

BIOLOGY

Subject Plan

2009 – 2010

Subject Aims

As in syllabus:

- (i) Students general education to include scientific investigations and acquisition of biological knowledge and understanding.
- (ii) To enhance an interest/awareness in biological diversity.
- (iii) To create an awareness of the application of biological to modern society so that students can make informed evaluation with respect to contemporary biological issues.

Subject Objectives

- (i) That students have a knowledge and understanding of biology, including practical laboratory skills.
- (ii) That students should be able to apply their knowledge of biology to areas of industry, medicine, agriculture, waste management etc.
- (iii) That students should be able to apply their knowledge of biology in personal, social and economic spheres to make informed evaluation about contemporary biological issues.

Subject Coordinator:

Oonagh Redmond

Subject Teachers:

John Guilfoyle
Collette Mooney
Ruth Anne Cawley

Time Allocation

Five class periods per week in 4th Year and in Leaving Cert. Year.
Six class periods per week if tutor class.

Option Structure

Choice subject. All students would have taken science to Junior Cert. but not necessarily at higher level.

Timetabling

Usually 1 double class in laboratory and three single classes per week.

Grouping of Pupils

Mixed ability. Higher and Ordinary level students in class together.

Student Access to Subject

Available by choice with advice from career guidance and other teachers.

Class Organisation

Generally all do higher level in 4th Year, with some opting for Ordinary Level in Leaving Cert Year.

<u>Year</u>	<u>Textbooks</u>	<u>Course Materials</u>
4 th	Leaving Cert. Biology (Revised Edition) Michael O'Callaghan Education Company	Lab notebook for Practical Work Notes Copy and Homework Copy
5 th	As above. Leaving Cert. Exam Papers	As above.

Cross-Curricular Planning

With Home Economics and Agricultural Science Faculties.

Subject Planning for a Culturally Diverse Society and Students with Special Needs

Any students with problems in relation to dissections are excused.
English language can be a problem for some non-nationals and this makes the learning of Biology a lot more difficult for them. In as far as possible extra English lessons are given to these students.

Effective Teaching Methodologies

Whole class teaching

Board work

Brainstorming

Group work

Paired work

Investigative practical work – individually and in groups (usually of between 2 -4 students).

Ecology Fieldwork

IT work/ Powerpoint / Biology CDs

OHP transparencies

Range/Variety of Resources/Availability of ICT Facilities

General laboratory supplies including chemicals and glassware.

Equipment/Materials for mandatory experiments kept in separate boxes in Prep. Room. Different boxes maintained by different teachers. Student handouts available for each experiment.

Microscopes. Available in Prep room at back of room 3B and Room 10C. Approx 1 per every 2 students. Prepared slides also available.

Anatomical Models (Skeleton, upper torso, eye, brain, heart, kidney, ear, skin available in rooms 3B and 4B)

Charts/Posters. Flip chart of anatomical systems/structures available in room 3B.

Trolley to transport apparatus between science room and prep. Room.

Overhead Projectors

Broad band in each room

Data Projector in Prep room (shared amongst science teachers)

Selection of Biology CDs including “Teaching Resources for LC Biology”, Spring 2009, by SLSS.

Biology Laboratory Manual, SLSS.

Printer in Prep room.

Computer and overhead projector in language room.

Provision of Health and Safety Requirements

First Aid boxes in Prep. Room.

School Science Safety Manual in Prep Room.

Safety signs around classroom.

Fire exit doors clearly marked and fire drills carried out yearly.

Fire extinguishers in science laboratories.

Eye wash bottles in Prep Room

Goggles available/used in experiments

Special bin for “Sharps” (broken glass etc.)

School Health and Safety Statement in Staffroom

Laboratory safety rules and specific precautions for particular experiments regularly discussed with students.

Accident report sheets kept in Office and filled in and filed in the event of an accident.

Curriculum Content – Long-Term Planning

Content to be covered in each Year of Programme:

Year 4 – Leaving Cert. Year 1

Experiments

Unit 1

The scientific method

The characteristics of life

Food

Ecology

Study of an Ecosystem

Food tests

Ecology expts (4)

Unit 2

Cell Structure

Enzymes

Energy carriers

Diffusion and Osmosis

Microscope expts.(3)

Enzyme expts. (2, plus 1 for HL)

Cell immobilization

Osmosis expt.

Unit 3

Classification of organisms

Monera

Fungi

Protista

Flowering plants

Blood

Heart and blood vessels

Lymphatic system

Nutrition and transport in plants

Animal nutrition

Homeostasis

Gas exchange in plants

Human breathing

Excretion

Plant responses

Note: either (a) or (b)

Growth of leaf yeasts

TS of dicot stem

Dissection of heart

Exercise & pulse rate(a)

Exercise & breathing rate(b)

Effects of IAA on growth

Year 5 – Leaving Cert. Year 2

Unit 2

Photosynthesis

Respiration

Cell division

Cell diversity

Classification and diversity

DNA and RNA

Genetic crosses

Variation and evolution

Genetic engineering

Unit 3

The nervous system

The senses

The endocrine system

The skeleton and muscles

The human defence system

Viruses

Sexual reproduction in plants

Vegetative propagation

Human reproduction

Experiments

Light intensity vs. rate photosynthesis

Production alcohol by yeast

Separation DNA from plant tissue

Factors required for germination

Digestive activity during germination

Homework Procedures

Written homework given each night along with work to revise/learn.

Homework is written into students' homework journals.

Homework monitored and feedback given to parents via journal eg. comments written by teacher into journal if homework not done – to be signed by parents.

Assessments/Examinations/Reporting Procedures

Class tests given at teacher's discretion.

Formal tests:

4th Year: Tests at Christmas, Easter, and Summer. Christmas report has two results: one for midterm (Oct.) and one for Christmas. Summer report has two results: one for Easter and one for summer.

20% of summer mark in 4th Year given to laboratory notebook (practical work).

5th Year: Tests at Christmas and Leaving Cert mock exam in February/March.

Report sent home at Christmas has result for midterm (Oct) and Christmas. Report sent home after Easter with Leaving Cert mock results.

Parent Teacher meeting: One per year for each group where parents are informed of progress.

Teacher In-Career Development

All teachers in the Biology Faculty have attended inservice in the revised Leaving Cert. Biology course, (theory and practical content).

Collette Mooney	2007	Course of instruction in Occupational First Aid and HeartSave AED.
Ruth Anne Cawley	2007	
Oonagh Redmond	2008 – 2009	ICT in Biology, SLSS

DES Subject Department Inspection

Date: 28 – 29 November 2005

Recommendations:

1. Access to labs for all biology students
2. Mark for practical work to be given at exam times.
3. Common material to be covered by all biology students in 4th year (collaborative planning).

Action Taken:

1. All senior cycle biology students have a double period in the lab each week.
2. 20% of end of year result is given to the laboratory notebook.
3. The content of Year 1 of the Leaving Cert. Biology programme (ie. 4th Year Biology students) is as outlined in this subject plan.

Sept.2009.