

# **CURRICULUM FOR BS MULTIMEDIA AND GAMING**

**(Fall 2024 and onwards)**



**Department of Multimedia and Gaming  
University of Malakand**

## Curriculum for BS Multimedia and Gaming as per Revised NCEAC-2023 Criteria

### Generic Structure for Computing Disciplines:

Category	Credit Hours	Courses
Computing Core (CC)	46	14
Domain Core (DC)	18	6
Domain Elective (DE)	21	7
Mathematics & Supporting Courses (MSC)	12	4
Elective Supporting Courses (ESC)	3	1
General Education Requirement (GER)	34	14
<b>Total Cr. Hrs.</b>	<b>134</b>	<b>46</b>

### Mapping of *BS Multimedia and Gaming* Program on the Generic Structure:

Computing Core (46/134): 14 Courses					
S.No.	Code	Pre-Reqs	Course Title	Category	Cr. Hrs.
1	CS111		Programming Fundamentals	CC	3-1
2	CS121		Object Oriented Programming	CC	3-1
3	CS230		Data Structures	CC	3-1
4	CS240	CS120	Computer Organization and Assembly Language	CC	2-1
5	CS120		Digital Logic Design	CC	2-1
6	CS233		Operating Systems	CC	2-1
7	CS241	CS111	Database Systems	CC	3-1
8	CS471		Information Security	CC	2-1
9	CS232		Computer Networks	CC	2-1
10	CS242		Software Engineering	CC	3-0
11	CS362	CS230	Analysis of Algorithms	CC	3-0
12	CS350		Artificial Intelligence	CC	2-1
13	CS478		Final Year Project – I	CC	0-3
14	CS489		Final Year Project – II	CC	0-3

**Domain Core (18/134) 6 Courses**

S.No.	Code	Pre-Reqs	Course Title	Category	Cr. Hrs.
1	MG231		Mobile Multimedia	DC	2-1
2	MG243		Game Design and Development	DC	2-1
3	MG352		Game Programming	DC	2-1
4	MG353		3D Design and Modeling	DC	2-1
5	MG367		3D Animation and Visual Effects Production	DC	2-1
6	CS473		Parallel & Distributed Computing	DC	2-1

**Domain Elective (21/134): 7 Courses**

S.No.	Code	Pre-Reqs	Course Title	Category	Cr. Hrs. (Contact Hrs.)
1	MG361		Practical Scripting for Games	DE	2-1
2	MG351		Graphic Design & Illustration Art	DE	2-1
3	MG365		Storyboarding and Narrative Development	DE	2-1
4	MG471		UI/UX Design & Development	DE	2-1
5	MG472		Physics for Game Developers		2-1
6	CS321		Theory of Automata	DE	2-1
7	CS325		Human Computer Interaction (HCI)	DE	2-1
8	MG480		Virtual Reality Game Development	DE	2-1
9	MG481		Game Engine Architecture	DE	2-1
11	MG482		Multi-Player Games	DC	2-1
12	CS474		Computer Graphics	DE	2-1
13	MG483		AI for Computer Games	DE	2-1
13	MG362		Multimedia Games & Entertainment Systems	DE	2-1
14	MG484		Multicore & GPU Programming	DE	2-1

Note: Domain Core/Elective Courses of 3 Cr.Hrs in other computing disciplines may also be taken as elective courses

**Mathematics & Supporting Courses (MSC) (12/134) : 4 Courses**

S.No.	Code	Pre-Reqs	Course Title	Category	Cr. Hrs.
1	MATH217		Multivariate Calculus	MSC	3-0
2	MATH114		Linear Algebra and Applications	MSC	3-0
3	STAT210		Probability and Statistics	MSC	3-0
4	ENG112		Technical and Business Writing	MSC	3-0

Elective Supporting Courses (3/134): 1 Course					
S.No.	Code	Pre-Reqs	Course Title	Category	Cr. Hrs.
1	MGT113		Social Science (Principles of Marketing)	ESC	3-0
2	MGT114		Social Science (Financial Accounting-I)	ESC	3-0

General Education Requirement as per HEC UG Education Policy (34/134): 14 Courses					
S.No.	Code	Pre-Reqs	Course Title	Category	Cr. Hrs.
1	CS110		Introduction to Information and Communication Technologies	GER	2-1
2	ENG101		Functional English	GER	3-0
3	ENG102		Introduction to Expository Writing	GER	3-0
4	CS127		Quantitative Reasoning – 1 (Discrete Structures)	GER	3-0
5	MATH110		Quantitative Reasoning – 2 (Calculus and Analytical Geometry)	GER	3-0
6	ISL112		Islamic Studies/ Ethics (for Non-Muslims)	GER	2-0
7	PSC116		Pakistan Studies	GER	2-0
8	PSC111		Ideology and Constitution of Pakistan	GER	2-0
9	MGT111		Social Sciences (Principles of Management)	GER	2-0
10	PHYS355		Natural Sciences (Basic Electronics)	GER	2-1
11	CS311		Professional Practices	GER	2-0
12	SOC114		Civic and Community Engagement	GER	2-0
13	MGT215		Entrepreneurship	GER	2-0
14	ISL113		Seerah and its Contemporary Application سیرت رسول ﷺ اور اس کی عصری معنویت / Any course from arts and humanities in general category (for non-Muslims)	GER	2-0

Non-Credit (NC) Courses: 3 Courses					
S.No.	Code	Pre-Reqs	Course Title	Category	Cr. Hrs. (Contact Hrs.)
1	MATH111		Mathematics I	NC	3-0
2	MATH122		Mathematics II	NC	3-0
3	ISLXXX		Teaching the Holy Quran with Translation	NC	2-0

**Note:**

**Mathematics & Supporting Courses, Elective Supporting Courses, General Education Courses will be taken from their respective departments as approved.**



## Scheme of Studies: BS Multimedia and Gaming

Semester 1					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	ISL112		Islamic Studies/Ethics (for Non-Muslims)	GER	2-0
2	CS110		Introduction to Information and Communication Technologies	GER	2-0
3	CS110L		Introduction to Information and Communication Technologies	GER	0-1
4	SOC114		Civics and Community Engagement	GER	2-0
5	PHY355		Basic Electronics	GER	2-0
	PHY355L		Basic Electronics Lab	GER	0-1
6	ENG101		Functional English	GER	3-0
7	CS111		Programming Fundamentals	CC	3-0
8	CS111L		Programming Fundamentals Lab	CC	0-1
9	MATH111		Mathematics I	NC	3-0
10	ISL 118		Teaching the Holy Quran with Translation (Para 1,2,3)	NC	2-0
<b>Total Cr. Hrs.</b>					<b>17</b>

Semester 2					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	CS127		Discrete Structures	GER	3-0
2	MATH110		Calculus and Analytical Geometry	GER	3-0
3	CS121	CS160	Object Oriented Programming	CC	3-0
4	CS121L		Object Oriented Programming Lab	CC	0-1
5	ENG102	ENG101	Introduction to Expository Writing	GER	3-0
6	CS120		Digital Logic Design	CC	2-0
7	CS120L		Digital Logic Design	CC	0-1
8	PSC111		Ideology and Constitution of Pakistan	GER	2-0
9	MATH122		Mathematics II	NC	3-0
10	ISL 124		Teaching the Holy Quran with Translation (Para 4,5,6, 7)	NC	2-0
<b>Total Cr. Hrs.</b>					<b>18</b>

Semester 3					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	MATH217		Multivariate Calculus	MSC	3-0
2	CS230	CS160	Data Structures	CC	3-0
3	CS230	CS160L	Data Structures	CC	0-1
4	CS232		Computer Networks	CC	2-0
5	CS232L		Computer Networks	CC	0-1
6	MG231		Mobile Multimedia	DC	2-0
7	MG231L		Mobile Multimedia	DC	0-1
8	CS233		Operating Systems	CC	2-0
9	CS233L		Operating Systems	CC	0-1
10	ISL226		Teaching the Holy Quran with Translation (Para 8,9,10, 11)	NC	2-0
Total Cr. Hrs.					16

Semester 4					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	PSC116		Pakistan Studies	GER	2-0
2	CS241		Database Systems	CC	3-0
3	CS241L		Database Systems	CC	0-1
4	CS242	CS162	Software Engineering	CC	3-0
5	MG243		Game Design and Development	DC	2-0
6	MG243L		Game Design and Development	DC	0-1
7	CS240	CS120	Computer Organization and Assembly Language	CC	2-0
8	CS240	CS120	Computer Organization and Assembly Language	CC	0-1
9	ISL113		Seerah and its Contemporary Application سیرت رسول ﷺ اور اس کی عصری معنویت / Any course from arts and humanities in general category (for non-Muslims)	GER	2-0
10	ISL 240		Teaching the Holy Quran with Translation (Para 12, 13, 14, 15)	NC	2-0
Total Cr. Hrs.					17

Semester 5					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	STAT210		Probability and statistics	MSC	3-0
2	CS350	CS260	Artificial Intelligence	CC	2-0
3	CS350L		Artificial Intelligence	CC	0-1
4	MG352		Game Programming	DC	2-0
5	MG352L		Game Programming	DC	0-1
6	CS351		Professional Practices	GER	2-0
7	MG3XX		Domain Elective 1	DE	2-0
8	MG3XXL		Domain Elective 1 Lab	DE	0-1
9	MG353		3D Design and Modeling	DC	2-0
10	MG353		3D Design and Modeling	DC	0-1
11	ISL 337		Teaching the Holy Quran with Translation (Para 16, 17, 18, 19)	NC	2-0
Total Cr. Hrs.					17

Semester 6					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	MATH114		Linear Algebra and Applications	MSC	3-0
2	MG3XX		Domain Elective 2	DE	2-0
3	MG3XXL		Domain Elective 2 Lab	DE	0-1
4	MG367		3D Animation and Visual Effects Production	DC	2-0
5	MG367L		3D Animation and Visual Effects Production	DC	0-1
6	CS362	CS230	Analysis of Algorithms	CC	3-0
7	MG3XX		Domain Elective 3	DE	2-0
8	MG3XXL		Domain Elective 3 Lab	DE	0-1
9	ENG112	ENG101	Technical and Business Writing	MSC	3-0
10	ISL 346		Teaching the Holy Quran with Translation (Para 20,21,22,23)	NC	2-0
Total Cr. Hrs.					18

Semester 7					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	CS478		Final Year Project – I	CC	0-3
2	MG4XX		Domain Elective 4	DE	2-0
3	MG4XXL		Domain Elective 4 Lab	DE	0-1
4	MG4XX		Domain Elective 5	DE	2-0
5	MG4XXL		Domain Elective 5 Lab	DE	0-1
6	CS473	CS333	Parallel & Distributed Computing	DC	2-0
7	CS473L		Parallel & Distributed Computing	DC	0-1
8	CS471		Information Security	CC	3-0
9	ISL 447		Teaching the Holy Quran with Translation (Para 24,25,26,27)	NC	2-0
Total Cr. Hrs.					15

Semester 8					
S.No.	Code	Pre-Req.	Course Title	Category	Cr. Hrs.
1	CS489	CS478	Final Year Project – II	CC	0-3
2	MG4XX		Domain Elective 6	DE	2-0
3	MG4XXL		Domain Elective 6 Lab	DE	0-1
4	MG4XX		Domain Elective 7	DE	2-0
5	MG4XXL		Domain Elective 7 Lab	DE	0-1
6	MGT215		Entrepreneurship	GER	2-0
7	MGT111		Principles of Management	GER	2-0
8	MGT113		Principles of Marketing	ESC	3-0
9	ISL 455		Teaching the Holy Quran with Translation (Para 28,29,30)	NC	2-0
Total Cr. Hrs.					16
<b>Program Total Cr. Hrs.</b>					<b>134</b>