FACULTY OF SCIENCE

SYLLABI FOR

POSTGRADUATE DIPLOMA

IN

COMPUTER GRAPHICS AND ANIMATION

FOR

EXAMINATIONS 2018 - 2019

--:O:--
# OUTLINE OF THE SYLLABI AND COURSES FOR POST GRADUATE DIPLOMA IN COMPUTER GRAPHICS AND ANIMATION

## SEMESTER I

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Paper Name</th>
<th>Lect. T P Hrs./Week</th>
<th>Exam. Marks</th>
<th>Int. Ass. Marks</th>
<th>Total Marks</th>
<th>Exam Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGA-14</td>
<td>Computer Fundamentals</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-15</td>
<td>Computer Graphics &amp; Animation</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-03</td>
<td>Computer Graphics : CorelDraw</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-04</td>
<td>Adobe Photoshop</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-16</td>
<td>Practical based on CGA-14 &amp; CGA-15</td>
<td>5 50 25</td>
<td>75</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CGA-06</td>
<td>Practical based on CGA-03 &amp; CGA-04</td>
<td>5 50 25</td>
<td>75</td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Total Marks : 550

## SEMESTER II

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Paper Name</th>
<th>Lect. T P Hrs./Week</th>
<th>Exam. Marks</th>
<th>Int. Ass. Marks</th>
<th>Total Marks</th>
<th>Exam Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGA-07</td>
<td>Computer Graphics : Advance CorelDraw</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-08</td>
<td>Adobe Flash</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-09</td>
<td>Adobe Illustrator</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-10</td>
<td>Autodesk 3D Max</td>
<td>3 1 80</td>
<td>20</td>
<td>100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CGA-11</td>
<td>Practical based on CGA – 07 &amp; CGA 08</td>
<td>5 50 25</td>
<td>75</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CGA-12</td>
<td>Practical based on CGA-09</td>
<td>5 50 25</td>
<td>75</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CGA-13</td>
<td>Project work</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Total Marks : 650

Note: Pass Marks 40% in Theory, Internal Assessment and Practical separately
50% marks for project work
50% marks in aggregate to qualify the examinations.
POST GRADUATE DIPLOMA IN COMPUTER GRAPHICS AND ANIMATION

SEMESTER 1

Paper Title : COMPUTER FUNDAMENTALS
Max Marks: 80 (Th) + 20 (Int.)
Paper code : CGA-14
Time: 3 hours
Course Duration: 40 Lectures of one hour each

Objectives: (i) The objective of this course is to familiarize students with concept of working of computer, various types of peripheral devices and Operating System.
(ii) to familiarize student with documentation, spreadsheet and presentation packages.

Note:
1. The Question Paper will consist of four units
2. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt ONE question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I
   (No. of Lectures: 15)

UNIT - II
2. Input and Output Devices: Various Input Devices such as keyboard, mouse and joystick, Output Devices: Monitors (CGA, EGA, VGA and SVGA), different types of Printers and Plotters.
3. Memory: Primary and secondary memory: RAM, ROM, PROM, EPROM, Cache, Removable and non-removable secondary memory: Tapes, Disks, CDROM, DVD, comparison of these devices based on technology and speed. Organization of data on disks: Tracks, sectors, cylinders, heads, access time, seek time and latency time.
   (No. of Lectures: 15)

UNIT - III
5. Operating Systems – DOS, Windows and UNIX: Comparison of main features of DOS, UNIX and Windows Operating Systems. DOS: Internal DOS commands such as DIR, COPY, TYPE, DEL, DATE, and External commands such as UNDELETE, DELTREE, XCOPY, MOVE, and SCANDISK.
UNIX: Overview of UNIX structure, general purpose UNIX commands such as date, echo, cal, bc, pwd, passwd, file and directory commands such as ls, mkdir, cp, mv, rm, process management commands such as ps, kill, communication commands such as news, mesg, wall; working with editor.

(No. of Lectures: 15)

UNIT - IV

6. **Word Processing Software**: Basics of Word Processing: creating, opening, saving, and printing document, using the Interface (Menu Toolbars), editing Text (Copy, Delete, Move etc.), Finding and Replacing Text, Spell Check, Autocorrect feature; Formatting: Character, Paragraph and Page formatting, adding Headers and Footers, setting up Multiple Columns.

7. **Spreadsheet Software**: Worksheet overview: Row, Column, Cells, Menus, creating, opening, saving, and printing worksheet; working with Ranges, working with Formulae and Functions (Statistical, Mathematical and String), number formatting.

8. **Presentation Software**: Basics features, selecting design templates, creating, saving and printing a simple presentation.

(No. of Lectures: 15)

**References**:

5. Rajaraman, V. : Fundamentals of Computers, PHI, New Delhi,
8. Norton, P. : Complete guide to LINUX, Techmedia
PAPER TITLE: Introduction to Graphics & Animation  
Max Marks: 80 (Th) + 20 (Int.)

Paper code: CGA-15  
Time: 3 hours

Course Duration: 40 Lectures of one hour each

Objectives: (i) The objective is to make students understand how graphics system works.
(ii) to Make the understand working of various graphics devices and Animation.

Note:
1. The Question Paper will consist of four units
2. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt ONE question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I

Computer Graphics:
A survey of Computer Graphics:

UNIT - II

Overview of Graphics System
Video Display Devices, Raster Scan System, Random Scan System, Graphic Monitors and Workstations, Input Devices, Hard copy devices, Graphics Software.

UNIT - III

Two dimensional Geometric Transformations and viewing: Basic transformations, Rotation, Scaling, Composite transformations, viewing pipeline, clipping operations.

Three dimensional concepts, transformations and Viewing: three dimensional display methods, three dimensional transformations, three dimensional viewing pipeline, viewing coordinates.

UNIT - IV

Animation: Concept of Animation, Basics of animation, Principle and use of animation in multimedia, effect of resolutions, pixel depth, image size on quality and storage. Overview of 2D and 3D animation techniques.

Lectures (15)

Text Books
1. Multimedia Magic by S. Gokul, BPB, 2009
4. Multimedia on a PC by Rain Sinclair 2008
5. Introduction to Computer Graphics by N Krishnamurthy 2009

References Books:
2. Computer Graphics by Hearn and Baker, PHI. 2010
PAPER TITLE: Computer Graphics - Corel draw

Max Marks: 80 (Th) + 20 (Int.)

Paper code : CGA-03

Time: 3 hours

Course Duration: 40 Lectures of one hour each

Objectives : (i) To familiarize the student with working of Corel draw.

(ii) To help them use various tools of Corel draw.

(iii) To develop canalize in using Corel draw.

Note :
1. The Question Paper will consist of four units
2. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt ONE question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I

Introduction : Introduction to CorelDraw, document info, working with toolbars, working with docker windows, using views, zoom, workspaces.

Customizing Options: Using Multiple workspaces, Customizing the Toolbars, Using Shortcuts, Saving Defaults, Setting File Backups.

UNIT - II

Basic Drawing: Selection techniques, objects locking, digger selection, working with: lines, freehand curves, ellipses, rectangles, grids, rulers, guidelines, and snapping to objects.

Advanced Drawing : Working with curves, polygons, manipulating objects, working with nodes: adding, deleting, rotating and skewing.

UNIT - III

Text work: creating artistic text, paragraph text, changing the typeface, type size, applying text effects, aligning text, adjusting spacing, shifting and rotating text, dedicated text editor.

Advanced text work: Using tabs, indents, linking frames, editing individual characters, working with text styles, fitting text to a path, searching text, checking spelling and grammar.

UNIT - IV

Styles and Templates: Introduction to styles and templates, creating a style, applying a style, copying properties, use of templates.

Text books :
1. Coreldraw in easy steps by Stepman 2009
2. Teach Yourself Coreldraw by Karlins David 2009
3. Coreldraw 5, 9, 12 for beginners by David Gray

References Books:
2. Mastering Corel-Draw by Altman, BPB. 2009
Objectives: Students will gain working knowledge of Photoshop and develop their skill in editing and altering photographs through a basic understanding of tool bars, layers and panels.

Note:
1. The Question Paper will consist of four units
2. Examiner will set total of nine questions comprising two questions from each unit and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I
**Introduction:** Painting and editing: Opening a file, working with palettes, using the layers palette, using the painting editing tools, smudging a selection, saving palettes. **Selections:** Tool overview, selecting with the marquee moving a selection selecting with the magic wand tool, selecting with lasso tool, saving and loading selections, transforming a selection, adding a text, cropping the image.

UNIT - II
**Promotional Piece:** Creating and Viewing layers, rearranging layers, changing the mode of a layer, feathering a selection, defining and filling with a pattern, adding a layer effect to a type layer, pattering and saving files.

UNIT - III
**Using. Paths:** Drawing paths with pen tool, storing a path, drawing curved paths, filling a path, combining straight and curved lines, making a path into a selection. Drawing a path around an artwork, transforming a path channels and masks: working with masks and channels, Using channels, coating a quick mask: Editing a quick mask, saving a selection as a mask, loading mask as a selection and using the replace colour command, creating 3 gradient mask, applying filters to mask.

UNIT - IV
**Advanced Layer Techniques:** Working with layer masks, creating a clipping group, Adding adjustment layers, adjusting hue and saturation, removing layer masks, save layered files understanding colour making colour correction, using the navigations command, adjusting colour with the level command and the wires commands, making selective colour correction, lightening, darkening and saturating areas.

**Text Books**
2. Photoshop element 2 the complete reference by Hirish Gene 2nd edition
3. Photoshop CS4 – studio techniques by Ben Will more 2009
4. Desktop Publishing and Design by C Roger 2009
5. Designing Web Animations by Nicola Brown

**References Books:**
1. Photoshop 7 - Savvy by Romaniello, BPB.
2. Photoshop Web Graphics by Laurie Uriich 2009
3. Mastering digital photography and imaging, 2009
CGA - 16 : PRACTICAL based on CGA - 14 & CGA - 15
Max Marks: 75 (50 + 25)
Practical work – Assignments related with:
  • Differentiation of Dos and Unix OS
  • Windows (desktop, control panel, buttons and icons, administrative tools etc.),
  • Text editing in Microsoft-Word, Microsoft Excel,
  • Making simple multi-media using Microsoft power-point.

CGA - 06 : PRACTICAL based on CGA - 03 & CGA - 04
Max Marks: 75 (50 + 25)
Practical work – Assignments related with:
  • Drawing lines, curves, circles, ellipses, polygons
  • Create Illustrations pamphlets of any institute
  • Create Magazine cover relating to Graphics.
  • Creating Information Broacher of Schools
  • Create various banners, logos, magazines (10 pages)
  • Create collage of various photographs
  • Personal Logo Assignment
  • Personal Collage
  • Clone Stamp Assignment
  • Cinema Poster Designing
SEMESTER II

PAPER TITLE: Computer Graphics – Advance Corel Draw

Max Marks: 80 (Th) + 20 (Int.)

Paper code : CGA-07

Time: 3 hours

Course Duration: 40 Lectures of one hour each

Objectives : Students will gain working knowledge of features of Corel draw. They will be able to design logo, brochures etc.

Note :
1. The Question Paper will consist of four units
2. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt ONE question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I

Layers: Introduction to layers, editing layers, setting up a master layer, moving, copying and locking layers, reordering layers.

Tools and Techniques : The Outline tool: working with preset outlines. Setting outline widths, colours, styles. Creating line styles, applying outline arrows, editing arrows, Configuring various corners of the objects, applying calligraphic outlines, setting outline defaults, further outline options.

UNIT - II

The Fill Tool : applying uniform fills, pattern fills, using two-colour pattern fills, full colour pattern fills, bitmap pattern fills, fountain fills, texture fills, interactive fills. Creating mesh fills, tiling fills interactively etc.

The Artistic Media Tool : using preset mode, brush mode, object sprayer mode.
The Interactive Tools: distorting objects, extruding objects, blending objects, interactive envelopes.

UNIT - III

Working with Images : Importing images, using the scrapbook, colouring a black and white bitmap, tracing bitmaps, cropping bitmaps, resizing, rotating, skewing images, bitmap special effects, colour styles, exporting images.

UNIT - IV

Printing and Publishing : Layout styles, setting the page size, specifying the background colour, adding a printable page frame, hiding the page border, using facing pages, setting the start page, inserting pages, going to specific pages. Printing components, using print styles, proofing aids, printing to a file, the bureau wizard, publishing to the internet.

Corel Rave: Introduction to corel rave, playing sample rave animations, working with the timeline docker, inserting hyperlinks, creating sprites and adding behaviors.

Text Books :
2. CorelDRAW® 9 Bible (Paperback) by Deborah Miller
4. CorelDRAW X3 by Collectif
5. CorelDRAW 12 Unleashed.

References Books:
PAPER TITLE: Adobe Flash

Max Marks: 80 (Th) + 20 (Int.)

Paper code : CGA-08

Time: 3 hours

Course Duration: 40 Lectures of one hour each

Objectives: (i) To make students understand the working and features of Flash.
            (ii) To make the work with various tools, objects, frames, layers etc.
            (iii) To enable them to use animation tools and features to create animation.

Note:
1. The Question Paper will consist of four units
2. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt ONE question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I

Introduction: Introduction to Flash, Applications of Flash, Features of Flash, demonstration of some applications develop in Flash.


UNIT - II

Working with an object: The Object Initialization, Selecting Object with Arrow tool and Lasso Tool, Grouping Objects, Moving Objects, Resizing Object, Rotating and Skewing Object, Reshaping Object.


UNIT - III

Symbol and instance: Creating Symbol and Instance, Modifying an Instance, Instance Property Panel, Editing Symbols and Duplicating Symbols.

Graphics: Bitmap and Vectored File, Importing Bitmap, Exporting Flash Object as Bitmap.

UNIT - IV

Output settings in flash: shockwave and video formats, Publishing settings.

Animation and effects: Using mask layers, Animate object along paths, adding timeline effects, timeline effect settings.

Text Books
1. Flash in Easy Steps, DreamTech Press, Nick Vandome 2009
2. Inside Flash, Techmedia, lody Keating, Fig Leaf Software 2010
3. Flash Web Design by Hillman 2009
4. Flash MX in easy step by nick 2009

References Books:
1. Flash Mx Professional 2010 by Unleashed, David Vogeleer Matthew Pizzi
2. After Effect for Flash , Richard 2009
Objectives : (i) The objective of course is to familiarize students with Adobe Illustrator.
   (ii) To cover, all the basics which will allow them to start making Professional working graphics.

Note :
1. The Question Paper will consist of four units
2. Examiner will set total of NINE questions comprising TWO questions from each section and ONE compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt ONE question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I
Graphics Overview - Raster graphics, Vector graphics, Printing graphics.
Creating new drawings & opening old ones : Page set up - Rulers, grids and guidelines, Smart Guides, Smart guide preferences, One last guide to set.
Selecting an object: Templates; Viewing your work - Document info, Annotating an object.

UNIT - II
Illustrator's Design Tools - Grid, Artboard / Workspace, Bounding Box, Setting preferences / customizing, Keyboard Shortcuts, Saving your work, Exporting your work as a bitmap, Adobe Bridge, Special Focus.
Toolbars - Default toolbar, Drawing, selecting/deselecting, moving objects & manipulating object center points, Shapes, Drawing lines, curves, arcs.
Pen Tool Paths, Straight segments, Smooth points, Non-continuous curve.

UNIT - III
Working with layers - Compounding & breaking apart objects - Hiding and showing objects & layers - Layers, Color, Type & Appearance - Layers - Sub-layers - Template layers - Layer options; Isolation mode.
Working with color - A word about color - Color aspects – Gradients – Transparency; Color options; Special painting and drawing tools; Spot & process color.

UNIT - IV
Working with Text / Type - Adding, selecting & manipulating text, Editing, Formatting, Fitting text to a curve or line, Fitting text to a shape, Wrapping text, Symbols & special characters, Spacing, kerning & leading, Spell checking, Anti-alias, Styles, Creating objects, graphs and symbols, learning how to select and edit, understanding colour, gradients and mesh. Putting Illustrator to Work: Using Illustrator of organize objects, using creative strokes and fill with patterns, applying transformations and distortions, using path blends, compound paths and Masks.

Text Books
1. Adobe Illustrator CS 4 Techmedia 2011
2. Illustrator in easy step by nick 2011

References Books:
3. Adobe Illustrator CS 3 CS 4, Techmedia 2009
4. After Effect for Illustrator, Richard 2009
PAPER TITLE: Autodesk 3D Max

Paper code : CGA-10

Course Duration: 40 Lectures of one hour each

Max Marks: 80 (Th) + 20 (Int.)
Time: 3 hours

Objectives:
(i) Objective is to enable students to use interface, use selecting and transformation tools.
(ii) Enable them to apply Animation and Rendering.
(iii) Then enable students ability to combine creativity with technology to make 3D models animated etc.

Note:
1. The Question Paper will consist of four units
2. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt ONE question from each unit and the Compulsory Question
4. All questions carry equal marks unless specified.

UNIT - I


Exploring the Max Interface: Interface Elements, Menus, Toolbar, Viewports, Command Panel, Lower Interface Gar Controls, Interacting With the Interface.

UNIT - II

Working With the Viewports: 3D Space, Viewport Navigation Controls, Configuring the Viewports, Viewport backgrounds.

Working With Objects: Creating Primitive Objects, Primitive Object Types, Selecting Objects And Setting Object Properties, Cloning Objects.

UNIT - III

Transforming Objects: Moving, Rotating and Scaling Objects, Using Pivot Points, Grids and Snap Options.

Modifiers: Exploring the Modifier Stack, Exploring Modifier Types, Using Instanced ’Modifiers.

UNIT - IV

Animation and Rendering: Animation: About Key Frame Set Key Animation Mode. The Track View-Dope Sheet,

Rendering: Rendering Options. The Render Scene Dialog, The Render frame Window, Rendering for Animation.

Text Books
1. 3Ds Max 5, DreamTech Press, Prof. Sham Teckoo 2009
2. Introducing 3Ds Max 9 by H K Shoni 2009
3. Mastering 3Ds Max by Cat woods 2008
4. 3Ds Max 7 fundamentals, Teb Broadman 2009

References:
1. 3Ds Max 5 Bible, Kelly L. Murdock, Willey Pub. Inc .2009
2. 3Ds Max 5 Fundamentals
3. 3Ds Max 9 Bible by Mudrock
4. Mastering Autodesk 3Ds Max 2010 by Mark Gerhard
CGA-11 : PRACTICAL based on CGA-07 & CGA-08  
Practical work – Assignments related with:  
• Create any web applications  
• Making Masks, Making Posters  
• Create any character  
• Create any corporate presentations using adobe flash  
• Create advertisement of display graphical device.

CGA-12 : PRACTICAL based on CGA-09  
Practical work – Assignments related with:  
• Create any web applications  
• Create any corporate presentations using adobe illustrator  
• Mask Making, Gradients and Blends  
• Making Logos, Making Posters,  
• Making Clip Arts, Animate Fishie  
• Create advertisement of display graphical device.  
• Create layout designs using Adobe Illustrator

CGA-13 : PROJECT WORK : (using ANY Graphics and Animation tool specified in syllabus)  
Project must be taken up from the real life examples like :  
• Science Project related to Physics / Chemistry  
• Story Narration for Kids.  
• Interactive Kindergarten tutorial  
• Animate flame of candle.  
• Create simple cartoon character  
• Any other relevant projects.