TCET
DEPARTMENT OF INFORMATION TECHNOLOGY (IT)
Credit Based Grading Scheme(Revised - 2012) - University of Mumbai
CBGS-2012(R)

TCET/FRM/IP-02/09	Revision: A

Semester Plan

(Theory)

Semester: V	Course: IT

Subject: Computer Graphics and Virtual Reality	2 Lectures / Week	Class: TE IT B

Sr. No.	Prerequisite/ Bridge course:	Duration (Week /Hrs)	Modes of Learning	Recommended Sources
1	**Matrix calculations in maths** **Programming using C++ or Java**	6	Self Learning/ Revision	**Text Book:** 1.Donald Hearn and M. Pauline Baker, "Computer Graphics", Pearson Education. 2.R. K Maurya, "Computer Graphics with Virtual Reality", Wiley India. **Course Link:** 1. http://www.tutswing.com/cplusplus-home 2. www.nptel.ac.in/courses/106106090

Sr. No.	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
1		L 1.1	SOP – CGVR Theory	Power point presentation, Chalk & Board	07-11-2017	1 to 6	
2		L 1.2	SOP – CGVR Practical	Power point presentation, Chalk & Board	07-12-2017	1 to 6	
3		L 1.3	SOP – CGVR OBE	Power point presentation, Chalk & Board	13/7/17	1 to 6	
4		L 4.2	Area filling : Inside/Outside Test, Even-Odd Method, Winding Number Method	Power point presentation, Chalk & Board	17/7/17	1.2,2.8, 2.9, 2.9.2	
5		L 4.3	Area filling : Scan line Fill Algorithm	Power point presentation, Chalk & Board	18/7/17	1.2,2.9.4	
6		L 4.4	Polygon Fill Algorithm, Boundary Fill and Flood Fill algorithm	Power point presentation, Chalk & Board	21/7/17	1.2,2.9.5	
7	2	L 5.1	Basic Geometrical 2D transformations : Translation, Rotation	Power point presentation, Chalk & Board	24/7/17	1.2,2.10, 2.10.2	
8		L 5.2	Basic Geometrical 2D transformations : Scaling, Reflection	Power point presentation, Chalk & Board	27/7/17	1.2,2.10.4	
9		L 5.3	Basic Geometrical 2D transformations : Shear, their homogeneous Matrix representation	Power point presentation, Chalk & Board	31/7/17	1.2,2.10.6, 2.10.8	
10		L 5.4	Basic Geometrical 2D transformations: Composite transformation	Power point presentation, Chalk & Board	08-03-2017	1.2,3.8.1	
11		L 6.1	Introduction ,Viewing Pipeline	Power point presentation, Chalk & Board	08-07-2017	1.2,3.8.11.2,	
12		L 6.2	View Coordinate reference frame, Window to viewport transformation, Point clipping	Power point presentation, Chalk & Board	08-10-2017	1.2,3.8.1	
13	3	L 6.3	Line clipping: Cohen Sutherland Algorithm	Power point presentation, Chalk & Board	14/8/17	1.2,3.8.3.1	
14		L 6.4	Line clipping: Liang Barsky Algorithm	Power point presentation, Chalk & Board	24/8/17	1.2,3.8.3.1.c	
15		L 7.1	Polygon clipping: Sutherland Hodgeman polygon clipping Algorithm	Power point presentation, Chalk & Board	31/8/17	1.2,3.8.3.2	
16		L 7.2	Polygon clipping: Weiler Atherton, Text Clipping.	Power point presentation, Chalk & Board	09-04-2017	1.2,3.8.3.3	

17		L 9.1	Key Frame Animation, Animation Sequence	Power point presentation, Chalk & Board	09-07-2017	1.2,5.9.1, 5.9.2-5.9.6	
18		L 9.2	Motion Control Methods, Morphing, Warping(only Mesh Warping).	Power point presentation, Chalk & Board	09-11-2017	1.2,5.9.75.9.8	
19		L 9.3	Virtual Reality : Basic Concepts , Classical Components of VR System	Power point presentation, Chalk & Board	14/9/17	1.2,6.9.1	
20		L 10.1	Types of VR Systems, Three Dimensional Position Trackers	Power point presentation, Chalk & Board	16/9/17	1.2,6.9.3	
21	5	L 10.2	Navigation and Manipulation Interfaces, Gesture Interfaces	Power point presentation, Chalk & Board	18/9/17	1.1, 1.2, 2.2, 6.9.4	
22		L 10.3	Graphical Display, Sound displays,	Power point presentation, Chalk & Board	21/9/17	1.1, 1.2, 2.2,6.9.5	
23		L 10.4	Haptic Feedback, Input Devices	Power point presentation, Chalk & Board	25/9/17	1.1, 1.2, 2.2,6.9.5	
24		L 11.1	Graphical Rendering Pipeline,	Power point presentation, Chalk & Board	10-05-2017	1.3, 2.1, 6.9.5	
25		L 11.2	Haptic Rendering Pipeline, Open GL rendering pipeline	Power point presentation, Chalk & Board	10-07-2017	1.3, 2.1,6.9.5	
26		L 11.3	Applications of Virtual Reality	Power point presentation, Chalk & Board	10-12-2017	1.3, 2.1,6.9.7	
27		L 13.5	Revision and Doubt Clearing	Power point presentation, Chalk & Board	16/10/17	--	

Remark: Course:	Syllabus Coverage:	Practice Session: 2 L 13.4, L 13.5	Beyond Syllabus: 3 L2.3, L9.1, L 12.1

No. of (lectures planned)/(lecture taken): 51

Advanced course: Multimedia Systems, Gaming, Animation	**20 Hours**	**Online NPTEL videos with Hands on Training in Laboratory**	**Web sources:** • https://ocw.mit.edu/courses/comparative-media-studies-writing/cms-608-game-design-fall-2010/study-materials/ • https://ocw.mit.edu/courses/comparative-media-studies-writing/cms-608-game-design-fall-2010/study-materials/ • https://www.university.youth4work.com/AAG_Academy-of-Animation-and-Gaming/study

Text Books:
1.1. Donald Hearn and M. Pauline Baker, "Computer Graphics", Pearson Education.
1.2. R K Maurya, "Computer Graphics with Virtual Reality", Wiley India.

References:
2.1. Grigore Burdea, Philippe Coiffet, "Virtual Reality Technology", Wiley.
2.2. Steven Harrington, "Computer Graphics", McGraw Hill.
2.3. Rogers, "Procedural Elements of Computer Graphics", Tata McGraw Hill.
2.4. Vince, "Virtual Reality Systems", Pearson Education.
2.5. F.S. Hill , Stephen M. Kelley , "Computer Graphics using Open GL" Prentice Hall

Digital Reference:
3.1. https://www.smartzworld.com/notes/computer-graphics
3.2. www.nptel.ac.in/courses/106106090
3.3. https://www.cs.uic.edu/~jbell/CourseNotes/ComputerGraphics

Mr. Shridhar Kamble   **Dr. Rajesh Bansode**
Mr. Rahul Neve

Name & Signature of Faculty   **Signature of HOD**   **Signature of Principal /Dean (Academics)**

          Date: **Date:**   **Date:**

Note:

1. Plan date and completion date should be in compliance

2. Courses are required to be taught with emphasis on resource book, course file, text books, reference books, digital references etc.

3. Planning is to be done for 15 weeks where 1st week will be AOP, 2nd -13th for effective teaching and 14th -15th week for effective university examination oriented teaching, mock practice session and semester consolidation.

4. According to university syllabus where lecture of 4 hrs/per week is mentioned minimum 55 hrs and in case of 3 lectures per week minimum 45 lectures are to be engaged are required to be engaged during the semester and therefore accordingly semester planning for delivery of theory lectures shall be planned.

5. In order to improve score in NBA, faculty members are also required to focus course teaching beyond university prescribed syllabus and measuring the outcomes w.r.t learning course and programme objectives.

6. Text books and reference books are available in syllabus. Here only additional references w.r.t. non –digital/ digital sources can be written (if applicable)

7. Technology to be used in class room during lecture shall be written below the topic planned within the bracket.