

*St Nathy's College*

*Subject Department  
Plan  
for*

*Construction  
Studies*

*2009-2010*

## ***Subject Aims.***

The subject aims to:-

- Introduce the pupils to the knowledge and skills involved in construction technology and construction materials and practices; through theoretical study and integrated practical projects.
- Develop the student's ability to communicate ideas and information by appropriate methods, and to encourage them to apply accurate observation and scientific investigation through the exploration of materials and processes.
- Contribute towards their general education.
- Provide a basis for those who may wish to study construction technology at third level.

## ***Subject Objectives.***

The students will be able to:-

- Have knowledge of how the various technologies which combine to produce a building which is comfortable and safe for all the users and which will incorporate inclusive design considerations.
- Understand and evaluate a variety of building types and systems in the context of design and aesthetics, architectural appropriateness, as well as their environmental impact.
- Develop the skills associated with processing materials.
- Be discerning in the selection or specification of the materials which are appropriately used and are environmentally friendly.
- Take a structured approach to project planning and critically analyse problems and their solutions in the context of design and project activities.

- Develop skills associated with sourcing and using information, decision making, time and task management.
- By successfully completing projects, gain a sense of confidence, personal achievement and satisfaction.
- Appropriately record and communicate building details and design ideas with the use of freehand sketching, draughting and a CAD package.
- Be appropriately informed home owners/occupiers.
- Appreciate the way in which good architecture enhances the quality of life of individuals and community.
- Appreciate the difference between minimum standards and good/best practice.
- In the context of sustainability in the built environment understand how the creative use of resources, impacts on the design considerations for buildings.
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***Subject Co-Ordinator.***

O.Lennon.

***Subject Teachers.***

J. Keville  
O Lennon  
G. Gildea  
J Howley

***Time Allocation.***

4<sup>th</sup> Year:- 5 Class periods per week  
5<sup>th</sup> Year:- 5 Class periods per week

## ***Timetabling***

4<sup>th</sup> Year:- Double and 3 singles is ideal

5<sup>th</sup> Year:- Double and 3 singles is ideal

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

Students are allocated to option subjects according to their preference and are done so on a mixed ability basis. At exam level both higher and ordinary levels are catered for in the one class.

## ***Student Access to Subject / Level.***

As is stated above due to the mixed ability nature of the class and the absence of any streaming both levels are catered for in the one class and each student have the option of selecting a level suited to their abilities, in their examination year.

Students at both levels are encouraged and appropriate time is given to both groups. There should be minimal differentiation between levels as much as is possible and the students should be challenged to explore all areas of the course in as much detail as possible.

## ***Class Organisation***

Each student is assigned a seat at a woodwork bench and is provided with a board and t-square for drawing classes and all the woodwork tools necessary for practical work.

### ***Equipment List and Course Materials.***

<b>Year Group</b>	<b>Equipment Necessary</b>	<b>Textbooks.</b>
<b>Construction Studies</b>		
<b>4<sup>th</sup> &amp; 5<sup>th</sup> Year</b>	A3 Display Folder 2H pencils Set of colouring pencils 45 & 30/60 Set Squares Protractor Bow Compass Eraser Pencil Sharpener Hardback copy USB Key	<b>Construction Studies for Today</b> By Trevor Hickey Pub:- Gill & McMillan

### ***Planning for Students with Special Needs.***

In order to best help students with special needs some of the following strategies can be used:-

- Limit the materials you ask special needs students to manage at a given time.
- Consider each special needs students preferred learning style when you create assignments and where possible modify the assignment to better suit their needs.
- Where possible limit the amount of written work given to special needs students.
- Structure your classroom routine so that the students can predict what they are expected to do.
- Be generous with your praise when the students do well.

### ***Cross Curricular Planning.***

Senior Cycle Graphics has links and ties in with subjects such as Maths, Metalwork and Engineering, Materials Technology Wood and DCG It also ties in with the LCA Graphics and Construction programme.

## ***Subject Planning for a Culturally Diverse Society.***

Due to multicultural nature of our society which is reflected in the classroom, there are now a number of challenges that need to be overcome to create an effective learning environment for every student. These include aspects such as:

- Communication: it is important that language is not a barrier to learning, and not to make assumptions about a student's knowledge level because they cannot speak English clearly.
- Learning preferences: the manner in which students understand and retain information differs and their perspective also differs depending on background experience. Some students are visual learners and some are tactile learners. Bringing cultural diversity into the classroom enhances the learning opportunity of the entire class. The visual learner can benefit from maps, discussions of videos and pictures.
- Social values: values differ from culture to culture and it is important that no one person's values are disregarded.

One way to overcome these challenges is to implement peer tutoring into the classroom situation. An example of projects that can be done is to invite the students to do research on their families' culture. One assignment might involve students finding pictures that represent how cultures live in their native country. Housing itself can be very symbolic of a culture's history and relates to the subject area.

The teacher also must realize that some students have not been exposed to people who are from different backgrounds and cultures. They may not be sure how to respond to someone who speaks differently. It also provides material for class discussions on the dangers of stereotyping people, the role of the media as it relates to culture and understanding people on an individual basis. Teachers may initiate projects connecting students with schools in other countries.

## ***Effective Teaching Methodologies.***

- 3D models of construction elements made from solid wood and plastic.

- Use of the overhead projector, blackboard, whiteboard and data projector.
- Teacher demonstration.
- Pairing of students of varying abilities.

### ***Range & Variety of Resources***

- Paper
- Overhead Projector
- Blackboard / Whiteboard
- Models
- Data Projector.

### ***Availability/ Use of ICT Facilities.***

The main drawing room is now fully equipped with 24 PC's for the students use and a laptop and data projector for the teachers use.

The PC's have access to the internet via broadband.

When the room is free the teacher would have the option of taking the students in the room.

### ***Provision for Health and Safety Requirements.***

- General guide – the schools Health and Safety statement is available.
- Drawing boards / desks have an angled work surface so as to reduce on back strain while drawing.
- There is a fire Exit plan and route highlighted in each classroom and a drill is carried out during each school year.
- All health and safety guidelines are in place.
- Students are informed of same.
- H &S notices are in place.
- Dust extraction systems in place.
- Adequate amount of KILL switches in place.
- Personal H&S equipment in place. Mouth, ear ,eye e

***Breakdown of Coursework  
to be covered for individual  
Year Groups.***

## **Outline of approach to 4<sup>th</sup> Year Construction Studies**

The main approach in 4<sup>th</sup> Year is to cover the majority of the theory course and all of the building detail drawings.

The students are advised to have a A4 Hard backed copy for taking notes this will last the two years of the course.  
All sketches are carried out in pencil and colour and shading is encouraged to enhance the diagrams.

For the drawing details students carry out the work on A3 sheets and are encouraged to get an A3 Display folder with clear plastic pockets which will protect the drawings and make them easy to revise.

## 4<sup>th</sup> Year.

### Outline of topics to be covered from *September - December*

Topics to be covered	Drawings.
Foundations <i>All different types and purposes</i>	Traditional strip (1:10) & Isometric
Subsoil Movement	Raft Foundation (1:10) & Isometric
Setting out of trenches	
Timbering and supporting of excavations	Deep Strip (1:10)
Concrete <i>Properties, constituents, storage of materials, mixing, placing and compaction</i> <i>Tests on Concrete.</i>	Short Board Pile Foundation (1:10) Suspended Timber Floor (1:10)
Planning Permission	Window detail (Head & Cill) 1:5
External envelope	
Types of structures	Eaves of Pitched Roof (Slate & Tile) 1:5
External wall construction.	
Opes in walls	
Floors <i>Upper and ground, timber and concrete.</i>	Ridge of Pitched Roof (Slate & Tile) 1:5 Eaves and Ridge combined
Roofs <i>Roof types, coverings and construction.</i>	Purlin Roof
Internal walls and partitions	Eaves of Flat Roof (1:10)
Sound Transmission and sound Insulation.	Abutment detail of Flat Roof (1:10)

## 4<sup>th</sup> Year.

### Outline of topics to be covered from *January - June*

Topics to be covered	Drawings and Practical
Windows <i>All different types and materials</i>	Section detail through a stairs.
Doors <i>All different types and materials</i>	
Stairs <i>Parts and regulations.</i>	Door detail, head and threshold (1:10)
Plumbing and Heating. <i>Hot and Cold Water systems</i> <i>Traditional Heating systems</i> <i><u>Alternative heating systems</u></i> <i>Geothermal, Aerothermal</i> <i>Wood pellet, Solar panels</i>	Fireplace detail with both solid concrete floor and suspended timber floor (1:10)
Above and Below Ground Drainage.	Septic tank
Plastering	
Electricity.	
Project work <i>Project work to incorporate joint work relevant to the practical exam</i> <i>Eg spice rack - incorporate barefaced Mortise and Tenon, Bridle joint and shaping, stopped chamfers.</i>	Plumbing and heating systems.

## Outline of approach to 5<sup>th</sup> Year Construction Studies

The work to be covered in 5<sup>th</sup> (leaving Cert) Year is broken into three main areas

- Design, research and manufacture of a practical project which can be either construction or woodcraft based and completion of an accompanying portfolio. ( this accounts for 25% of LC Exam)
- Completion of several past examination pieces in preparation for the practical exam which takes place in May. ( this accounts for 25% of LC Exam)
- Revision of all areas of the theory course with the aid of past examination papers and completion of topics that relate to the Higher level course.

The students can continue to work from the A4 Hard backed copy from 4<sup>th</sup> year.

All sketches are carried out in pencil and colour and shading is encouraged to enhance the diagrams.

For the drawing details students carry out the work on A3 sheets and are encouraged to get an A3 Display folder with clear plastic pockets which protect the drawings and make them easy to revise.

**5<sup>th</sup> Year.**

**Outline of topics to be covered from  
*September - December***

**Topics to be covered**

Design of LC Construction Project.

*Discussion of project possibilities,  
Investigation and research,  
Design Ideas and Working Drawings.*

Thermal Insulation and U Values.

*Calculation of U Value Questions from past  
examinations.*

LC Project Work.

*Marking out.  
Processing of joints.  
Assembly of project*

## 5<sup>th</sup> Year.

### Outline of topics to be covered from *January - June*

#### Topics to be covered

LC Project Work.

*Sanding and Varnishing*

*Fixing on of any hardware/ upholstery.*

Practical Work in preparation for practical exam.

*Completion of several past examination pieces.*

*Emphasis on*

- *Reading of the working drawings*
- *Accurate marking out*
- *Processing and assembly.*

Revision of theory course.

*In conjunction with the exam papers, all areas of the course are revised, including all the building details. Any topics that specifically relate to the higher level course are also covered.*

- *Thermal Insulation and U Values.*
- *Light*
- *Sound*

### ***Homework Procedures***

Homework can be given at each teacher's discretion as a revision tool and to reinforce what was covered in class. Homework may involve completing a diagram started in class or doing out a written question.

The teacher should keep a record of homework given in their diary.

### ***Assessments/Examinations Procedures***

In line with our school procedures the students are given exams at October mid – Term, Christmas, Easter & Summer Exams. These results are recorded in the teacher's diary and are written into report books by the teacher along with a subject comment and are sent out twice a year.

Teachers are free to give separate topic tests at any other stage during the year.

### ***Record Keeping Procedures***

At the start of each school year the school provides each teacher with an attendance diary and a record keeping book. The teacher can use these to keep a record of all work given, test results and any behavioural issues.

The teacher has the option of purchasing a separate school diary if they so wish.