Department of InformationTechnology

B. Tech. in InformationTechnology

with Multidisciplinary Minor

UG Scheme & Curriculum - 2023
(NEP 2020)

UG Scheme-2023 (NEP-2020)

Course Code	Name of Course	Course Category	Teaching Scheme				Credits	Evaluation Scheme					
								Theory			Practical		Total Marks
			L	T	P	Total Hours		TAE	CAE	ESE	INT	EXT	
SEMESTER-III													
23BTSHL201CS	Discrete Mathematics and Graph Theory	PCC2	3	1	-	4	**4**	10	15	50	-	-	75
23BTCSL201/ 23BTCSP201/	Data Structure and Algorithms	PCC3	3	-	2	5	**4**	10	15	50	25	25	125
UNXXLXXX	Multi-disciplinary Minor-I	MDM1	2	-	-	2	**2**	10	15	50	-	-	75
23BTITL211	Open Elective-I Introduction to Scripting Languages	OE I	4	-	-	4	**4**	10	15	50	-	-	75
23BTMBL201	Engineering Economics and Industrial Management	EEMC1	2	-	-	2	**2**	10	15	50	-	-	75
UNHULXXX	Humanities Elective	VEC1	2	-	-	2	**2**	10	15	50	-	-	75
23BTITL202	Minor Project	CEP	-	-	4	4	**2**	-	-	-	50	-	50
TOTAL			**16**	**1**	**6**	**23**	**20**	**60**	**90**	**300**	**75**	**25**	**550**

Open Elective-I
Introduction to Scripting Languages

Multi-disciplinary Minor-I

Course Title: **INTRODUCTION TO SCRIPTING LANGUAGES**										
Semester	IV	Teaching Scheme				Evaluation Scheme				
						Theory			Practical	
Term	EVEN	Th	Tu	P	Credits	TAE	CAE	ESE	INT	EXT
Course Category	OE-1	3 Hrs.	1 Hr		4	10	15	50	--	--
Course Code	23BTITL211									
Teaching Mode	Offline	4 Hr			Total	75			--	
Duration of ESE	3Hrs					75				

Course Objectives	The objectives of the course is to introduce students to the basic scripting mechanism applied to computer applications, the requirements of Scripting Languages and the use of scripting languages.
	To understand nature of the problem and apply suitable scripting validation to make the software bug free and convenient for the user.
Course Outcomes	CO1: Comprehend the differences between typical scripting languages, typical system and application programming languages.
	CO2: Implement the design of programs for simple applications.
	CO3: Write and apply Python scripts.
	CO4: Gain knowledge of the strengths and weakness of PHP.
	CO5: Implement Bash Shell Scripting.

Course Contents:

Unit	Contents	Hours
I	**Introduction to Scripts and Scripting Languages**–Scripts and Programs, Uses for Scripting Languages, Web Scripting. Java Script: Variables, Data Types, Operators, Conditional statements, Loops, Arrays, Functions, Objects-Predefined objects, accessing objects, object Methods.	6
II	**JavaScript programming of reactive web pages elements:** JavaScript Events-Mouse events, Keyboard events, Form events, window events, Event handlers, Frames, Form object, JavaScript Form Validation.	8
III	**Python**: variables, Operators, loops, Organizing python codes using functions, Packages, Lambda function, Reading Config files in python, read functions, read(), readline() and readlines(),write () and writelines(),Concept of class, object and instances, Inheritance, overlapping and overloading operators	8

IV	**PHP**: Data Types, Variables, Operators, Conditional statements, Loops, Arrays-Indexed Array, Associative Array, String Functions, Functions-Parameterized Function, Call by Value, Call by Reference, File Handling, PHP Form handling.	6
V	**Bash Shell Scripting**: Bash Introduction, using Variables and Comments, Read User Input, Pass Arguments to a Bash-Script, Functions, Decision Making, String and Numeric Comparisons.	6

Mapping of Course Outcomes with Program Outcomes and Program Specific Outcomes:

Course Outcomes	Program Outcomes and Program Specific Outcomes													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	--	--	--	--	--	--	--	--	--	--	--	--
CO2	--	--	3	3	3	--	--	--	--	--	--	--	2	--
CO3	--	--	--	--	--	--	--	--	2	2	--	--	3	3
CO4	--	--	--	--	--	2	--	--	--	--	3	3	--	--
CO5	--	--	--	--	--	--	2	--	3	--	3	3	--	3

Text Books	1.	The World of Scripting Languages, David Barron, Wiley Publications.
	2.	Learning PHP, MySQL, JavaScript, CSS&HTML5: A Step by Step Guide to Creating Dynamic Websites 3rdEdition, O'Reilly Publications.
	3.	Python: The Complete Reference, 1st Edition.
	4.	Bash Guide for Beginners, Machtelt Garrels, 2004

Reference Books	1.	The Ruby Programming Language, David Flanagan and Yukihiro Matsumoto, O'Reilly Publications
	2.	Beginning JavaScript with Dom scripting and AJAX, Russ Ferguson, Christian Heilmann, Apress.
	3.	Programming Perl, Larry Wall, T. Christiansen and J. Orwant, O'Reilly, SPD.
	4.	Open-source Web Development with LAMP using Linux Apache, MySQL, Perl and PHP, J. Lee and B. Ware (Addison Wesley) Pearson Education.
	5.	Python Distilled, David M. Beazley, 2021
	6.	Bash Pocket Reference: Help for Power Users and Sys Admins Arnold Robbins, 2016

Course Title: **BASICS OF GAME PROGRAMMING**										
Semester		Teaching Scheme				Evaluation Scheme				
						Theory			Practical	
Term		Th	Tu	P	Credits	TAE	CAE	ESE	INT	EXT
Course Category		2 Hrs.	--	--	2	10	15	50	--	--
Course Code										
Teaching Mode	Offline	2 Hr			Total	75			--	
Duration of ESE	2Hrs					75				

Course Objectives	The objectives of the course is to let students understand the concept of Game design and development, learning different processes, mechanics and the issues in Game Design.
	Another objective is to expose students to the Core architectures of Game Programming, Knowing about Game programming platforms, frame works and engines. Learn to develop games.
Course Outcomes	CO1: Discuss the concepts of Game design and development.
	CO2: Design the processes, and use mechanics for game development.
	CO3: Explain the Core architectures of Game Programming.
	CO4: Use Game programming platforms, frame works and engines.
	CO5: Create interactive Games.

Mapping of Course Outcomes with Program Outcomes and Program Specific Outcomes:

Course Outcomes	Program Outcomes and Program Specific Outcomes													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	--	--	1	--	--	--	2	--	1	--	--
CO2	2	2	3	--	3	--	--	--	--	--	--	1	--	3
CO3	--	--	--	--	--	--	--	--	--	2	--	2	--	--
CO4	--	--	3	--	3	--	--	--	1	--	2	--	2	2
CO5	--	--	2	--	--	1	--	--	2	2	2	2	1	3

Course Contents:

Unit	Contents	Hours
I	**3D Graphics for Game Programming:** 3D Transformations, Quaternions, 3D Modeling and Rendering, Ray Tracing, Shader Models, Lighting, Color, Texturing, Camera and Projections, Culling and Clipping, Character Animation, Physics-based Simulation, Scene Graphs.	6

II	**Game Engine Design:** Game engine architecture, Engine support systems, Resources and File systems, Game loop and real-time simulation, Human Interface devices, Collision and rigid body dynamics, Game profiling.	8
III	**Game Programming**: Application layer, Game logic, Game views, managing memory, controlling the main loop, loading and caching game data, User Interface management, Game event management.	8
IV	**Gaming Platforms and Frameworks:** 2D and 3D Game development using Flash, DirectX, Java, Python, Game engines - Unity. DX Studio.	6
V	**Game Development**: Developing 2D and 3D interactive games using DirectX or Python – Isometric and Tile Based Games, Puzzle games, Single Player games, and Multi-Player games.	6

Text Books	1.	Mike Mc Shaffrfy and David Graham, "Game Coding Complete", Fourth Edition, Cengage Learning PTR.
	2.	Jason Gregory, "Game Engine Architecture", CRC Press / A K Peters
	3.	David H. Eberly, "3D Game Engine Design: A Practical Approach to Real-Time Computer Graphics", Morgan Kaufmann

Reference Books	1.	Ernest Adams and Andrew Rollings, "Fundamentals of Game Design", Prentice Hall / New Riders
	2.	Eric Lengyel, "Mathematics for 3D Game Programming and Computer Graphics", Course Technology PTR.
	3.	Jesse Schell, The Art of Game Design: A book of lenses, 1st Edition, CRC Press