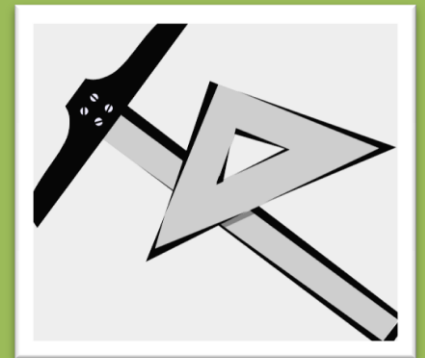
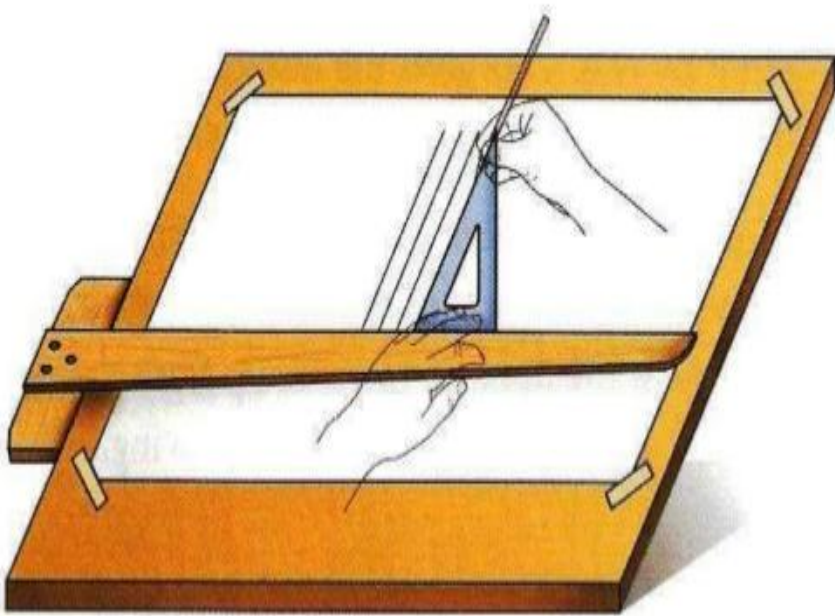


# *Technical Graphics & DEG*

*Department Subject Plans 2014-2015*



*Ballyhannis  
Community  
School*

## Subject Co-ordinator

- Mr Patrick McGarry

### 1. Teaching Staff

- Mr. Patrick McGarry : Senior Cycle/Junior Cycle
- Mr. Patrick Noone : Senior Cycle/Junior Cycle
- Mr. Sean McHugh : Junior Cycle
- Mr. Colin Quinn : Junior Cycle

### 2. Department Rooms

- D1, D3, D4 and B3

### 3. Equipment

- T-Squares and ancillary drawing equipment
- Data Projector x 2
- Desktop Computers x 4
- Laptop Computers x 18
- Visualiser
- A3 Scanner
- A4 Printer x 2 (1 Colour)
- A3 Printer x 2
- Digital Camera

### 4. Time Allocation

- First Year : 1 double (1/2 Year-taster programme)
- 2<sup>nd</sup> & 3<sup>rd</sup> Years : 1 double and 2 singles per week
- TY : Varies per year
- 4<sup>th</sup> & 5<sup>th</sup> Year : 1 double and 3 singles

## **5. Mission statement**

**“The Technical Graphics and DCG department aspires to provide a safe, stimulating environment where all students can develop their practical and academic skills to fulfil their goals”**

## **6. Subject Aims**

- **To develop the capacity and ability of students in the area of visuo-spatial reasoning.**
- **To apply appropriate thinking skills in the realisation of solutions.**
- **To develop appropriate graphical skills for communication.**
- **To develop the use of Information Technology.**
- **To develop the cognitive and practical skills associated with communication graphics, problem solving and critical thinking.**
- **To develop appropriate technical skills for the construction of drawings.**
- **To provide a learning environment where students can plan, organise and present appropriate design solutions using a variety of skills, techniques and media.**
- **To provide a basis for lifelong learning.**
- **To develop an appreciation for, and understanding of, aesthetic principles and their importance in design and the human environment.**

## **7. Subject Objectives**

***On completion of their studies students should be:***

- **Familiar with the principles, concepts, terminology and methodologies associated with the graphics code.**
- **Able to apply the principles of both plane and descriptive geometries to the solution of a variety of concrete and abstract graphic problems.**
- **Able to produce neat and accurate drawings that comply with internationally recognized standards and conventions.**

- Able to model in two and three dimensions, graphic design problems and solutions, utilising a range of appropriate techniques and media with confidence and discernment.
- Appreciative of the facility which the graphics code provides, in the solution of problems and in the visual communication of data.
- Able to utilise freehand sketching, both two and three dimensional, as a means of communication and as an aid to spatial reasoning and refinement.
- Able to utilise a variety of rendering and presentation techniques in the solution of graphic design problems, in both two and three dimensions.
- Competent and confident in the application of CAD and other appropriate Information and Communications Technologies (ICT) in the solution, modelling and presentation of graphic design solutions, in two and three dimensions.
- Able to interpret verbal, written and mathematical information, and to represent it graphically.

### **8. Grouping of Pupils (Mixed ability, Streaming)**

- Technical Graphics is an optional subject and consequently all groups are of mixed ability. However, early in their 3<sup>rd</sup> year, students opt for Higher / Ordinary level after discussion with their Parents / Guardian and their teacher. Students are all generally encouraged to take the Higher level paper where possible.
- In 4<sup>th</sup> year all students follow the common level in DCG and they also decide on their level by the end of that year in consultation with Subject Teachers
- Both the Honours and Ordinary groups are taught in the same classroom.

## **9. Textbooks and Course Materials**

- 1st Year : No Textbook
- 2<sup>nd</sup> & 3<sup>rd</sup> Years : Understanding Technical Graphics (G&M)
- TY : No Textbook
- 4<sup>th</sup> & 5<sup>th</sup> Year : DCG Solutions Workbook

## **10. Planning for students with special needs**

The TG & DCG department caters for students with special needs in the following ways:

- The subject lends itself to one-to-one teaching thus assisting students with learning difficulties.
- Teachers liaise regularly with school's learning support co-ordinators Mrs Lyons & Ms Hayes. Relevant information from student profiles is exchanged where appropriate.
- Realistic expectations and suitable homework plans are devised & implemented.
- Teachers also liaise with Tutors, Parents and school management.

## **11. Cross-curricular planning**

This is particularly relevant as there is overlap between Maths, Geography, Art, Construction Studies, and DCG. Whenever possible the link is established between subjects to tie the individual subjects together to show the bigger picture of education. As the Drawing staff are also practical teachers the links between these subjects is especially highlighted. The link between Maths is also emphasised and discussed both formally and informally with the Maths department to establish common links between the courses.

## **12. Homework Procedures**

Homework has a role in consolidating the work done in class. Regular study will help promote good learning habits. It allows the student to work on their own initiative, and take responsibility for their own learning. Each student must have the necessary textbooks. Homework must be done conscientiously and in a tidy manner. The co-operation of parents in this area is absolutely essential. Homework should be divided evenly over the week.

All students must have a Homework Journal to record all homework assigned. The Journal should be used as a means of communication between parents and teachers.

Teachers may occasionally, allow students to do homework in school to check how long it takes the average student to complete the task.

No student will be punished for getting homework wrong, but teachers will insist on seeing evidence that it was attempted. Homework is corrected and a comment made enlightening students as to where they may make improvements in the future.

Homework is given at the end of every class and is relevant to what was covered in that class. The amount of HW will vary, depending on whether the class was a double or a single and on when the next class will be. The amount will also depend on the year group and the general ability of the group.

Homework is always checked and noted in the student's journal and teacher's diary if not done by a student. Homework will often come in the form of completion of work done in class.

The average or suggested time expected following each class:

- 1<sup>st</sup> Year – 10/15 minutes
- 2<sup>nd</sup> Year – 10/15 minutes
- 3<sup>rd</sup> Year – 15/20 minutes with extra time at weekends for revision

- 5<sup>th</sup> Year – 15-25 minutes with extra time at weekends for revision
- 6<sup>th</sup> Year – 25-35 minutes with extra time at weekends for revision and especially during the Student Assignment period.

### **13. Record Keeping Procedures**

Record of results, absenteeism, lates, behaviour etc are recorded in the teacher's journal and is also recorded on the schools eportal facility where deemed appropriate.

### **14. Reporting Procedures**

Depending on what has to be reported dictates to whom the reporting is done.

For disciplinary matters the reporting may be to the Year Head / Principal.

This is primarily done via the school eportal facility but also through face-to-face discussions to get a more personal understanding on any issues.

For matters relating to "child abuse" the reporting must be to the Designated Liaison Person. This report should be written.

Matters relating to a child's academic performance may be reported to parents at a specially arranged meeting and parent teacher meetings.

### **15. Teacher in-career development**

Patrick Mc Garry, Patrick Noone and Colin Quinn have completed the 13 in-service training courses for the new Leaving Certificate DCG, 2006-2009.

There has been no in-service training for Technical Graphics in recent years.

### **16. Subject Meetings**

Time is allocated to formal subject meetings during the year. Topics include organization of common curriculum, order lists or new IT and drawing

equipment, organization of rooms, paperwork associated with exams, discipline, class sizes, students with learning difficulties, books, new *Literacy and Numeracy* initiatives etc.

Teachers frequently consult each other regarding matters arising. These subject meetings are very valuable. Teachers frequently consult each other on a more in-formal basis regarding matters arising. These subject meetings are very valuable. See Appendix 3 for a copy of department meetings.

See also Appendix 1&2 for Leaving Cert and Junior Cert examinations results which are frequently discussed and evaluated and these Subject Meeting.

Strategies to improve results are often debated and recorded. Areas where we perform well against the national figures are also acknowledged.

## **17. Literacy and Numeracy Policy**

### **Reasons to integration of Numeracy and Literacy in Tech Gr. & DCG**

- The universal language of *design and graphic representation* helps bridge and overcome many literacy barriers.
- Keywords to describe the skills mastered in Technical Graphics and DCG are easily identifiable and can help the student associate with the meaning of that particular term.
- Where pupils struggle with the language to represent their ideas there is huge scope to use other *practical* means to communicate.
- Literacy is encouraged through the use of posters on the wall with new terms explained.
- Numeracy is an integral part of TG and DCG. Links between Mathematics and Technical Graphics are often seen and easily recognised to the students. This is especially focused upon with the short Junior Certificate questions.

### **Strategies for Improving Literacy and Numeracy**



- Students label sheet in title box and label each view they draw.
- The DCG student assignment requires students to explain, compare, discuss, analysis various products. Thesauruses/Dictionary and internet are encouraged to find adjectives to describe shapes etc.
- A print rich environment is in the classroom both 2d and 3d.
- Topics are explained and demonstrated explicitly to students.
- Class discussions are encouraged using relevant terms/descriptions.
- Students compare and contrast themes and ideas when designing products.
- Students are encouraged to organise and convey their written work accurately through the use of annotations. Huge emphasis placed on size/accuracy and proportion at all levels.
- Measurement conversion is also emphasised

### **18. Assessments/Examinations Procedures**

Formal assessment of learning occurs at Christmas and Summer for 1<sup>st</sup>, 2<sup>nd</sup> and 4<sup>th</sup> year students in a structured examination setting. 3<sup>rd</sup> years and 5<sup>th</sup> years generally have formal examinations in December and Mock examinations in February in a structured examination setting. At the end of a section a teacher may give an examination to assess the learning in the particular topic. Assessment for learning continues on throughout the year where teachers monitor student's progress by speaking to students while they draw and by structured questioning throughout classes. The results of all formal examinations are relayed to parents in the form of a report. Examination of student's folders is also a key component in final assessment for all year groups.

## **19. Technical Graphics - Topic by Topic**

### **First Year**

1. Learning to draw
2. Inclined Lines
3. Angles
4. Basic Constructions
5. Triangles
6. Polygons
7. Orthographic Projection 1
8. Pictorial Drawing 1
9. Freehand Sketching
10. The Ellipse
11. Circle 1
12. Developments 1

### **Second Year**

1. Orthographic Projection 2
2. Pictorial Drawing 2
3. Transformation Geometry
4. Areas
5. The Parabola
6. Auxiliary Projection
7. Circles
8. Rotation of Objects
9. The Ellipse and Parabola 2
10. Transformation Geometry 2

### **Third Year**

1. Solids in Contact
2. Enlargements and Reductions
3. Developments
4. Geometrical Solids
5. CAD
6. Solidworks
7. Short Questions
8. Perspective

First Year	BCS Technical Graphics Scheme of Work	
Term	Topic	Assessment
<b>Term 1</b> <b>Sept-Oct</b>	<p><b>Learning to Draw</b></p> <ul style="list-style-type: none"> <li>• Introduction to Technical Graphics</li> <li>• Use of drawing equipment</li> <li>• Standard page layout</li> <li>• Fireplace Drawing – Embellish where appropriate</li> <li>• Speedo / Pizza Hut / CAO Logos</li> <li>• (<b>Additional</b> Logos <u>where appropriate</u>)</li> </ul> <p><b>Inclined Lines</b></p> <ul style="list-style-type: none"> <li>• Lines + printing,</li> <li>• Vertical, horizontal, inclined lines- printing practice.</li> <li>• Construction work</li> <li>• Lotto / EA Sports / Nike Logos/Ulster Bank</li> <li>• (<b>Additional</b> Logos <u>where appropriate</u>)</li> </ul> <p><b>Angles</b></p> <ul style="list-style-type: none"> <li>• Set square angles, similar angles (compass), types of angles, calculation of angles (protractor work)</li> </ul>	<p>Review of students work in class</p> <p>Review of students work in class</p> <p>Homework Worksheets</p> <p>Review of students work in class</p>
<b>Oct- mid Dec</b>	<p><b>Basic Constructions</b></p> <ul style="list-style-type: none"> <li>• Bisect lengths, angles. Division of a line. Perpendicular lines. In-circle and circumcircle</li> </ul> <p><b>Triangles</b></p> <ul style="list-style-type: none"> <li>• Types of triangles, methods of construction, theorems on same.</li> </ul> <p><b>Polygons</b></p> <ul style="list-style-type: none"> <li>• Types and methods of drawing, polygons used in design.</li> </ul>	<p>Review of students work in class</p> <p>Homework Worksheets</p>
<b>Christmas Test</b>	<b>Logos / Constructions</b>	<b>Marking scheme + review of folder work</b>

Term 2		
Jan-mid Feb	<p><b>Orthographic Projection 1</b></p> <ul style="list-style-type: none"> <li>• Plans, elevations, end views for basic shapes.</li> <li>• Ortho from 3-d</li> <li>• Relationship to everyday life.</li> </ul>	Homework Worksheets + <b>Topic Test</b>
Mid Feb - April	<p><b>Pictorial Drawing 1</b></p> <ul style="list-style-type: none"> <li>• Oblique projection/Isometric Projection. Simple figures.</li> <li>• Cubes, prisms, simple inclined shapes.</li> <li>• Oblique from Oblique</li> <li>• Oblique from Isometric</li> <li>• Oblique from orthographic</li> </ul> <p><b>Freehand Sketching</b></p> <ul style="list-style-type: none"> <li>• Lines/Technique, Circles, prisms, Cylinders, right solids, shading</li> </ul> <p><b>The ellipse</b></p> <ul style="list-style-type: none"> <li>• Basic construction, Concentric/Trammell, location of focal points, construction of tangent to point on curve.</li> </ul>	Review of students work in class  Homework Worksheets
Term 3		
April-Jun	<p><b>Circles 1</b></p> <ul style="list-style-type: none"> <li>• Constructions on same, introduction to tangents, locating centres, concentric and eccentric circles.</li> <li>• Inscribed and circumscribed circles.</li> <li>• Tangents External and internal tangents.</li> <li>• Circles in contact 1.</li> <li>• Designs based on same.</li> </ul> <p><b>Developments 1</b></p> <ul style="list-style-type: none"> <li>• Cuboids, Prisms, Cylinders, packaging incorporating all.</li> </ul> <p style="text-align: center;"><b><u>End of Year Test</u></b></p> <ul style="list-style-type: none"> <li>• <b>Orthographic Projection</b></li> <li>• <b>Ellipse</b></li> <li>• <b>Pictorial Drawing</b></li> </ul>	Homework Worksheets  Review of students work in class

Second Yr	BCS Technical Graphics Scheme of Work	Second Yr
Term	Topic	Assessment
<b>Term 1</b>	<b><u>Orthographic Projection 2</u></b>	
<b>Sept-Oct</b>	<ul style="list-style-type: none"> <li>• More complex shapes and solids. Problems involving 1<sup>st</sup> and 3<sup>rd</sup> angle projection.</li> </ul>	Homework Worksheets
	<b>Pictorial Drawing 2</b>	
	<ul style="list-style-type: none"> <li>• More complex oblique-Curves and Circles</li> <li>• Isometric Projection from Isometric</li> <li>• Isometric projection from Orthographic</li> <li>• Isometric projection by scale</li> <li>• Axonometric projection from Isometric 1</li> </ul>	<b>Topic Test</b>  Homework Worksheets
	<b>Transformation Geometry 1</b>	
	<ul style="list-style-type: none"> <li>• Central symmetry, Axial symmetry, Translations and Rotations of simple and complex objects/figures. Problems on same.</li> </ul>	<b>Topic Test</b>
<b>Term 2</b>	<b>Areas</b>	
<b>Oct- Dec</b>	<ul style="list-style-type: none"> <li>• Calculation of areas using grids. Basic construction of converting the following; triangle→rectangle→square</li> <li>• Square → rectangle→ triangle</li> <li>• Converting complex figures to new shapes.</li> </ul>	Homework Worksheets <b>Topic Test</b>
	<b><u>The Parabola</u></b>	
	<ul style="list-style-type: none"> <li>• Constructing the parabola using rectangular/eccentricity method and constructing tangents to the curve.</li> </ul>	Homework Worksheets
	<b><u>Auxiliary elevations and plans/True Shape.</u></b>	
	<ul style="list-style-type: none"> <li>• Sections on prisms and pyramids. Horizontal and vertical sections. Introduction to true shapes. Indexing.</li> </ul>	<b>Marking scheme + review of folder work</b>
	<b><u>Circles 2</u></b>	
	<ul style="list-style-type: none"> <li>• More complex problems, e.g. logos, containers etc. Complex circular shapes and exercises,</li> </ul>	Homework Worksheets
	<b><u>Christmas Test</u></b>	

<b>Term 3</b>  <b>Jan-March</b>	<p><b><u>Rotations of Objects</u></b></p> <ul style="list-style-type: none"> <li>• Rotations through the various view Orthographic Views.</li> </ul> <p><b>The ellipse and Parabola 2</b></p> <ul style="list-style-type: none"> <li>• More complex and problem solving exercises on the ellipse which would include tangents (internal &amp; external). Supplementary methods for constructing the ellipse.</li> <li>• Constructing the parabola using rectangular method and constructing tangents to the curve.</li> </ul>	<p>Homework Worksheets <b>Topic Test</b></p> <p>Homework Worksheets <b>Topic Test</b></p> <p>Review of students work in class</p>
<b>March</b>	<ul style="list-style-type: none"> <li>• <b>Sketching</b></li> <li>• <b>2d and 3d</b></li> <li>• <b>Solidworks</b> Introduction – Intereface briefing plus sample modelling.</li> </ul>	<p>Homework Worksheets</p>
<b>April-Jun</b>	<p><b>Pictorial Drawing 3</b></p> <ul style="list-style-type: none"> <li>• Construction of axonometric planes. Construct axonometric view of solids by projecting from given views. Identifying and indexing of views. Problems on same.</li> </ul> <p><b>Transformation Geometry 2</b></p> <p>Central symmetry, Axial symmetry, Translations and Rotations of simple and complex objects/figures. Problems on same.</p>	<p>Review of students work in class</p> <p>Homework Worksheets</p> <p>Homework Worksheets</p>
	<p><b><u>End of Year Test</u></b></p>	

<b>Third Yr</b>	<b>BCS Technical Graphics Scheme of Work</b>	
<b>Term</b>	<b>Topic</b>	<b>Assessment</b>
<b>Term 1</b>	<b>Solids in Contact</b>	
<b>Sept-Oct</b>	<ul style="list-style-type: none"> <li>Pyramids, prisms, cones and spheres in contact. Finding points of contact between solids. Problems on same.</li> </ul> <p><b>Enlargements and Reductions</b></p> <ul style="list-style-type: none"> <li>Enlarging and reducing figures using grid paper, polar point and radiating lines method.</li> </ul> <p><b>Developments 2</b></p> <ul style="list-style-type: none"> <li>Developments of prisms, pyramids, cones, cylinders. Developments of simple containers. Developments of sloped and curved simple exercises. Use of indexing.</li> </ul>	<p>Homework Worksheets <b>Topic Test</b></p> <p>Review of students work in class</p> <p>Homework Worksheets <b>Topic Test</b></p> <p>Review of students work in class</p>
<b>Term 2</b>	<b>C.A.D</b>	
<b>Oct- Dec</b>	<ul style="list-style-type: none"> <li>Terminology and theoretical aspects-no computers. Identification and application of computer software and hardware. Familiarisation of various tools in CAD software package. (Very limited availability of computers)</li> </ul> <p><b>Short Questions</b></p> <ul style="list-style-type: none"> <li>Introduction through Ordinary and Higher level past papers</li> </ul> <p><b>Perspective</b></p> <ul style="list-style-type: none"> <li>1 and 2 point perspective and exercises on same</li> </ul>	<p>Homework Worksheets</p> <p>Review of students work in class</p> <p><b>Topic Test</b></p> <p>Homework Worksheets</p>
<b>Term 3</b>	<b>Revision of Topics for Mocks</b>	
<b>Jan-Feb</b>		
<b>Feb - June</b>	<b>Exam Papers –Revision where appropriate</b>	

## **20. New DCG Course Content**

### **1. Core Areas of Study**

- Plane and Descriptive Geometry
- Projection Systems
- Plane Geometry
- Conic Sections
- Descriptive Geometry of Lines and Planes
- Intersection and Development of Surfaces
- Communication of Design and Computer Graphics
- Graphics in Design and Communication
- Communication of Design
- Freehand Drawing
- Information and Communication Technologies

### **2. Optional Areas of Study**

- Applied Graphics
- Dynamic Mechanisms
- Structural Forms
- Geologic Geometry
- Surface Geometry
- Assemblies

### **Course assessment**

The syllabus will be assessed in relation to the syllabus objectives and the specified student learning outcomes. All material specified within the areas of study is examinable.

There are two assessment components

- A Student Assignment (40% of marks, of which CAD will form a significant and compulsory component)
- A terminal examination paper (60% of marks)



The purpose of the *Student Assignment* is to assess those elements of the course that cannot be readily assessed through the terminal examination, in particular elements of design and communication. The assessment criteria applying to completed Higher and Ordinary level assignments will differ. The learning outcomes related to the course assignment will result in students being able to:

- Represent design and communication information through sketches, drawings, CAD and other ICT applications
- Use appropriate presentation techniques, including colour, rendering and sketching, to represent an artefact and/or design
- Produce appropriately dimensioned 2D and 3D drawings and models using CAD
- Appreciate, analyse, evaluate and modify artefacts from a design perspective
- Demonstrate design and visualisation skills and techniques.

The assignment will take approximately 40 hours to complete. The completed assignment may take the form of:

- ❖ A design investigation and modification

or

- ❖ A design investigation and concept design

## **21. Information Technology**

Information technology is incorporated as much as possible into both the teaching and learning of DCG as it is recognised as imperative to satisfying the goals of the syllabus. Digital presentations are frequently used in class. Understanding Solidworks is fundamental to this course. The use of visualisers is also incorporated into the teaching of more intricate skills. Students are expected to use the internet to research and gain better understanding of material being covered. Students are encouraged to use the I.T. resources available on subject related websites such as T4 and E.T.T.A.

## Forth Year Scheme of Work

	TOPIC	DESCRIPTION	SYLLABUS
1-3	<i>Orthographic Projection</i>	Revision of basic fundamentals of topic Projecting points between views Drawing curved surfaces	Core
4-5	<i>Auxiliary Projection</i>	Plans, elevations. Curved surfaces. Sectional views	Core
6-7	<i>Isometric/Oblique Projection</i>	Pictorial Views	Core
8-10	<i>Advanced Pictorial Drawing</i>	Axonometric, Diametric, Trimetric, Isometric scale	Core
	<b>MIDTERM</b>	<b>MIDTERM</b>	
11-13	<i>Perspective Projection</i>	One-point, Two-point perspective Auxiliary vanishing points	Core
14-16	<i>Oblique Plane (1)</i>	Introduction	Core
	<b>CHRISTMAS</b>	<b>CHRISTMAS</b>	
17-18	<i>Intersecting Surfaces</i>	Finding points of interpenetration using edge views, cut views, true shapes etc.	Core
19-21	<i>Lamina/Planes</i>	Representing the elements of geometry Concepts of viewing lines, planes, from different views, edges Section planes etc.	Core
22	<i>I.T. Skills. Solidworks Introduction</i>	Computer basics, file management. Inserting pictures, tables, charts etc. Solidworks Interface Commands introduction	Assignment
	<b>MIDTERM</b>	<b>MIDTERM</b>	
23-24	<i>Solidworks</i>	Features, Sketch, toolbar commands Memo Block, Calculator, T-Square, Calculator exercises Drawing sheet layout	Assignment
25-27	<i>Solids in Contact (1)</i>	Cones, Spheres, Cylinders in contact Tangency, points of contact, loci, internally tangential solids etc	Core
	<b>EASTER</b>	<b>EASTER</b>	
28-32	<i>Dynamic Mechanisms Assemblies 1</i>	Involutes, Helix's, Special curves, Loci, Linkages, Cams, Gears	Options

### Fifth Year Scheme of Work

WEEK	TOPIC	DESCRIPTION	SYLLABUS
1-4	<i>Conic Sections</i>	<i>Recognise features common to all Conic sections, Ellipse, Parabola, Hyperbola Eccentricities, conic ratio's, etc</i>	<i>Core</i>
5-8	<i>Developments/ Envelopments. Assignment</i>	<i>Prisms, curves surfaces. Cones and pyramids. Oblique solids. Envelopments Assignment research</i>	<i>Core</i>
9	<i>Sketching Techniques/Assignment MIDTERM</i>	<i>Shading, rendering Use of different drawing media MIDTERM</i>	<i>Assignment</i>
10-15	<i>Student Assignment</i>	<i>Higher Level = 14 pages Ordinary Level = 12 pages</i>	<i>Assignment</i>
16	<i>Projection continuation CHRISTMAS</i>	<i>Hard and Soft Copy Review CHRISTMAS</i>	<i>Assignment</i>
17-18	<i>Projection completion</i>	<i>Final check list Bind folder, burn CD</i>	<i>Assignment</i>
19-21	<i>Mock Preparation</i>	<i>Variety of Topics</i>	<i>C&amp;O</i>
21-22	<i>Mocks Exams MIDTERM</i>	<i>Mocks Exams MIDTERM</i>	<i>Mocks Exams</i>
23-27	<i>Assemblies EASTER</i>	<i>Reading a diagram Orthographic recap Hatching – how/what to hatch Sectional views EASTER</i>	<i>Options</i>
28-31	<i>Interpenetration (2) Oblique Plane (2)</i>	<i>Exam Papers</i>	<i>Core</i>
31-33	<i>Exam Preparation</i>	<i>Revise paper layout Suggested timing Recap all topics</i>	<i>Core/Options</i>

