MSc in Plant Diversity
For Students entering in October 2009

Awarding Institution:	The University of Reading
Teaching Institution:	The University of Reading
	Faculty of Life Sciences
Programme Length:	12 months (24 month part-time)
Programme Director:	Dr. A. Culham
Date of Specification	April 2009
Board of Studies:	Plant Diversity

Summary of Programme aims
The MSc in Plant Diversity is designed to address the broad area of Plant Systematics and Biodiversity, which has become both socially and scientifically important in the modern world at national and international scales. It contains three streams:

1. Taxonomy and Evolution (programme advisor - Dr. A. Culham);
2. Biodiversity Assessment and Conservation (programme advisor – Dr S.L.Jury)
3. Vegetation Survey and Assessment (programme advisor - Dr. J. Mitchley).

The Autumn term is common to all streams.

The course aims to provide professional-level training in the characterisation, assessment and sustainable management of plant diversity, both at the level of the world's flora and of its vegetation. The specific aims of the three streams are:

a) Taxonomy and Evolution:
   To provide a broadly-based introduction to classical and contemporary aspects of plant taxonomy.

b) Biodiversity Assessment and Conservation:
   To present a broadly-based introduction to key topics in plant classification, conservation and resource management.

c) Vegetation Survey and Assessment:
   To provide a theoretical understanding of vegetation ecology and the practical skills necessary to identify higher and lower plants and to design, carry out and interpret vegetation surveys in an applied context.

Transferable skills
By the end of the course, students will have developed the following transferable skills:

(i) word processing, use of the Internet and World Wide Web, statistics packages and other computer skills;

(ii) design of research projects;

(iii) development of research, herbarium and field collecting techniques, molecular and phytochemical analysis (taxonomy and evolution streams);

(iv)   data analysis using univariate and multivariate statistics and other techniques;

(v)   communication skills, written and verbal, poster presentation and use of PowerPoint;

(vi)   ability to use database/library resources.

Programme content
The modules that make up the taught component of the course follow. Note that BIMPB12 Diversity and Identification of Plants, is taught in part at the Royal Botanic Gardens Kew by staff of RBG, part at the National History Museum, South Kensington, by staff of the NHM and part at the Royal Horticultural Society's Garden, Wisley, by RHS staff.

All Streams

Module	Title	Credits	Level	Term
Compulsory modules				
BIMED4	Evolution and Classification of Plant Biodiversity	10	7	A
BIMEL7	Plants and Climate	10	7	A
BIMEN7	Conservation and Biodiversity, the Global and Local Scales	10	7	A
BIMPA1	Basic Plant Ecology	10	7	A
BIMPB12	Diversity and Identification of Plants	20	7	A, Sp

A.   Taxonomy and Evolution Stream

Module	Title	Credits	Level	Term
Compulsory modules				
BIMEM8	Creating Revisions, Monographs, Floras and Information Systems	10	7	Sp
BIMPP60	Research Project	60	7	A, Su
*Optional modules: select **40 credits** to include one of either:*				
BIMEPEV	Mediterranean Field Course	20	7	Sp, Su
BIMPE23	Molecular Systematics	20	7	Sp. Su

*Plus **30 credits** from*		Credits	Level	Term
BIMEE8	Biodiversity Assessment and the Sustainable use of Plant Resources	10	7	Sp
BIMEF8	Biodiversity Informatics: Species Diversity Information Systems	10	7	
BIMEQ5	Ecological Biochemistry	10	7	Sp
BIMPC2	Critical Discussion of Systematic Literature	10	7	Sp
BIMPF2	The Local Flora and Vegetation	10	7	Sp

B.   **Biodiversity Assessment and Conservation Stream**

Module	Title	Credits	Level	Term
Compulsory modules				
BIMEE8	Biodiversity Assessment and the Sustainable use of Plant Resources	10	7	Sp
BIMEPE	Mediterranean Field Course	20	7	Sp, Su

V				
BIMPP60	Research Project	60	7	A, Su
Optional modules: 30 credits to be selected from the following:				
BIMEF8	Biodiversity Informatics: Species Diversity Information Systems	10	7	Sp
BIMEM8	Creating Revisions, Monographs, Floras and Information Systems	10	7	Sp
BIMEQ5	Ecological Biochemistry	10	7	Sp
BIMER5	Ecological Aspects of Environmental Assessment	10	7	Sp
BIMPC2	Critical Discussion of Systematic Literature	10	7	Sp
BIMPF2	The Local Flora and Vegetation	10	7	Sp
BIMPG2	Advanced Plant Ecology	10	7	Sp

C.   Vegetation Survey and Assessment Stream

Module	Title	Credits	Level	Term
Compulsory modules				
BIMEPEV	Mediterranean Field Course	20	7	Sp, Su
BIMPF2	The Local Flora and Vegetation	10	7	Sp
BIMPH3	UK Field Courses	20	7	Su
BIMPP40	Research Project	40	7	
Optional modules: 30 credits to be selected from the following:				
BIMEE8	Biodiversity Assessment and the Sustainable use of Plant Resources	10	7	Sp
BIMEF8	Biodiversity Informatics: Species Diversity Information Systems	10	7	Sp
BIMEM8	Creating Revisions, Monographs, Floras and Information Systems	10	7	Sp
BIMEQ5	Ecological Biochemistry	10	7	Sp
BIMER5	Ecological Aspects of Environmental Assessment	10	7	Sp
BIMPG2	Advanced Plant Ecology	10	7	Sp
ARMO44D	Vegetation History and Archaeobotany	20	7	Sp

From mid-May to the end of August the students on the Taxonomic and Biodiversity streams will undertake a research project (BIMPP60 and BIMPP40), with the aim of producing publishable results. A written report must be submitted to the teaching office by **4 pm on 20th September**. The project work will be supervised at Reading, RGB Kew, NHM, or elsewhere **subject to agreement of the Programme Director**. For projects based outside Reading University, a second supervisor based at Reading will be appointed. Fieldwork may, of course, be carried out anywhere in the world subject to approval and appropriate safety assessments.

During the first three weeks of the Summer Term, students in the Vegetation Survey and Assessment stream will normally undertake formal fieldwork in the Reading area, and further afield. Further residential field courses in early June and July will usually take place. Consequently, for this stream, the time available for the research project (BIMPP40) will be less (2½ months as opposed to 3½ months for the other streams).

In addition to the taught modules, students will be expected to attend occasional ad-hoc training in preparation for their research project and in other generic skills (such as the use of library resources).

Part-Time/Modular arrangements
Students taking their degree part-time over two years are normally expected to take 60 taught credits and conduct half their project work in each academic year. The dissertation is to be submitted by the deadline for the second year of study.

Summary of teaching and assessment
The teaching is organised in modules (totalling 180 credits) that involve a combination of lectures, tutorials, workshops, seminars, field courses and practical sessions. Modules taken during the autumn and spring term will be assessed by a mixture of course work and formal examinations. The remaining credits will be assessed by written reports of the work undertaken.

The University's taught postgraduate marks classification is as follows:

Mark	Interpretation
70 – 100%	Distinction
60 – 69%	Merit
50 – 59%	Good standard (Pass)
Failing categories:	
40 – 49%	Work below threshold standard
0 – 39%	Unsatisfactory work

For Masters Degrees
To pass the MSc students must gain an average mark of 50 or more overall in 180 credits, including a mark of 50 or more for the dissertation. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more overall including a mark of 60 or more for the dissertation and have no mark below 40 will be eligible for a Distinction. Those gaining an average mark of 60 or more overall including a mark of 50 or more for the dissertation and have no mark below 40 will be eligible for a Merit.

Students failing to meet requirements of the Masters degree may be eligible for a Postgraduate Diploma or Certificate. For this, students must gain an average mark of 50 or more over 120 credits (Diploma) or 60 credits (Certificate). In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

In the case of the Diploma, students who gain an average mark of 70 or more and have no mark below 40 will be eligible for the award of Distinction. Those gaining an average of 60 and have no mark below 40 will be eligible for a Merit. Certificates can only be pass or fail.

Admission requirements
Entrants to this programme are normally required to have obtained at least a Second class Honours degree in Botany, Biology or a related subject such an Environmental Science.

Admissions Tutor: Dr. Julie Hawkins

Support for students and their learning

University support for students and their learning falls into two categories. Learning support includes IT Services, which has several hundred computers and the University Library, which across its three sites holds over a million volumes, subscribes to around 4,000 current periodicals, has a range of electronic sources of information and houses the Student Access to Independent Learning (S@IL) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme.

Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and the Student Services Centre. The Student Services Centre is housed in the Carrington Building and includes the Careers Advisory Service, the Disability Advisory Service, Accommodation Advisory Team, Student Financial Support, Counselling and Study Advisors. Student Services has a Helpdesk available for enquiries made in person or online (www.risisweb.reading.ac.uk), or by calling the central enquiry number on (0118) 378 5555. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions on everything from accommodation to finance. The Carrington Building is open between 8:30 and 17:30 Monday to Thursday (17:00 Friday and during vacation periods). Further information can be found in the Student Diary (given to students at enrolment) or on the Student website (www.reading.ac.uk/student).

Each student will be assigned to a personal tutor and in term 3 will also have a research project supervisor.

Career prospects

There is an expanding market for graduates with the ability to document, classify, assess, manage and conserve global biodiversity. Many of the graduates of the Taxonomy and Evolution stream who do not go on to higher degrees are likely to find employment in our internationally-recognised associated institutions, the Royal Botanic Gardens, Kew, the National History Museum, South Kensington, the RHS Wisley or in similar institutions elsewhere in the country or abroad. Graduates of the Biodiversity Assessment and Conservation stream may find employment in tropical inventory work or working with conservation bodies in this country or overseas. Vegetation Survey and Assessment graduates have often taken up employment with ecological and environmental consultancies undertaking Phase 1 and 2 habitat and vegetation survey, environmental impact assessment etc, or working with national or local conservation organizations dealing with issues of practical conservation management or conservation and biodiversity policy.

Opportunities for study abroad

This course introduces most of the students to Mediterranean ecosystems. In addition, the project work gives plenty of opportunities to work overseas. Other placements can often be arranged as required with other institutions, universities or field stations with which the School of Biological Sciences has contact.

Educational aims of the programme

The aim of the programme is:

a)   for the Taxonomy and Evolution stream, to provide instruction in the theoretical background and practical skills required to enable the graduate to embark on a career

as a practising plant taxonomist, in research, teaching, the development and management of taxonomic collections and the documentation of the world's flora;

b)   for the Biodiversity Assessment and Conservation stream, to provide trainees from developing and developed countries with the practical and the critical skills they require to classify, conserve, utilize and manage botanical diversity in a way that permits sustained development for the benefit of all humankind;

c)   for the Vegetation Survey and Assessment stream, to train graduates, and capable and motivated non-graduates, to understand theoretical aspects of vegetation ecology and practical aspects of plant identification the field and the design, execution and assessment of vegetation surveys.

Knowledge and Understanding

A. Knowledge and understanding of:	Teaching/learning methods and strategies
1. The range of plant diversity. 2. The factors affecting vegetation types and species distributions 3. The assessment of biodiversity. 4. The classification of plants. 5. The characters which can be used to classify plants. 6. The need for and methods available for conservation. 7. The factors which control plant distribution. 8. The assessment of rarity. 9. Methods of vegetation survey.	All these are covered in taught modules, by lectures and practical work. 4 and 5 are areas in which the Taxonomy and Evolution stream have more advanced modules. 3,6,7 and 8 are areas in which the Biodiversity Assessment and Conservation stream have more advanced modules which include some seminars. 2 and 9 are principally addressed by the students taking the Vegetation Survey stream in applied fieldwork. *Assessment* The taught modules are assessed by some combination of examination, in-course tests, oral presentations and written assignments. 1 is also assessed by an identification quiz.. 9 is assessed in fieldwork reports. 2,3,4,5,7,8 and 9 are often components of the research project.

Skills and other attributes

B. Intellectual skills – able to:	Teaching/learning methods and strategies
1. Understand the principles, underlying plant classification. 2. Understand the principles underlying the classification of plant communities. 3. Understand the concepts underlying statistical data analysis. 4. Interpret vegetation surveys. 5. Select appropriate characters for plant classification. 6. Understand the interactions between climate, soils and vegetation. 7. Understand the principles of genetic change and evolution.	All these areas are covered by taught modules. The lectures are often supported by practical work or by a combination of lectures and seminars. 4 is also taught on field courses. *Assessment* Examination questions will test understanding in 1 and 2. 3,4 and 5 are tested by practical or fieldwork reports. 6 and 7 are tested by in-course assignments.

C. Practical skills	**Teaching/learning methods and strategies**
1. Use keys to identify plants.	Fieldwork and laboratory work are components of most of the taught modules, and all these areas are addressed by hands-on experience. Most research projects will contain evidence of use of more than one of these skills.
2. Carry out field surveys.	
3. Use statistical and classification computer packages.	
4. Manage plant collections.	
5. Carry out laboratory work with microscopes, chemicals and a variety of metering instruments.	*Assessment*
6. Dissect and describe a flower.	1 is assessed in an identification tests.
	2 is assessed in fieldwork reports
	3 & 5 are assessed in the research project
	3, 4 and 5 are assessed in laboratory reports on practical work.
	6 is assessed by an in-course plant description exercise.

D. Transferable skills – able to:	**Teaching/learning methods and strategies**
1. Use of the Internet.	1,2,6 and 7 are incorporated within taught modules.
2. Use of statistical packages.	
3. Preparation of a research proposal.	3 is the assessment on the modules of containing research report preparation.
4. Prosecution of research by applications of laboratory or field techniques.	4 is taught in laboratory and field based practicals.
5. Written and verbal communication skills.	5 is taught in feedback given on essays, oral presentations and the research report.
6. Use of databases and library search methods.	*Assessment*
7. Time management.	1,2 and 6 come within modular assessment of one particular module.
	4 is assessed in laboratory and fieldwork reports.
	5 and 7 are tested in essays, oral presentations and the research report.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance processes or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.