Department of Computer Applications
National Institute of Technology Tiruchirappalli

1. Course Outline			
Course Title	Graphics and Multimedia		
Course Code	CA723		
Department	CA	**No. of Credits**	3
Programme	MCA	**Learning Hours**	3
Course Type	Programme Core	**Faculty Name**	Dr. A. Vadivel Dr. V. Gayathri
Pre-requisites Course Code	NIL		
Course Co-ordinator	Dr. A. Vadivel	**PAC chairperson**	Dr. S. Suresh
E-mail	vadi@nitt.edu vgayathri@nitt.edu	**Telephone No.**	0431-250-3737 0431-250-4652

2. Course Overview

The Graphics and Multimedia course deals with the study of different applications of Graphics in real world. This course provides introduction to computer graphics algorithms, software and hardware. It examines techniques for creating 2D and 3D designs using computer graphics software. Students gain experience representing designs using shading and texturing techniques. They practice using computer graphics programs in different situations and develop basic skills that can be built upon later. Topics include: Interactive I/O devices, Line, Circle drawing algorithms, Transformations in 2D & 3D, texture mapping, shadows, Visualization, Polygon Rendering, Hidden Surface Elimination Algorithm, Multimedia, Animations and color.

3. Course Objectives

- To learn the principles of Graphics Algorithms and Mulimedia Techniques

4. Course Outcomes (CO)

Students will be able to:

- **Describe the basics of 2D drawing Algorithm and transformations**
- **Explain the basics of 3D drawing Algorithm and Transformations**
- **Develop interactive animations using multimedia tools**
- **Explain multimedia transmission technologies**

5. Course Outcome (CO)	Aligned Programme Outcome (PO)											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
Student will be able to Describe the basics of 2D drawing Algorithm and transformations	H	H		L	H							
Explain the basics of 3D drawing Algorithm and Transformations	H	H		L								
Develop interactive animations using multimedia tools			M		H							
Explain multimedia transmission technologies	H			L			M					

H = 0.6 M = 0.4 L = 0.0

6. Course Teaching and Learning Activities

Week	Mode of Delivery	Topics covered
1.	Class-I	Introduction to Graphics – Applications – Input Devices
	Class-II	Refreshing CRT – Raster & Random Displays
	Class-III	Other Display Devices
2.	Class-I	Line Drawing Algorithm: DDA with Exercises
	Class-II	Bresenham's Line Drawing Algorithm: Exercises, Comparison with DDA
	Class-III	Circle Drawing Algorithm with Exercises

6. Course Teaching and Learning Activities		
Week	**Mode of Delivery**	**Topics covered**
3.	Class-I	Basic 2D tranformations, Composite Transfermations
	Class-II	More on Composite Transformations
	Class-III	Other Transformations
4.	Class-I	Windowing, Window-to-Viewport Transformations,
	Class-II	Point & Line Clipping: Algorithms, Exercises
	Class-III	Area Clipping, Curve & Text Clipping, Exterior Clipping
5.	Class-I	Segmentation
	Class-II	3D concepts, Parallel & Perspective Projections
	Class-III	Visible Surface Detection Methods - I
6.	Class-I	Visible Surface Detection Methods - II
	Class-II	Basic 3D Transformations
	Class-III	More on 3D ransfermations: Exercises
7.	Class-I	Visualization, Polygon Rendering
	Class-II	Hidden Surface Elimination Algorithm
	Class-III	Multimedia: Hardware & Software, Components
8.	Class-I	Text in Multimedia: Properties, Operations, Tools
	Class-II	Image in Multimedia: Properties, Operations, File formats
	Class-III	Graphics Functionalities in Multimedia
9.	Class-I	Audio: Digital, MIDI, File Formats
	Class-II	Video: Properties, Containers, Editing Tools
	Class-III	Animation in Multimedia with its features

6. Course Teaching and Learning Activities		
Week	**Mode of Delivery**	**Topics covered**
10.	Class-I	Color Models: XYZ, RGB, YIQ, CMY, HSV
	Class-II	Multimedia Communication Systems – I
	Class-III	Multimedia Communication Systems – II
11.	Class-I	Information Retrieval in Multimedia
	Class-II	Video Conferencing: Technology Behind
	Class-III	Virtual Reality

The assessment pattern will be as follows:

7. Course Assessment Method				
Sl. No.	**Mode of Assessment**	**Week/Date**	**Duration**	**Weightage (%)**
1.	Cycle Test – 1	4th week	60 Mins	20
2.	Cycle Test – 2	8th week	60 Mins	20
3.	Assignments	---	---	10
4.	End Semester Exam	---	180 Mins	50
			Total	100

8. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

Reference Books

1. Hearn D and Baker M.P, "Computer Graphics – C Version", 2nd Edition, Pearson Education, 2004.
2. Donald Hearn, M.Pauline Baker, "Computer Graphics", 2nd Edition, 2000, PHI.
3. Ralf Steinmetz, Klara Steinmetz, "Multimedia Computing, Communications and Applications", Pearson Education, 2004.
4. Siamon J. Gibbs, Dionysios C.Tsichritzis, "Multimedia Programming", Addision Wesley, 1995.
5. John Villamil, Casanova, Leony Fernanadez, Eliar, "Multimedia Graphics", PHI, 1998.
6. Ralf Steinmetz, Klara Steinmetz, "Multimedia Computing, Communications and Applications", Pearson Education, 2001.
7. Ralf Steinmetz, Klara Steinmetz, "Multimedia Computing, Communications and Applications", 11th Impression, Pearson Education, 2012.

9. Course Exit Survey (mention the ways by which the feedback about the course is assessed and indicate the attainment level)

- The students through the class representative may give their feedback at any time to the course co-ordinator which will be duly addressed.

- The students may also give their feedback during Class Committee meeting.
- The COs will be computed after arriving at the final marks.

10. Course Policy (including plagiarism, academic honesty, attendance, etc.)

- **Plagiarism**
  The students are expected to come out with their original answers, solutions for problems given during the class work, home work, assignments, tests/examinations. If found to copy from internet/other students, zero marks will be assigned.
- **Attendance**
  100% is a must. However, relaxation upto 25% will be given for leave on emergency requirements (medical, death, etc.) and representing institute events.
- **Academic Honesty**
  i) Possession of any electronic device, if any, found during the test or exam, the student will be debarred for 3 years from appearing for the exam and this will be printed in the Grade statement/Transcript.
  ii) Tampering of MIS records, if any, found, then the results of the student will be with held and the student will not be allowed to appear for the Placement interviews conducted by the Office of Training & Placement, besides (i).

11. Additional Course Information

- The students can get their doubts clarified at any time with their faculty member with prior appointment.

For Senate's Consideration

Course Faculty

(Dr. A. Vadivel)

(Dr. V. Gayathri)

for **(Dr. S.SURESH)**
Class Committee Chairperson

17/8/16
(Dr. A. VADIVEL)
HoD