ANNEXURE – I

St. Vincent Pallotti College of Engineering & Technology, Nagpur

Department of Vocation (B. VOC)

Teaching Scheme for B.VOC Second Year 2025-26

SEMESTER III (Virtual Reality & Augmented Reality)

Sr. No.	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
			L	T	P		Continual Assessment	End Sem. Examination	Total
General Education Component (GEC)									
1	25BV301T	Business Communication Skills – III	3			3	40	60	100
2	25BV302T	Applied Computer Skills – III	3			3	40	60	100
3	25BV301P	Business Communication Skills – III Lab			3	3	25	25	50
4	25BV302P	Applied Computer Skills – III Lab			3	3	25	25	50
Total – GEC			**6**		**6**	**12**	**130**	**170**	**300**
Skill Education Component (SEC)									
5	25VA303S	Real Time Design (*)	4		8	12	50	100 (***)	150
6	25VA304S	Skill Development –III (**)			4	4	50	--	50
7	25VA305S	Real Time Programming in OOP	2			2	50	--	50
Total – SEC			**6**		**12**	**18**	**150**	**100**	**250**
Grand Total			**12**	-	**18**	**30**	**280**	**270**	**550**

Assessment Competent Authority: General Education Component,25BV301T/P,25BV302T/P,25VA304S, 25VA305S: by college,

(*) **Real Time Design**: **MES/Q0510** Game Artist:-NOS: N0524,N0531,N0104

(**) **Skill Development-III**: E – Courses & Skill workshops

(***) 25VA303S: Assessment by Sector Skill Council – MESC

SEMESTER IV (Virtual Reality & Augmented Reality)

Sr. No.	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
			L	T	P		Continual Assessment	End Sem. Examination	Total
General Education Component (GEC)									
1	25BV401T	Business Communication Skills – IV	3			3	40	60	100
2	25BV402T	Employability Skills - I	3			3	40	60	100
3	25BV401P	Business Communication Skills – IV Lab			3	3	25	25	50
4	25BV402P	Employability Skills - I Lab			3	3	25	25	50
Total – GEC			**6**		**6**	**12**	**130**	**170**	**300**
Skill Education Component (SEC)									
5	25VA403S	Extended Reality Fundamentals(*)	4		8	12	50	100 (***)	150
6	25VA404S	Skill Development- IV (**)			4	4	50	--	50
7	25VA405S	Game Programming & Development	2			2	50	--	50
Total – SEC			**6**		**12**	**18**	**150**	**100**	**250**
Grand Total			**12**	-	**18**	**30**	**280**	**270**	**550**

Assessment Competent Authority: General Education Component, 25BV401T/P, 25BV402T/P, 25VA404S, 25VA405S: by college,

(*) **Extended Reality Fundamentals: Technical Artist – MES/Q2505,** NOS: MES/N519-523, N2502, N2506, N0104

(**) **Skill Development-IV**: E-Courses & Skill Workshops

(***) 25VA403S: Assessment by Sector Skill Council – MESC

Dr. Suresh Rangankar
BOS, Chairman (B.VOC)

Dr. Promod Lanjewar
Dean(Academics)

Dr. Vijay Wadhai
Principal

FOURTH SEMESTER

COURSE CODE	COURSE NAME	TH	TU	PR	CREDITS	EVALUATION		
						CA	ESE	TOTAL
24BV401T	Business Communication Skills-IV	3	--	--	3	40	60	100

COURSE OBJECTIVES	COURSE OUTCOMES
• To provide students with the skills and knowledge of communication relevant to a business environment. • To enable students to apply effective communication strategies for academic, professional, and employability-related contexts, including presentations, interviews, and business writing.	1. To explain and identify grammatical rules, vocabulary usage, and sentence structures used in competitive examinations. 2. To apply communication skills in listening, reading, summarizing, group discussions, and technical presentations. 3. To analyze and construct effective business documents such as letters, notices, circulars, agendas, and minutes of meetings. 4. To create professional documents like resumes, cover letters, and prepare impactful responses for interviews and corporate communication scenarios.

UNIT I: English for Competitive Exams [15 HRS]

Word Completion (Article, Preposition, Subject Verb Agreement, Adjectives, etc.), Sentence Completion, Error Identification, Passage Arrangement, Formal & Informal sentences (Idioms, Grammar, Active-Passive, Modal Auxiliaries, Jumbled Word sentences, One word substitution), Meanings (Synonyms, Antonyms)

UNIT II: Professional Communication [10 HRS]

Listening to Conversation and Summarizing, Integrated Writing – Read a short excerpt and write a response. Speaking – Group Discussion (Case studies, General, Abstract), Impactful Technical Presentation, Reading Comprehension.

UNIT III: Professional Correspondence [10 HRS]

Business Letter Writing, Circular and Notices, Agendas, Minutes of Meeting, Memos

UNIT IV: Employability Enhancement skills [10 HRS]

Cover letter, Resume, Mock Interviews, Personality Grooming for Corporate Life

TEXT/ REFERENCE BOOKS

S.N	Title	Authors	Edition	Publisher
1	Functional English for Technical Student	Dr. Pratibha Mahato and Dora Thompson	2020	Himalaya Publishing House
2.	Communication Skills for Engineer	C. Muralikrishna and Sunita Mishra	2022	Pearson
3.	Effective Technical Communication	Barun K Mitra	1	Oxford University Press
4.	Basic Business Communication	Lesikar, R. & Flately	9	Tata McGraw Hill

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FOURTH SEMESTER

COURSE CODE	COURSE NAME	TH	TU	PR	CREDITS	EVALUATION		
						CA	ESE	TOTAL
24BV401P	Business Communication Skills-IV Lab	--	--	3	3	25	25	50

COURSE OBJECTIVES	COURSE OUTCOMES
• To provide students with the skills and knowledge of communication relevant to a business environment. • To enable students to apply effective communication strategies for academic, professional, and employability-related contexts, including presentations, interviews, and business writing.	1. To explain and identify grammatical rules, vocabulary usage, and sentence structures used in competitive examinations. 2. To apply communication skills in listening, reading, summarizing, group discussions, and technical presentations. 3. To analyze and construct effective business documents such as letters, notices, circulars, agendas, and minutes of meetings. 4. To create professional documents like resumes, cover letters, and prepare impactful responses for interviews and corporate communication scenarios.

List of Practicals / Activities:

1. English for Competitive Exams:

a) Write 10 examples of Articles.
b) Write 10 examples of MCQs of Prepositions.
c) Write 10 examples of MCQs of Subject-Verb Agreement.
d) Write 10 examples of MCQs of Adjectives.
e) Write 10 examples of MCQs of Sentence Completion.
f) Write 10 examples of MCQs of Error Identification.
g) Write 10 examples of Passage Arrangement.
h) Write 10 examples of MCQs of Idioms.

2. Professional communication

3. Professional correspondence:

a) Business Letter writing
b) Circular & Notices
c) Agendas
d) Minutes of Meeting
e) Memos

4. Employability Enhancement Skills.

i) Cover Letter
ii) Resume
iii) Mock Interviews

TEXT/ REFERENCE BOOKS

S.N	Title	Authors	Edition	Publisher
1	Functional English for Technical Student	Dr. Pratibha Mahato and Dora Thompson	2020	Himalaya Publishing House
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ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR
(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)
B.VOC. Scheme of Examination & Syllabus 2024-25
SOFTWARE DEVELOPMENT, CYBER SECURITY, VIRTUAL REALITY AND AUGMENTED REALITY

FOURTH SEMESTER

COURSE CODE	COURSE NAME	TH	TU	PR	CREDITS	EVALUATION		
						CA	ESE	TOTAL
24BV402T	Employability Skills-I	3	--	--	3	40	60	100

COURSE OBJECTIVES	COURSE OUTCOMES
• To build strong foundational programming skills in C and C++ that help students solve logical and technical problems commonly asked in TCS ignite and other placement examinations. • To develop the ability to design and implement structured and object-oriented solutions using C and C++, enabling students to meet industry expectations and perform well in TCS ignite coding assessments.	1. To explain the basic concepts of C programming including data types, operators, control structures, and looping constructs. 2. To apply arrays, strings, functions, and pointers to solve computational problems in C. 3. To analyze and differentiate object-oriented concepts such as classes, objects, constructors, inheritance, and operator overloading in C++. 4. To design and develop modular C and C++ programs using OOP concepts like polymorphism, overloading, overriding, and dynamic binding.

UNIT I: INTRODUCTION TO C PROGRAMMING [15 HRS]

Introduction to Computing, Overview of C, Constants, Variable and Data Types, Operators and Expressions, Control Structures, Decision Making and Branching, Decision Making and Looping.

UNIT II: INTRODUCTION TO ARRAYS AND STRINGS [15 HRS]

Arrays, Character Arrays and Strings, functions & Introduction to pointers, User-defined Functions, Pointers, Structures.

UNIT III: BASICS OF C++ [15 HRS]

OOPs Concepts ,Functions, Object and Classes, Constructors & Destructors, Operator overloading

UNIT IV: FUNDAMENTALS OF C++ [15 HRS]

Inheritance, Overloading, Overriding, Pointers in C++, Polymorphism.

TEXT/ REFERENCE BOOKS

S.N	Title	Authors	Edition	Publisher
1	The complete reference C	Herbert shieldt	1	Tata McGraw Hill Publication.
2.	Object Oriented Programming in C++	Saurav Sahay	1	Oxford University Press.
3.	Object Oriented Programming in C++	Barun K Mitra	1	Techmedia Publication.
4.	Programming in ANSI C	E. Balaguruswamy	8th Edition, 2019	McGraw Hill Education
5	Let Us C	Yashavant P. Kanetkar	16th Edition, 2019	BPB Publications

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FOURTH SEMESTER

COURSE CODE	COURSE NAME	TH	TU	PR	CREDITS	EVALUATION		
						CA	ESE	TOTAL
24BV402P	Employability Skills-I -Lab	--	--	3	3	25	25	50

COURSE OBJECTIVES	COURSE OUTCOMES
• To build strong foundational programming skills in C and C++ that help students solve logical and technical problems commonly asked in TCS NQT and other placement examinations. • To develop the ability to design and implement structured and object-oriented solutions using C and C++, enabling students to meet industry expectations and perform well in TCS NQT coding assessments.	1. To explain the basic concepts of C programming including data types, operators, control structures, and looping constructs. 2. To apply arrays, strings, functions, and pointers to solve computational problems in C. 3. To analyze and differentiate object-oriented concepts such as classes, objects, constructors, inheritance, and operator overloading in C++. 4. To design and develop modular C and C++ programs using OOP concepts like polymorphism, overloading, overriding, and dynamic binding.

List of Practicals / Activities:

1. Programming based on different operators.
2. Coding Using Control structures.
3. Programming based on Functions.
4. Programming based on arrays (1D and multi-dimensional).
5. Programming based on different functions of Strings.
6. Programming based on classes and objects, Constructors & Destructors.
7. Programming based on types of inheritances and Polymorphism.
8. Programming based on Operator Overloading, Pointers and Virtual Classes

TEXT/ REFERENCE BOOKS

S.N	Title	Authors	Edition	Publisher
1	The complete reference C	Herbert shieldt	1	Tata McGraw Hill Publication.
2.	Object Oriented Programming in C++	Saurav Sahay	1	Oxford University Press.
3.	Object Oriented Programming in C++	Barun K Mitra	1	Techmedia Publication.

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FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24VA403S	Extended Reality Fundamentals	4	--	8	12	50	100	150

Course Objectives	Course Outcomes
• To develop foundational knowledge and hands-on skills in 3D design using Autodesk Maya, including modeling, texturing, workspace tools, and essential mesh operations. • To enable learners to design, animate, and render professional-quality 3D assets, using advanced modeling techniques, lighting, rendering workflows, animation principles, and dynamic simulations in Maya.	1. To describe 3D design concepts, Maya workspace tools, mesh editing operations, and text-editing/correction techniques used in 3D production. 2. To apply advanced modeling techniques to create high-poly models, detailed objects, multi-asset environments, and graphics for game and film production. 3. To analyze lighting setups, material properties, and rendering outputs using Arnold Render View to optimize visual quality in scenes like night lighting and car lighting. 4. To design and animate 3D scenes using keyframing, curves, nCloth, nParticles, and dynamic simulations to produce realistic motion such as robotic hand animation and cloth behavior.

Unit I Introduction to 3D design and Maya	**[15 HRS]**
Introduction to 3D design and MAYA Understanding the concept of software Maya tools, Workspace, properties, toolbars, color correction, text editing, remove croma, text effects. Basics of extrude, edge loop, bevel, edit mesh properties with understanding of sacless, rotate vertex, edge faces.	
Unit II Advanced Modelling technique	**[25 HRS]**
Advanced modelling techniques such as Creating a high poly- model using editing mesh tool, detailing an object, multiple assets object in game design and movie production, motion graphics, rotto, 3D in after effects, HDRI.	
Unit III Lighting and Rendering	**[25 HRS]**
Lighting of material, AI standard surface, area lights, creation of night scene in Arnold render, car lighting in Arnold render. Use Arnold Render View to view scene changes in real time, including lighting, materials, and cameras.	
Unit IV Animation and Dyanamics	**[25 HRS]**
Animation and Dynamics, Create, view, and modify animation curves using a graphical representation of scene animation.FPS, timeline stretch, basic of keying principle of animation, animating robotic hands. Use of ncloth, npassive collider, creating cloth, nparticles.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	AutoDesk Maya	Kelly L. Murdock	2008	Autodesk.
2	Introducing Autodesk Maya	Dariush Derakhshani	Latest	Wiley

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24SD404S 24CY404S 24VA404S	Skill Development – IV	--	--	4	4	50	--	50

Course Objectives	Course Outcomes
• To develop advanced quantitative aptitude skills by introducing learners to geometry, mensuration, logarithms, permutations, combinations, probability, and business mathematics concepts. • To enhance logical and analytical reasoning abilities through structured practice in ranking, cubes & dice, inequalities, abstract reasoning, counting of figures, and data sufficiency. • To prepare students thoroughly for company-specific assessments, with special focus on the TCS Ignite Exam.	1. To explain mathematical principles related to geometry, mensuration, logarithms, permutations, combinations, probability, partnerships, and reasoning rules. 2. To apply quantitative formulas and logical reasoning techniques to solve problems in mensuration, height & distance, ranking, cubes & dice, and inequalities. 3. To analyze complex problems involving abstract reasoning, data sufficiency, order–ranking patterns, and figure counting to determine accurate solutions. 4. To evaluate different problem-solving strategies and choose the most efficient methods to answer quantitative and reasoning questions within time constraints.

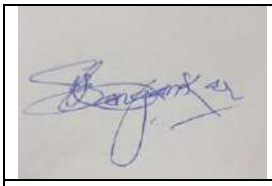
Unit I : Numerical Ability - IX	**[15HRS]**
Geometric Properties, Mensuration (2D and 3D Geometry), Logarithms, Height and Distance.	
Unit II : Logical Reasoning - V	**[15 HRS]**
Order and Rankin, Cube and Dices, Inequalities, Counting of Figures.	
Unit III : Numerical Ability - X	**[15 HRS]**
Permutation and Combination, Probability, Ages, Partnerships.	
Unit IV : Logical Reasoning -VI	**[15 HRS]**
Abstract Reasoning, Data Sufficiency, Eligibility Test.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude	R.S Agarwal	Latest edition	S. Chand Publication
2	Quantitative Aptitude	Arun Sharma	4th Edition	Mc Graw Hill

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative aptitude and reasoning	R. Praveen	3rd	PHI
2	Objective Quantitative Aptitude	Oswal books	Latest	Oswal books

		Oct-2022	1	Applicable for 2024-25
Chairman - BoS	Dean – Academics	Date of Release	Version	

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24VA405S	Game Programming & Development	2	--	--	2	50	--	50

Course Objectives	Course Outcomes
• To introduce learners to the Unreal Engine environment, including workspace tools, asset management, material editing, and scene creation for real-time 3D visualization. • To equip students with practical skills in designing scenes, applying materials, creating animations, and using Blueprints for interactive and realistic content development in Unreal Engine.	1. To explain Unreal Engine concepts, workspace tools, importing assets, and navigating the content browser. 2. To apply scene creation techniques such as arranging assets, applying materials, adding textures, and setting lighting for day, night, and atmospheric effects. 3. To analyze and use Blueprint features to modify materials and enhance realism in 3D assets. 4. To create and integrate animations by importing keyframes, applying animations to characters, and rendering animated content for game development or cinematic scenes.

Unit I Introduction to Unreal engine	**[7 HRS]**
Understanding the concept of software unreal engine, basic of tolls such as poly edit selecting, property tab , workspace, shortcut tabs , importing 3D models, assets in content browser, importing to workspace, imaging assets.	
Unit II Creating Scene in unreal	**[8 HRS]**
Arranging asset, applying material, create realistic atmosphere, creating day , night , evening atmosphere, using point spots and direction light. Creating and applying texture, lighting and basic animation.	
Unit III Editing Material	**[7 HRS]**
Introduction to blueprint, creating realistic material in given asset.	
Unit IV :- Animation and dynamics	**[8 HRS]**
Importing animations, introduction to keyframe, Applying animation to the character in Unreal engine for game development and to static mesh rendering.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Maya: The World as Virtual Reality	Richard L. Thompson	1ST	Hill Publishing.
2	Unreal Engine 5 Beginner's Guide	Thomas Mooney	Latest Edition	Packt Publishing
3	Learning Unreal Engine	Joanna Lee & John P. Doran	Latest Edition	Packt Publishing