Welcome

On behalf of the academic and research staff of the Discipline of Botany and Plant Science at NUI Galway we welcome you to the 3rd year modules from Botany and Plant Science for 2012/2013. Education and research focused on Botany and Plant Science is now a key topic for future sustainable development both in Ireland and internationally, and is strategically important for your professional and career development. Please be aware that your third year results contribute to your final degree mark from 4th year, and will have a bearing on whether you obtain an Honours grade (and what level of honours grade). Your final degree mark will affect your competitiveness in terms of securing employment or progressing to further education (e.g. securing a PhD place). For Botany and Plant Science careers see: http://www.nuigalway.ie/botany/bpscareersjobs.html

Prof Charles Spillane, Head of Botany and Plant Science

The 3rd Year Coordinators from Botany and Plant Science for 2012_2013 will be Dr. Peter McKeown and Dr. Ronan Sulpice. If you have any questions regarding 3rd year you should write to both coordinators in the same e-mail and one of the Coordinators will respond to your query.

Dr. Peter McKeown [Peter.McKeown@nuigalway.ie]
Dr. Ronan Sulpice [Ronan.Sulpice@nuigalway.ie]
Third Year Botany and Plant Science Modules 2012/2013

BT301 (BT311, BT312 and BT316)

Three modules (BT316, BT317 and BT311, each 12 ECTS) are offered to Third Year students by the Discipline of Botany and Plant Science. Each module is a stand-alone course. However, students wishing to proceed to 4th year Honours in Botany are required to take at least two of these three modules. These modules (separately and together) are also open to all students in 3rd year proceeding to B.Sc. (Hons; non-denominated and denominated), who have taken the relevant prerequisites.

These modules will be of interest to students with general interests in Plant Biology, Plants & Environment, Plant Ecology, Plants & Sustainability, Crop Science & Agriculture, Plant Evolution, Plant Science, Plant Genetics and Plant Biotechnology.

For Marine Science students wishing to take Botany as an option in Third year, a special course is available (‘Applications of Plant Science in Biotechnology and Ecology’). Please contact the Marine Science Course Coordinator for details.

The prerequisites for taking BT316 and BT317/BT318 are BT208 and BT209, i.e. the 2nd year modules provided by Botany and Plant Science. There are currently no prerequisites for taking BT311, apart from having some interest and knowledge of genetics, molecular/applied biosciences and sustainable development challenges (particularly in developing countries).

BT316 (Plant Ecology and Palaeoecology): 12 ECTS Credits. Taught in Semester I.

Lecturers: Dr. Karen Bacon, Dr. Micheline Sheehy-Skeffington; Dr. Peter McKeown; Dr. Joanne Denyer.


Soil-Plant Relationships (Dr. Peter McKeown): Introduction to ecosystems and energy flow. Introduction to soil properties, both physical and chemical and how to measure them. Description of principal soil types in Ireland. Plant specialisation: calcicole-calcifuge species. Plants living in saline habitats and in anaerobic conditions.

Palaeoecology (Dr. Karen Bacon): Introduction to the main palaeoecological techniques used in the reconstruction of past environments. Pollen analysis: principles and methods. Late-glacial environmental change at both global and regional/local levels, and consideration of the possible climate-forcing mechanisms involved. Holocene environmental change and long-term human impact on vegetation and soils in Ireland. Introduction to the evidence for major climate oscillation on a global scale during the Quaternary (Ice Ages).

BT316 Field Course (Dr. Joanne Denyer): Students taking module BT316 are required to participate in a 3-day residential field-course in plant ecology that takes place immediately after the written summer examinations (normally towards the end of May). This course will be based in a region of high ecological/conservation interest such as Killarney, the Midlands, including the mid-Shannon region, north Mayo/Sligo, etc.
BT316, with its emphasis on plant ecology (present and past), habitat description, and short and long-term environmental change, is an option that is strongly recommended to B.Sc. Environmental Science students in NUI Galway. The module may be selected by Third Year Environmental Science students and Fourth Year Environmental Science students who have not taken this unit in Third Year.

**BT312 (Applied Aquatic Plant Science):** 12 ECTS Credits. Taught in Semester II.

*Lecturers: Dr. Dagmar Stengel and Dr. Zoe Popper*

**Applied and Environmental Aquatic Plant Science:** Applied and environmental aspects of Aquatic Plant Science, with emphasis, but not exclusively, on Marine Plant Science. Distribution and ecology of seaweeds and algae-environment interactions; Economic and ecological importance of marine plants and methods for their sustainable utilization. On- and off-shore cultivation techniques and methods for utilizing and managing natural resources. The history of the Irish seaweed industry and prospects for future development.

**Applications of plant physiology:** Plant growth and development; plant tissue culture and its uses; responses to biotic and abiotic factors; secondary metabolites (including plant pigments and plant toxins); and genetically modified crops.

**BT317 Field Course:** Students taking module BT317 are required to participate in non-residential field excursions. These take place during term.

**BT318: Applications of Plant Science in Biotechnology and Ecology (semester II).** This course is available to Marine Science students who wish to take 3rd year Botany, in combination with BT316. Please contact Dr D. Stengel, Dr. Z. Popper or the Marine Science Course Coordinator for details. The course runs for the whole of semester 2 with the first six weeks being taught by the Discipline of Earth and Ocean Sciences (EOS). If you elect to take this module you must ensure that you attend all elements of the course and make sure that staff are aware that you have selected BT318.

**BT311 (Plant & AgriBiosciences for Sustainable Development):** 12 ECTS Credits. Taught in Semester I and II

*Lecturers: Prof Charles Spillane and Guest Lecturers.*

This module provides advanced training in plant and agri-biosciences (particularly genetics and biotechnology approaches) for addressing major sustainable development challenges facing society. The module will inform and update students of the mega-challenges humanity faces for ensuring provision of plant-derived food, fibre, fuel (energy), medicines, green chemicals and biomaterials to 2050. The module will focus on current sustainable development challenges facing Ireland, EU member states and particularly developing countries. Plant and agri-biosciences research approaches for sustainable development will be covered in depth and will include aspects of plant, forestry, livestock and microalgal genetics, molecular biology/genetics, cell and tissue culture, propagation biology, genetic engineering, chromosome biology, epigenetics, genomics, bioinformatics and synthetic biology. A major focus will be placed on plant and agri-biosciences research which lever solar-powered photosynthetic organisms to facilitate a societal transition to a more sustainable bio-based economy. Lectures will be complemented with tutorials with plant science researchers, where you will develop skills to read and interpret scientific research papers and your scientific communication/presentation skills. The module is complemented by study visits to biosciences research sites, visiting lectures and continuous assignments for students to investigate and develop their own innovative approaches for applying biosciences research to addressing major sustainable development challenges.
Assessment of 3rd year modules

Written examinations for BT316 at the end of Semester I (before Christmas)

Written examinations for BT317, BT318 and BT311 take place at the end of Semester II (Summer examinations, end April/beginning May), respectively.

Practical (and tutorial) examinations are by continuous assessment which includes mini-project reports, class presentations, etc. based on laboratory, group and individual work.

Lectures and laboratory/tutorial sessions

Lectures take place in the Máirín de Valera Seminar Room (C315) on the top floor of Áras de Brún. Locations of practicals and tutorials will be announced in the lectures.

For BT316 and BT312/BT318 lectures are as follows: Monday (10.00-11.00h); Tuesday (11.00-12.00h), Wednesday (9.00-10.00h) and Friday 12.00-13.00h. 

(Note: Lecture venues for BT312 will be as follows from Monday 7th January – Friday 15th February:
Monday (10.00-11.00h): Lecture Room AC216, Concourse;
Tuesday (11.00-12.00h): Lecture Room AC214, Concourse;
Wednesday (9.00-10.00h): Lecture Room AC214, Concourse;
and Friday (12.00-13.00h): Lecture Room AC204, Concourse)

For BT316 and BT312/BT318 there is one 4-h laboratory session per week. This takes place on Thursdays (14.00-18.00h).

For BT311, lectures will be held on Tuesday (12.00-14.00) and Wednesday (12.00-14.00), with BT311 tutorials running from 17.00-20.00 on both Tuesdays and Wednesdays. BT311 lectures/tutorials will not commence before October 2012.

Registration

Registration takes place in Room C311 of Botany and Plant Science, top floor of Áras de Brún. on Monday 3rd September 2012 and Tuesday 4th September 2012 (between 10.00 to 12.30 each day).

A passport-sized photograph and RSI number are required. Registration is IMPORTANT. You are expected to register as soon as possible (during the first week and if at all possible before the first practical). Please note also that all students are required to complete a Fieldwork Safety Declaration form. This is important in your own safety interests and it is also required under Health and Safety Regulations. The form will be available from the Botany and Plant Science Secretary, Síle Mhic Dhonncha (C311).

First Lecture and Practical for 3rd Year Botany and Plant Science 2012/2013

The first 3rd year lecture from Botany and Plant Science (BT316) will be on Tuesday 4th September 2012 at 11.00-12.00 in the Máirín de Valera Seminar Room (C315) on the top floor of Áras de Brún.

The first practical for BT316 will be on Thursday, 6th Sept. 2012; 14.00-18.00 h. This practical typically involves a botanical field study excursion to a native woodland near Spiddal, Connemara.
IMPORTANT: be suitably clad for the prevailing weather conditions; bring warm and waterproof clothes and boots or wellingtons. Data collected during the excursion will be processed during the subsequent practical. Participation in this first practical is therefore strongly advised.

Meeting place: rear entrance to Áras de Brún; departure: 14.00 h sharp, Thur. 8th September.

Progression to Fourth Year Honours Degree in Discipline of Botany and Plant Science

Final year Botany and Plant Science students undertake a research project on a specialist topic in Botany and Plant Science within the research groups of one of the academic staff (Lecturers/Scientists) in Botany and Plant Science. In early Spring 2013 (Semester II), the Discipline of Botany and Plant Science will organise a briefing on possible final year research projects, for students who plan to progress to the 4th year Honours Degree in the Discipline of Botany and Plant Science. Following this briefing, (as competition can be high for specific projects), we strongly recommend that you identify your final year project with the relevant member of staff as early as possible before you leave for the summer. Some projects will provide the option of beginning the project during the summer period in 2013. The results of the student's 4th year research projects are written-up as a short final year thesis which forms part of the final 4th year degree examination.

For the 4th year Honours degree, advanced modules are provided by the Botany and Plant Science academic staff (i.e. scientists) on specialised topics in Botany and Plant Science. The specialised advanced modules are (a) Plant Cell Biology and Evolution; (b) Advanced Algal Sciences; (c) Plant Genetics and Biotechnology for Food Security; (c) Applied Plant Ecology; (d) History of Plants, Atmosphere and Climate Change and (e) Current Topics in Plant Sciences. See Botany and Plant Science website for more details:

http://www.nuigalway.ie/botany/botany_coursesY4.html

Summer Research Internships

Students progressing to 4th year Botany and Plant Science are encouraged (and facilitated) to seek research internships in institutions in Ireland and internationally which are engaged in botany and plant science research activities. Highly motivated students who are interested in exploring such opportunities for summer internships in summer 2012 are encouraged to contact Prof Charles Spillane, Head of Botany and Plant Science by email in the first instance (and to discuss with other colleagues who have done internships during summer 2011).

3rd Year Botany and Plant Science Course Coordinator

Dr. Peter McKeown and Dr. Ronan Sulpice are the 3rd Year Botany and Plant Science course coordinators for 2012_2013 and can be contacted by e-mail. If you have any questions regarding 3rd year you should write to both coordinators in the same e-mail and one of the Coordinators will respond to your query.

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Key Websites:

http://www.nuigalway.ie/botany/index.html