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Director Academics

Approved
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Dean Faculty of Computing & AI

Recommended, please. Apr.
5/9/25

1. The Department of Creative Technologies has held a **DBS meeting** on curriculum changes for **BSAI, BSDS, and BSSE** programs for the **Fall 2025 intake and onwards**, followed by the **FBS**.
 - The relevant minutes of these meetings are attached as **Flag A** and **Flag B**.
 - The updated curriculums for Fall 2025 and onwards are attached as **Flag C**.
 - Additionally, the **Fall 2023 curriculums** for all three programs have also been updated with the inclusion of **Pakistan Studies (HU115)** in **Semester 7**. (Attached as **Flag D**).
2. The case is hereby forwarded for kind **approval of the updated curriculums**, please

Imran

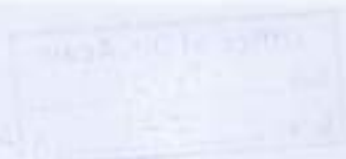
Dr. Imran Ihsan
Professor
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Department of Creative Technologies

05 Sep 2025



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Scheme of Studies

Faculty of Computing and Artificial Intelligence
Department of Creative Technologies
Bachelor of Science in Artificial Intelligence
(Applicable from Fall-2025 Intake & Onwards)

Framework of BSAI Program					
Area	Category	Code	Course Title	Cr. Hrs.	%
Computing	Computing Core	CS111	Programming Fundamentals	3-0-3	✓
		CS111L	Programming Fundamentals Lab	0-1-1	
		CS112	Object Oriented Programming	3-0-3	
		CS112L	Object Oriented Programming Lab	0-1-1	
		CS130	Database Systems	3-0-3	
		CS130L	Database Systems Lab	0-1-1	
		EE123	Digital Logic Design	2-0-2	
		EE123L	Digital Logic Design Lab	0-1-1	
		CS216	Data Structures	3-0-3	
		CS216L	Data Structures Lab	0-1-1	
		CS215	Information Security	2-0-2	
		CS215L	Information Security Lab	0-1-1	
		AI232	Introduction to Artificial Intelligence	2-0-2	
		AI232L	Introduction to Artificial Intelligence Lab	0-1-1	
		CS260	Computer Networks	2-0-2	✓
		CS260L	Computer Networks Lab	0-1-1	
		SE100	Software Engineering	3-0-3	
		CS226	Computer Organization and Assembly Language	2-0-2	✓
		CS226L	Computer Organization and Assembly Language Lab	0-1-1	
		CS325	Operating Systems	2-0-2	
		CS325L	Operating Systems Lab	0-1-1	
		CS332	Design and Analysis of Algorithms	3-0-3	
		AI497	Final Year Project - I	0-1-1	✓
		AI498	Final Year Project - II	0-2-2	✓
		AI499	Final Year Project - III	0-3-3	✓
	Domain Core	AI130	Programming for Artificial Intelligence	2-0-2	
		AI130L	Programming for Artificial Intelligence Lab	0-1-1	
		AI233	Machine Learning	2-0-2	
		AI233L	Machine Learning Lab	0-1-1	
		CS426	Parallel and Distributed Computing	2-0-2	
		CS426L	Parallel and Distributed Computing Lab	0-1-1	
		AI335	Deep Learning	2-0-2	✓
		AI335L	Deep Learning Lab	0-1-1	
		AI421	Knowledge Representation and Reasoning	2-0-2	
		AI421L	Knowledge Representation and Reasoning Lab	0-1-1	
		AI403	Computer Vision	2-0-2	
		AI403L	Computer Vision Lab	0-1-1	
	Domain Elective	AIXXX	Domain Elective - I	2-0-2	
		AIXXXL	Domain Elective - I Lab	0-1-1	
		AIXXX	Domain Elective - II	2-0-2	
		AIXXXL	Domain Elective - II Lab	0-1-1	
		AIXXX	Domain Elective - III	2-0-2	
		AIXXXL	Domain Elective - III Lab	0-1-1	

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		AIXXX	Domain Elective - IV	2-0-2	
		AIXXXL	Domain Elective - IV Lab	0-1-1	
		AIXXX	Domain Elective - V	2-0-2	
		AIXXXL	Domain Elective - V Lab	0-1-1	
		AIXXX	Domain Elective - VI	2-0-2	
		AIXXXL	Domain Elective - VI Lab	0-1-1	
		AIXXX	Domain Elective - VII	2-0-2	
		AIXXXL	Domain Elective - VII Lab	0-1-1	
Total	Number of Computing Core Courses: *14			Cr. Hrs. : 46 (30 – 16)	62%
	Number of Domain Core Courses: 06			Cr. Hrs. : 18 (12 – 6)	
	Number of Domain Elective Courses: 07			Cr. Hrs. : 21 (14 – 7)	
	Number of Computing Courses: 27			Cr. Hrs. : 85 (56 – 29)	
	* Note: FYP-I, FYP-II, and FYP-III are considered two rather than three courses.				
Non-Computing	Mathematics & Supporting Courses	MA105	Multivariable Calculus	3-0-3	
		MA201	Linear Algebra	3-0-3	
		MA301	Probability and Statistics	3-0-3	
		EL400	Technical & Business Writing	3-0-3	
	Elective Supporting	XXXXX	Elective Supporting - I	3-0-3	
	General Education Requirement Courses	CS181	Applications of Information & Communication Technologies	2-0-2	
		CS181L	Applications of Information & Communication Technologies Lab	0-1-1	
		EL170	Functional English	3-0-3	
		EL271	Expository Writing	3-0-3	
		MA216	Quantitative Reasoning – I (Discrete Structures)	3-0-3	
		MA110	Quantitative Reasoning – II (Calculus & Analytical Geometry)	3-0-3	
		HU124	Islamic Studies & Ethics	2-0-2	
		HU405	Ideology and Constitution of Pakistan	2-0-2	
		BA152	Social Sciences (Introduction to Management)	2-0-2	
		PH111	Natural Sciences (Applied Physics)	2-0-2	
		PH111L	Natural Sciences (Applied Physics Lab)	0-1-1	
		CS470	Arts & Humanities (Professional Practices)	2-0-2	
		HU411	Civics and Community Engagement	2-0-2	
		BA353	Entrepreneurship	2-0-2	
		HU115	Pakistan Studies	2-0-2	
		FQ100	Fehm-e-Quran I	0-1-1	
		FQ101	Fehm-e-Quran II	0-1-1	
Total	Number of Mathematics and Supporting Courses: 04			Cr. Hrs. : 12 (12 – 0)	38%
	Number of Elective Supporting Courses: 01			Cr. Hrs. : 3 (3 – 0)	
	Number of General Education Requirement Courses: 15			Cr. Hrs. : 34 (30 – 4)	
	Number of Non-Computing Courses: 20			Cr. Hrs. : 49 (45 – 4)	
Grand Total	Total Number of Courses: 47 + Internship				
	Total Cr. Hrs. : 134 (101 – 33) + Internship (03) = 137				

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Semester-Wise Scheme of Studies

Faculty of Computing and Artificial Intelligence
Department of Creative Technologies
Bachelor of Science in Artificial Intelligence
(Applicable from Fall-2025 Intake & Onwards)

Semester – I				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	CS111	Programming Fundamentals		3-0-3
2	CS111L	Programming Fundamentals Lab		0-1-1
3	CS181	Applications of Information & Communication Technologies		2-0-2
4	CS181L	Applications of Information & Communication Technologies Lab		0-1-1
5	EL170	Functional English		3-0-3
6	HU124	Islamic Studies & Ethics		2-0-2
7	PH111	Applied Physics		2-0-2
8	PH111L	Applied Physics Lab		0-1-1
9	HU115	Pakistan Studies		2-0-2
10	*MA114	Foundational Mathematics (Non-Credit for Medical students)		3-0-3
Total Contact Hours: 23			Total Cr. Hr.	14-3-17

Semester – II				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	CS112	Object Oriented Programming	CS111, CS111L	3-0-3
2	CS112L	Object Oriented Programming Lab	CS111, CS111L	0-1-1
3	EE123	Digital Logic Design	-	2-0-2
4	EE123L	Digital Logic Design Lab	-	0-1-1
5	CS260	Computer Networks	-	2-0-2
6	CS260L	Computer Networks Lab	-	0-1-1
7	AI130	Programming for Artificial Intelligence	-	2-0-2
	AI130L	Programming for Artificial Intelligence Lab		0-1-1
8	MA216	Discrete Structures	-	3-0-3
9	FQ100	Fehm-e-Quran I	-	0-1-1
10	*MA118	Pre-Calculus (Non-Credit for Medical Students only)	-	3-0-3
Total Contact Hours: 25			Total Cr. Hr.	12-5-17

Semester – III				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	CS216	Data Structures	CS112, CS112L	3-0-3
2	CS216L	Data Structures	CS112, CS112L	0-1-1
3	CS226	Computer Organization and Assembly Language	EE123, EE123L	2-0-2
4	CS226L	Computer Organization and Assembly Language Lab	EE123, EE123L	0-1-1
5	AI232	Introduction to Artificial Intelligence	-	2-0-2
6	AI232L	Introduction to Artificial Intelligence Lab	-	0-1-1
7	FQ101	Fehm-e-Quran II	FQ100	0-1-1
8	MA110	Calculus & Analytical Geometry	-	3-0-3
9	MA301	Probability and Statistics	-	3-0-3
Total Contact Hours: 25			Total Cr. Hr.	13-4-17

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Semester – IV				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	AI233	Machine Learning	AI232, AI232L	2-0-2
2	AI233L	Machine Learning Lab	AI232, AI232L	0-1-1
3	CS130	Database Systems	-	3-0-3
4	CS130L	Database Systems Lab	-	0-1-1
5	MA105	Multivariable Calculus	MA110	3-0-3
6	CS332	Design and Analysis of Algorithms	CS216, CS216L	3-0-3
7	AIXXX	Domain Elective - I	-	2-0-2
8	AIXXXL	Domain Elective - I Lab	-	0-1-1
Total Contact Hours: 22			Total Cr. Hr.	13-3-16

Summer				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	AI496	*Internship	-	03
*Internship Requirement: Each student must complete a 6-week internship after the 4th semester, preferably during the summer break. The internship will be evaluated as a 3-credit hour course and included in the transcript. In exceptional cases, students may defer the internship until after the 6th semester with approval from the Head of Department.				

Semester – V				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	CS325	Operating Systems	CS226, CS226L	2-0-2
2	CS325L	Operating Systems Lab	CS226, CS226L	0-1-1
3	AI335	Deep Learning	AI233, AI233L	2-0-2
4	AI335 L	Deep Learning Lab	AI233, AI233L	0-1-1
5	AIXXX	Domain Elective - II	-	2-0-2
6	AIXXXL	Domain Elective - II Lab	-	0-1-1
7	AIXXX	Domain Elective - III	-	2-0-2
8	AIXXXL	Domain Elective - III Lab	-	0-1-1
9	MA201	Linear Algebra	-	3-0-3
10	BA152	Introduction to Management	-	2-0-2
Total Contact Hours: 25			Total Cr. Hr.	13-4-17

Semester – VI				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	CS426	Parallel and Distributed Computing	CS325, CS325L	2-0-2
2	CS426L	Parallel and Distributed Computing Lab	CS325, CS325L	0-1-1
3	SE100	Software Engineering	-	3-0-3
4	EL271	Expository Writing	EL170	3-0-3
5	AIXXX	Domain Elective - IV	-	2-0-2
6	AIXXXL	Domain Elective - IV Lab	-	0-1-1
7	AIXXX	Domain Elective - V	-	2-0-2
8	AIXXXL	Domain Elective - V Lab	-	0-1-1
9	AI497	Final Year Project - I	List-A	0-1-1
Total Contact Hours: 20 + 3 Hrs. FYP			Total Cr. Hr.	12-4-16

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Semester – VII				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	AI498	Final Year Project - II	AI497	0-2-2
2	AI421	Knowledge Representation and Reasoning	CS216, CS216L	2-0-2
3	AI421L	Knowledge Representation and Reasoning Lab	CS216, CS216L	0-1-1
4	AIXXX	Domain Elective - VI	-	2-0-2
5	AIXXXL	Domain Elective - VI Lab	-	0-1-1
6	AI403	Computer Vision	-	2-0-2
7	AI403L	Computer Vision Lab	-	0-1-1
8	CS215	Information Security	-	2-0-2
9	CS215L	Information Security Lab	-	0-1-1
10	EL400	Technical & Business Writing	-	3-0-3
Total Contact Hours: 23 + 6 Hrs. FYP			Total Cr. Hr.	11-6-17

Semester – VIII				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	AI499	Final Year Project - III	AI498	0-3-3
2	HU405	Ideology and Constitution of Pakistan	-	2-0-2
3	CS470	Professional Practices	-	2-0-2
4	HU411	Civics and Community Engagement	-	2-0-2
5	AIXXX	Domain Elective - VII	-	2-0-2
6	AIXXXL	Domain Elective - VII Lab	-	0-1-1
7	XXXXX	Elective Supporting – I	-	3-0-3
8	BA353	Entrepreneurship	-	2-0-2
Total Contact Hours: 16 + 9 Hrs. FYP			Total Cr. Hr.	13-4-17

Program Total Credit Hours: 134 (101 – 33) + Internship (03) = 137

List-A: Pre-Requisite Courses for Final Year Project - I				
S. No.	Code	Course Title	Cr. Hrs.	
1	CS111	Programming Fundamentals	3-0-3	
2	CS111L	Programming Fundamentals Lab	0-1-1	
3	CS112	Object Oriented Programming	3-0-3	
4	CS112L	Object Oriented Programming Lab	0-1-1	
5	CS216	Data Structures	3-0-3	
6	CS216L	Data Structures Lab	0-1-1	
7	SE101	Introduction to Software Engineering	3-0-3	
8	CS130	Database Systems	3-0-3	
9	CS130L	Database Systems Lab	0-1-1	

List of Domain Elective Courses

Note: Students are required to complete seven (07) domain elective courses, with at least five (05) selected from the designated list below. Up to two (02) electives may be taken from other departments within the Faculty of Computing and Artificial Intelligence (FCAI), subject to approval by the respective HoDs.

No.	Code	Course Title	Cr. Hr.
Group 01: Intelligent Systems & Automation			
1	AI315	Artificial Intelligence in Automation	2-0-2
	AI315L	Artificial Intelligence in Automation Lab	0-1-1
2	AI316	AI Project Design and Development	2-0-2
	AI316L	AI Project Design and Development Lab	0-1-1

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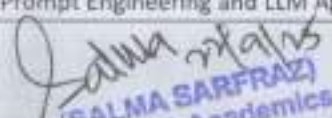
3	AI317	Agent Based Systems	2-0-2
	AI317L	Agent Based Systems Lab	0-1-1
4	AI318	Expert Systems with Applications	2-0-2
	AI318L	Expert Systems with Applications Lab	0-1-1
5	AI319	Cognitive Computing Systems	2-0-2
	AI319L	Cognitive Computing Systems Lab	0-1-1
6	AI320	AI for Robotics and Control Systems	2-0-2
	AI320L	AI for Robotics and Control Systems Lab	0-1-1
7	AI322	Knowledge Based Systems	2-0-2
	AI322L	Knowledge Based Systems Lab	0-1-1
8	AI411	AI-based Decision Support Systems	2-0-2
	AI411L	AI-based Decision Support Systems Lab	0-1-1
9	AI412	Autonomous Systems Design	2-0-2
	AI412L	Autonomous Systems Design Lab	0-1-1
Group 02: Data Science & AI Applications			
10	AI307	Biomedical Data Processing and Analysis	2-0-2
	AI307L	Biomedical Data Processing and Analysis Lab	0-1-1
11	AI308	Advanced Multimedia Processing	2-0-2
	AI308L	Advanced Multimedia Processing Lab	0-1-1
12	AI329	AI for Environmental Data Analysis	2-0-2
	AI329L	AI for Environmental Data Analysis Lab	0-1-1
13	AI418	Applied AI with Computer Vision	2-0-2
	AI418L	Applied AI with Computer Vision Lab	0-1-1
14	AI422	AI in Healthcare Applications	2-0-2
	AI422L	AI in Healthcare Applications Lab	0-1-1
15	AI423	Remote Sensing and AI	2-0-2
	AI423L	Remote Sensing and AI Lab	0-1-1
16	AI424	AI for Smart Cities	2-0-2
	AI424L	AI for Smart Cities Lab	0-1-1
17	AI436	Visual Learning and Recognition	2-0-2
	AI436L	Visual Learning and Recognition Lab	0-1-1
18	AI437	Intelligent Video Analytics	2-0-2
	AI437L	Intelligent Video Analytics Lab	0-1-1
Group 03: AI in Embedded & Ubiquitous Systems			
19	AI311	Microcontroller and Embedded Processing	2-0-2
	AI311L	Microcontroller and Embedded Processing Lab	0-1-1
20	AI313	Internet of Things and Sensor Networks	2-0-2
	AI313L	Internet of Things and Sensor Networks Lab	0-1-1
21	AI314	Ubiquitous Computing and Intelligent Systems	2-0-2
	AI314L	Ubiquitous Computing and Intelligent Systems Lab	0-1-1
22	AI431	AI for Edge Computing	2-0-2
	AI431L	AI for Edge Computing Lab	0-1-1
23	AI432	Embedded AI Systems	2-0-2
	AI432L	Embedded AI Systems Lab	0-1-1
24	AI433	Intelligent Cyber-Physical Systems	2-0-2
	AI433L	Intelligent Cyber-Physical Systems Lab	0-1-1

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Group 04: AI in Human-Computer Interaction & Software Systems			
25	AI234	Human Computer Interaction and AI	2-0-2
	AI234L	Human Computer Interaction and AI Lab	0-1-1
26	AI235	Mobile Application Development and AI	2-0-2
	AI235L	Mobile Application Development and AI Lab	0-1-1
27	AI236	Web Engineering and AI	2-0-2
	AI236L	Web Engineering and AI Lab	0-1-1
28	AI341	Conversational Agents and Chatbots	2-0-2
	AI341L	Conversational Agents and Chatbots Lab	0-1-1
29	AI342	AI-driven UX/UI Design	2-0-2
	AI342L	AI-driven UX/UI Design Lab	0-1-1
30	AI431	AI in Software Engineering Practices	2-0-2
	AI431L	AI in Software Engineering Practices Lab	0-1-1
Group 05: Knowledge Representation & Semantic AI			
31	AI327	Knowledge Graphs	2-0-2
	AI327L	Knowledge Graphs Lab	0-1-1
32	AI351	Ontologies and Knowledge Representation	2-0-2
	AI351L	Ontologies and Knowledge Representation Lab	0-1-1
33	AI352	AI for Information Extraction	2-0-2
	AI352L	AI for Information Extraction Lab	0-1-1
34	AI421	Semantic Technologies	2-0-2
	AI421L	Semantic Technologies Lab	0-1-1
35	AI428	Explainable Artificial Intelligence	2-0-2
	AI428L	Explainable Artificial Intelligence Lab	0-1-1
36	AI451	Fairness, Accountability & Transparency in AI	2-0-2
	AI451L	Fairness, Accountability & Transparency in AI Lab	0-1-1
Group 06: Natural Language Processing & Language Technologies			
37	AI323	Information Retrieval	2-0-2
	AI323L	Information Retrieval Lab	0-1-1
38	AI324	Natural Language Processing	2-0-2
	AI324L	Natural Language Processing Lab	0-1-1
39	AI325	Computational Linguistics and Text Analytics	2-0-2
	AI325L	Computational Linguistics and Text Analytics Lab	0-1-1
40	AI326	Speech Processing Techniques and Applications	2-0-2
	AI326L	Speech Processing Techniques and Applications Lab	0-1-1
41	AI328	Large Language Models: From Theory to Applications	2-0-2
	AI328L	Large Language Models: From Theory to Applications Lab	0-1-1
42	AI361	AI for Sentiment and Emotion Analysis	2-0-2
	AI361L	AI for Sentiment and Emotion Analysis Lab	0-1-1
43	AI429	Applied Natural Language Processing	2-0-2
	AI429L	Applied Natural Language Processing Lab	0-1-1
44	AI461	Dialogue Systems and Conversational AI	2-0-2
	AI461L	Dialogue Systems and Conversational AI Lab	0-1-1
45	AI462	AI for Multilingual Text Analytics	2-0-2
	AI462L	AI for Multilingual Text Analytics Lab	0-1-1
46	AI463	Prompt Engineering and LLM Applications Lab	2-0-2
	AI463L	Prompt Engineering and LLM Applications	0-1-1

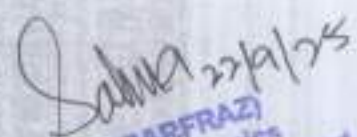

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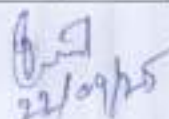

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List of Elective Supporting Courses				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	MK101	Principles of Marketing	-	3-0-3
2	AF142	Financial Accounting	-	3-0-3

List of General Education Courses				
S. No.	Code	Course Title	Pre-Req.	Cr. Hrs.
1	CS181	Application of Information & Communication Technologies	-	2-0-2
	CS181L	Application of Information & Communication Technologies Lab	-	0-1-1
2	EL170	Functional English	-	3-0-3
3	EL271	Expository Writing	EL170	3-0-3
4	MA216	Discrete Structures	-	3-0-3
5	MA110	Calculus & Analytical Geometry	-	3-0-3
6	HU124	Islamic Studies & Ethics	-	2-0-2
7	HU405	Ideology and Constitution of Pakistan	-	2-0-2
8	BA152	Introduction to Management	-	2-0-2
9	PH111	Applied Physics	-	2-0-2
	PH111L	Applied Physics Lab	-	0-1-1
10	CS470	Professional Practices	-	2-0-2
11	HU411	Civics and Community Engagement	-	2-0-2
12	BA353	Entrepreneurship	-	2-0-2
13	HU115	Pakistan Studies	-	2-0-2
14	FQ100	Fehm-e-Quran I	-	0-1-1
15	FQ101	Fehm-e-Quran II	-	0-1-1


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