Probability	3	0	3
		Total:	**15**	**2**	**17**

Semester-3

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-2305		Data Structures and Algorithms	3	1	4
BCS-2306		Computer Organization and Assembly Language	2	1	3
BCS-2307		Software Engineering	3	0	3
MAT-2315		Differential Equations	3	0	3
BCS-2308		Discrete Structures	3	0	3
ISL-2312		Islamic Studies	2	0	2
		Total:	**16**	**2**	**18**

Semester-4

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-2409		Design and Analysis of Algorithms	3	0	3
MAT-2415		Linear Algebra	3	0	3
BCS-2410		Database Systems	3	1	4
BCS-2411		Operating Systems	3	1	4
ARA-2401		Arabic	3	0	3
		Total:	**15**	**2**	**17**

Semester-5

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-3512	BCS-2411	Parallel & Distributed Computing	3	0	3
BCS-3513		Theory of Automata	3	0	3
MAT-3515		Numerical Computing	3	0	3
BCS-35XX		CS Elective-1	3	1	4
BCS-35XX		CS Elective-2	3	1	4
		Total:	**15**	**2**	**17**

Semester-6

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-3614		Artificial Intelligence	3	0	3
BCS-3615		Computer Networks	3	0	3
BCS-3616		Compiler Construction	3	0	3
PS-3617		Pakistan Studies	2	0	2
BCS-36XX		CS Elective-4	3	1	4
BSC-36XX		CS Elective-3	3	0	3
		Total:	**17**	**1**	**18**

Semester 7

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-4717		Information Security	3	0	3
BCS-4718		Final Year Project I	0	0	s/u
HUM-4704		Professional Practices	3	0	3
ENG-4707		Technical and Business Writing	3	0	3
ECO-4706		Economics	3	0	3
BCS-4719		Human Computer Interaction	3	0	3

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-47XX		CS Elective-5	2	1	3
		Total:	**17**	**1**	**18**

Semester-8

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-4820		Final Year Project II	0	6	6
BSC-4821		Theory of Programming Languages	3	0	3
HRM-4809		Human Resource Management	3	0	3
BCS-4822		Internship/ Practical Training	-	-	S/U
BCS-48XX		CS Elective-6	3	0	3
		Total:	**9**	**6**	**15**

List of CS-Elective Courses

S.No.	Course Code	Title	Lec. Hrs	Lab. Hrs	Credit Hours
Area		**Software Engineering and Development**			
1	BCS-4823	Semantic Web	3	0	3
2	BCS-4724	Visual Programming	2	1	3
3	BCS-3525	Web Design and Development	3	1	4
4	BCS-3626	Mobile Application Development	3	1	4
5	BCS-3527	Computer Graphics and Animations	3	1	4
Area		**Data Science**			
6	BCS-3528	Distributed Database System	3	1	4
7	BCS-3629	Data Mining	3	0	3
8	BCS-4730	Big Data Analytics	3	0	3
Area		**Network and security**			
9	BCS-3631	Wireless Networks	3	0	3
10	BCS-4732	System and Network Administration	3	1	4
11	BCS-4733	Network Security	3	0	3
Area		**Machine Learning & Miscellaneous**			
12	BCS-4834	Deep Learning	3		3
13	BCS-4735	Digital Image Processing	3	0	3
14	BCS-4836	Applications in blockchain	3		3
15	BCS-3537	Introduction to Python Programming	3	1	4
16	BCS-3638	Information System	3	0	3
17	BCS-3539	Object Oriented Analysis and Design	3	0	3
18	BCS-3640	Game Development	3	0	3

Important Note:-

1. The existing scheme of study of BS (CS) session 2021-2025 is updated. The changes are made from semesters 3rd to 8th.

2. The revised scheme of study will also be applicable on sessions 2022-2026 and onward. However, the OBE-based curriculum will be applicable on sessions 2022-2026 and onwards.

Item No. 3

Approval of revised scheme of study of BS(IT) Session 2021-25

Eligibility Criteria

The minimum requirements for admission in a Bachelor of Sciences in Information Technology is at least 50% marks in the Intermediate (HSSC) examination with Mathematics or equivalent qualification with Mathematics certified by IBCC.

Program's Goal and Objectives

One of the main goals of the BS(IT) program is to equip students with skills and knowledge that enable them to take on appropriate professional positions in the ICT industry and grow into leading roles. The main objectives are;
1. Educate students with knowledge of Computer Science and Information Technology.
2. Enhance the programming, analytical, and problem-solving skills of students.
3. Enable students to Select, design, integrate and administer Computer based solutions into the organizational environment

Category-wise Credit Hours Distribution

Course Group	Credit hours	% age
General Education	18	15%
University Electives	12	9%
Mathematics & Science Foundation	12	9%
Computing – Core	40	30%
Common courses	**82**	**63%**
Domain IT		
Domain IT Core	24	18%
Domain IT Electives	21	12%
Domain IT Supporting	9	7%
Domain courses	**54**	**37%**
TOTAL	**136**	**100%**

Course Title	Credit hours
Programming Fundamentals	3-1
Object Oriented Programming	3-1
Data Structures & Algorithms	3-1
Discrete Structures	3-0
Operating Systems	3-1
Database Systems	3-1
Software Engineering	3-0

Computer Networks	3-1
Information Security	3-0
Final Year Project	0-6
Total	**39 (27-12)**

General Education Courses

Course Title	Credit hours
English Composition & Comprehension	3-0
Technical & Business Writing	3-0
Communication & Presentation Skills	3-0
Professional Practices	3-0
Intro to Info. & Comm. Technologies	2-1
Pakistan Studies	2-0
Islamic Studies/ Ethics	2-0
Total	**18-1**

University Elective Courses
(Not limited to the list below, Institutions may add more courses)

Course Title	Credit hours
Foreign Language	2-0
Social Service	1-0
Management Related	3-0
Social Science Related	3-0
Economy Related	3-0
Total	**12-0**

Mathematics and Science Foundation Courses

Course Title

	Credit hours
Calculus & Analytical Geometry	3-0
Probability & Statistics	3-0
Linear Algebra	3-0
Applied Physics	3-0
Total	**12-0**

Domain Courses for BS-IT

BS-IT CORE **(Compulsory) courses Course Title**	**Credit hours**
Cyber Security	3-0
Database Administration and Management	3-1
Information Technology Project Management	3-0
Information Technology Infrastructure	3-0
System and Network Administration	3-1
Virtual Systems and Services	3-1
Web Technologies	3-0
Total	**24 (21-3)**

BS-IT SUPPORTING courses (ANY 3 from the following list)
(Coverage of relevant pre-requisite must be ensured while offering any of the following courses from this category)

Course Title	Credit hours
Enterprise Systems	3-0

Modeling and Simulation	3-0
Formal Methods	3-0
Operations Research	3-0
Software Requirements Engineering	3-0
Total (Any three of the above)	**9-0**

BS-IT ELECTIVE courses Course Title	**Credit hours**
IT Elective – 1	3+1
IT Elective – 2	3
IT Elective – 3	3+1
IT Elective – 4	3
IT Elective – 5	3+1
IT Elective – 6	3
Total	**21**

Proposed Study Plan for BS (Information Technology)

4-Years Program (8 Regular Semesters of 18 weeks each)

Semester-1

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-1101		Introduction to Information and Communication Technology	2	1	3
BIT-1102		Programming Fundamentals	3	1	4
PHY-1118		Applied Physics	3	0	3
MAT-1115		Calculus and Analytical Geometry	3	0	3
ENG-1107		English Composition & Comprehension	3	0	3
		Total:	**14**	**2**	**16**

Semester-2

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-1203	BIT-1102	Object Oriented Programming	3	1	4
ENG-1207		Communication & Presentation Skills	3	0	3
BIT-1204		Enterprise Systems	3	0	3
STA-1220		Probability and Statistics	3	0	3
HRM-1209		Human Resource Management	3	0	3
PSY-1219		Psychology	3	0	3
		Total:	**18**	**1**	**19**

Semester-3

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-2405		Database Systems	3	1	4
BIT-2306		Data Structure and Algorithms	3	1	4
BIT-2307		Discrete Structures	3	0	3
MAT-2305		Linear Algebra	3	0	3
BIT-2308		Information Technology Infrastructure	3	0	3
		Total:	**15**	**2**	**17**

Semester-4

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-2409		Software Engineering	3	0	3
ISL-2312		Islamic Studies	2	0	2
BIT-2410		Computer Networks	3	1	4
BIT-2411		Operating Systems	3	1	4
ARA-2401		Arabic	3	0	3
		Total:	**14**	**2**	**16**

Semester-5

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-3512		Information Technology Project Management	3	0	3
BIT-3513		System & Network Administration	3	1	4
BIT-3514		Information Security	3	0	3
BIT-35XX		IT Elective-1	3	1	4
BIT-35XX		IT Elective-2	3	0	3
		Total:	**15**	**2**	**17**

Semester-6

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-3615		Cyber Security	3	0	3
BIT-3616		Web Technologies	3	0	3
BIT-3617		Database Administration & Management	3	1	4
BIT-36XX		IT Elective-3	3	1	4
BIT-36XX		IT Elective-4	3	0	3
		Total:	**15**	**2**	**17**

Semester 7

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-4718		Final Year Project	0	0	s/u
BIT-4719		Operations Research	3	0	3
HUM-4704		Professional Practices	3	0	3
BIT-4720		Virtual System and Services	3	1	4
MGS-4702		Economics	3	0	3
BIT-47XX		IT Elective-5	3	1	4
		Total:	**15**	**2**	**17**

Semester-8

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-4821		Final Year Project	0	6	6
ENG-4807		Technical and Business Writing	3	0	3

BIT-4822		Modeling and Simulation	3	0	3
BIT-4823		Internship/ Practical Training	-	-	S/U
PS-4817		Pakistan Studies	2	0	2
BIT-48XX		IT Elective-6	3	0	3
		Total:	**11**	**6**	**17**

List of IT-Elective Courses

S.No.	Course Code	Title	Lec. Hrs	Lab. Hrs	Credit Hours
Area		**Software Engineering and Development**			
1	BIT-4824	Semantic Web	3	0	3
2	BIT-3525	Visual Programming	3	1	4
3	BIT-3526	Web Design and Development	3	1	4
4	BIT-3627	Mobile Application Development	3	1	4
5	BIT-3528	Programming in Python	3	1	4
Area		**Network and security**			
6	BIT-3529	Wireless Networks	3	0	3
7	BIT-3630	Telecommunication System	3	0	3
8	BIT-4831	Ethical Hacking	3	0	3
9	BIT-4732	Network Security	3	0	3
Area		**Miscellaneous**			
10	BIT-4733	Ecommerce	3	0	3
11	BIT-3534	Information System	3	0	3
12	BIT-4835	Robotics	3	0	3
13	BIT-3636	Big Data Analytics	3	0	3
14	BIT-3637	Data Mining	3	0	3

Important Note:-

1. The existing scheme of study of BS (IT) session 2021-2025 is updated. The changes are made from semesters 3rd to 8th.

2. The revised scheme of study will also be applicable on sessions 2022-2026 and onward. However, the OBE-based curriculum will be applicable on sessions 2022-2026 and onwards.

3. Apart from the presented list of elective courses, faculty members can also offer their area of specialization/expertise as an elective subject.

4. The elective course offering is subject to the availability of rooms and faculty members.

Item No. 4

Approval/Adaptation of CLOs outlined by HEC for each Computing course (where available) for BSCS and BSIT Programs

The course outlines with CLOs for BSCS and BSIT programs as outlined by HEC in the curriculum revised in 2017 are adapted where available.

The course outlines are available in a separate document. BSCS and BSIT Course outlines with CLOs

This will affect the students of BSCS and BSIT of session 2022 and onward.

Item No. 5

Approval for Changes of Courses in Scheme of study of BS(CS) Approved in 7th BoS was held on 06-06-2016

Two changes are suggested in the 7th semester of the BSCS program for Sessions 2019-23 and 2020-2024.

1. The course of Fuzzy Logic of 3 credit hours is replaced with Visual Programming of credit hours (2+1).
2. The course of System Programming 3 credit hours is replaced with Theory of Programming Languages of credit hours (3).

Semester 7

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BCS-4701		Visual Programming	2	1	3
BCS-4702		Compiler Construction	3	0	3
BCS-4703		Numerical Computing	3	0	3
BCS-4704		Digital Image Processing	3	0	3
BCS-4705		Theory of Programming Languages	3	0	3
BCS-4706		Final Year Project (1)	-	-	S/U
		Total:			**15**

Item No. 6

Approval for Changes of Courses in Scheme of study BS(IT) Approved in 7ᵗʰ BoS was held on 06-06-2016

One change is suggested in the 5ᵗʰ semester of the BSIT program for Session 2020-2024**.**

1. The course of DB Administration & Management *(IS) is being removed to balance the total credit hours.

Semester-5

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-3501	-	Web Design and Development *(IC)	2	1	3(2+1)
BIT-3502	-	DB Administration & Management *(IS)	3	0	3
BIT-3503	-	Multimedia Technologies *(IC)	3	0	3
BIT-3504	-	Telecommunication Systems *(IE)	3	0	3
BIT-3505	BIT-2402	Software Engineering II *(CC)	3	0	3
BIT-3506	-	Technology Management *(IC)	3	0	3
		Total:			**18**

Updated Semester 5

Code	Pre-Req	Title	Lec. Hrs	Lab. Hrs	Credit Hours
BIT-3501	-	Web Design and Development *(IC)	2	1	3(2+1)
BIT-3503	-	Multimedia Technologies *(IC)	3	0	3
BIT-3504	-	Telecommunication Systems *(IE)	3	0	3
BIT-3505	BIT-2402	Software Engineering II *(CC)	3	0	3
BIT-3506	-	Technology Management *(IC)	3	0	3
		Total:			**15**

Item No. 7

Approval of Minutes of meeting of Industrial Advisory Board (IAB) for BSCS and BSIT Programs held on 07-10-2022.

Minutes of 1st Industrial Advisory Board of CS&IT Department

The first meeting of IAB of the Department of Computer Science & Information Technology was held on 7 September 2022, at 10 HRS at the Department of Computer Science & Information Technology to collect valuable feedback from the board members.

The meeting was formally started with the recitation of Holy Quran verses by Dr. Iftikhar Ahmad Assistance Professor, CS&IT Department.

The coordinator of the CS&IT Department Dr. Yasir Mahmood warmly welcomed all the participating members of the Industrial Advisory Board for their valuable participation.

Board members discussed the agenda items one by one and provided their valuable recommendations.

Mr. Muhammad Akram Director of Quality Cell, Najran University KSA gave the following suggestions/comments:

1- Courses in the Scheme of study of CS and IT programs are ok.

2- There must be Lab for Computer Networks at BSIT.

3- Benchmarking with at least three national and international university courses taught at the undergraduate level should be done.

4- There should be an external review of the programs.

5- The implementation of schemes of study is important.

6- Knowledge area should be defined.

7- CLOs should be defined by the group of faculty members, not by a single member.

Mr. Muhsin Yasin suggested course coordinators for each knowledge area. He recommended the followings:

1- The network and security area should be changed to cyber security because network and security is a part/subset of Cyber Security and by making a few changes in the modules here it can cover both cyber security and network security.

2- Add ethical Hacking and network and web-based security courses can be added in the elective part.

Mr. Ahsan suggested adding new tools.

Mr. Rehman suggested focusing on Lab work.

Mr. Usman commented, FYP should be related to Market demands or should be started as a startup.

Mr. Zeeshan Asghar highlighted a few typos.

The course name of FYP in the 7th and 8th semesters should be FYP I & FYP II.

The data structure course name is data structures

Add Game development courses or tools e.g. Unity 3D

Add OOP Design course as elective in both BSCS/BSIT program

The Coordinator of the CS&IT department informed the members about changes made in schemes of studies of currently running batches and for the upcoming batch of fall 2022 that will be PLO/CLO based. The Coordinator of the CS&IT department also informed the members that knowledge groups are already made, and the coordinator of each knowledge group is chosen. Benchmarking with five national and international universities has already been done. The suggested courses are added to the elective list of both CS and IT programs.

The meeting ended with a note of thanks from the chair.

Dr. Yasir Mehmood

Coordinator, Department of CSIT
MUST, Mirpur (A.K)