MSc/Diploma in Plant Diversity

Awarding Institution:	The University of Reading
Teaching Institution:	The University of Reading
Faculty of Life Sciences	Programme Length:
For Students Entering in 2003	12 months (24 part-time)
Programme Director: Dr. D.M. Keith-Lucas	Date of Specification
Board of Studies: Plant Diversity	August 2003

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 - Prof. F.A. Bisby);
3. Vegetation Survey and Assessment (programme advisor - Dr. D.M. Keith- Lucas).

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 the theoretical understanding and practical skills necessary to carry out and interpret vegetation surveys and related vegetation studies to high standards in applied contexts.

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

(i) word processing, use of the Internet and Worldwide Web, statistics packages and other computer skills.
(ii) preparation of research proposals
(iii) prosecution 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 which make up the taught component of the course follow. Note that PSMB1A (Families of Flowering Plants) is taught in part at Royal Botanic Gardens Kew by staff of RBG, and PSMB3A (Diversity and Identification of Non-Flowering Plants) is taught in part at the National History Museum, South Kensington, by staff of the NHM.

All Streams

Mod Code	Module Title	Level	Credits
Compulsory modules			
PSMB1A	Families of Flowering Plants	M	10
PSMB2A	British Flora Origins, Biomes and Soils	M	10
PSMB3A	Diversity and Identification of Non-Flowering Plants	M	10
PSMB4A	Conservation and Biodiversity, the Global & Local Scales	M	10
PSMB5A	Vegetation & Community Ecology	M	10
PS2BB4	Evolution of Plant Diversity	I	10

A. **Taxonomy and Evolution Stream**

Compulsory modules:

PSMB2B	Critical Discussion of Systematic Literature	M	10
PSMB4B	Creating Revisions, Monographs, Floras And Information Systems	M	10
PSMB8B	Reproductive Biology and Variation in Higher Plants	M	10
PSMB4C	Research Project	M	60

Optional modules: select 30 credits to include one of either:

PSMB1C	Mediterranean Field Course	M	20
PSMB2C	Molecular Systematics	M	20

Plus one other

BO802	Palynology	H	10
PSMB5B	Biodiversity and the Sustainable use of Plant Resources	M	10
BO811	Plant Geography	H	10
BO810	Biodiversity Informatics	H	10
PSMB1B	Systematic Plant Anatomy	M	10

B. **Biodiversity Assessment and Conservation Stream**

Compulsory Modules:

PSMB2B	Critical Discussion of Systematic Literature	M	10
PSMB4B	Creating Revisions, Monographs, Floras and Information Systems	M	10
PSMB5B	Biodiversity Assessment and the Sustainable Use of Plant Resources	M	10
PSMB1C	Mediterranean Field Course	M	20

PSMB4C	Research Project	M	60

*Optional Modules**: 10 credits** to be selected from the following:*

PS2BC5	Ecological Aspects of Environmental Assessment	I	10
PSMB8B	Reproductive Biology and Variation in Higher Plants	M	10
BO811	Plant Geography	H	10
BO810	Biodiversity Informatics	H	10

C. **Vegetation Survey and Assessment Stream**

Compulsory Modules:

PSMB6B	Quantitative Plant Ecology and Landscape Science Issues	M	10
PS2BC5	Ecological Aspects of Environmental Assessment	I	10
PSMB9B	Fieldwork and short field courses	M	30
PSMB1C	Mediterranean Field Course	M	20
PSMB5C	Research Project	M	40

*Optional modules: **10 credits** to be selected from the following:*

BO801	Biodiversity Informatics	H	10
BO811	Plant Geography	H	10
PSMB5B	Biodiversity and the Sustainable use of Plant Resources	M	10

From mid-May to the end of August the students on the Taxonomic and Biodiversity streams will undertake a research project (PSMB4C), with the aim of producing publishable results. A written report must be submitted by **20th September**. The project work will be supervised at Reading, RGB Kew or NHM, whichever is the most appropriate in terms of the availability of expertise and facilities required in teach individual case. For projects based at RBG Kew or NHM, a second supervisor based at Reading will be appointed. Fieldwork may, of course, be carried out anywhere in the world.

During the first three weeks of the Summer Term, students in the Vegetation Survey and Assessment stream will undertake formal fieldwork in the Reading area, and in West Cornwall. Further residential field courses in early June (East Anglia) and in an upland region of Britain in early July will also take place. Consequently, for this stream, the time available for the research project (PSMB5C) will be less (2½ months as opposed to 3½ months for the other streams).

Part-time arrangements

The course may be taken over two or more years on a part-time basis. The preferred pattern for part-time students is to undertake the Autumn Term part of the course and any field-courses or short courses in the first year, and then to take the Spring Term part of the course and the research project in the second year. It may be possible to take the course by attending 3 days a week over two years.

Progression requirements

See appended progression requirements for students following a post-experience certificate.

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 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 be less than 60 credits.*

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

For PG Diplomas
To pass the Postgraduate Diploma students must gain an average mark of 50 or more. 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 be less than 60 credits.*

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

*The provision to permit a candidate to be passed overall with a profile containing marks below 40 is made subject to the condition that there is evidence that the candidate applied his or herself to the work of those modules with reasonable diligence and has not been absent from the examination without reasonable cause.

Admission Requirements.
Entrants to this programme will normally be required to have obtained an honours degree in Botany, Biological Science, Plant Science, Environmental Science, Horticulture or a related discipline. Applicants will normally be expected to have gained a Class 2 (1) degree, but those with Class 2 (2) degrees may apply, and each case will be considered on its merits. Applicants who academic qualifications do not meet these formal standards may be admitted to a post-experience course; they may then transfer to MSc status subject to satisfactory performance in their first two terms.

Admissions Tutor: Dr. D.M. Keith-Lucas.

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 Student Access to Independent Learning (S@IL) computers - 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 Programme Directors, the Careers Advisory Service, the University's Special Needs Advisor, Study Advisors, Hall Wardens and the Student's Union.

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, and the National History Museum, South Kensington, 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 usually gone into consultancies undertaking environmental impact assessment, on working with conservation organizations. The Royal Horticultural Society Gardens at Wisley have recently appointed three botanists, one from each of three streams of the Plant Diversity MSc!

Opportunities for study abroad
This course introduces most of the students to Mediterranean ecosystems, but the project work there has plenty of opportunities to work overseas. The NHM field station in Belize is available to those, particularly on the Biodiversity Assessment and Conservation streams who wish to gain tropical experience. Other placements can be arranged as required with other institutions, universities or field stations with which the School of Plant Sciences maintains regular 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 (who are almost always deficient in field skills) and capable non-graduate field-workers (who are mostly deficient in theoretical grounding) to plan, conduct and interpret vegetation surveys and related botanical field investigations to high standards and especially to those standards required by commercial and professional users of such surveys.

Knowledge and Understanding

A. Knowledge and understanding of:	**Teaching/learning methods and strategies**
1. The range of plant diversity. 2. The assessment of biodiversity 3. The classification of plants 4. The characters which can be used to classify plants. 5. The need for and methods available for conservation. 6. The factors which control plant distribution. 7. The assessment of rarity. 8. Methods of vegetation survey	All these are covered in taught modules, by lectures and practical work. 3 and 4 are areas in which the Taxonomy and Evolution stream have more advanced modules. 2,5,6 and 7 are areas in which the Biodiversity Assessment and Conservation stream have more advanced modules which include some seminars. 8 is principally addressed by the students taking the Vegetation Survey stream in applied fieldwork. *Assessment* All the taught modules are assessed by examination. 1 is also assessed by an identification quiz. 5 is assessed by an extended essay. 8 is assessed in fieldwork reports. 6 is assessed in an oral presentation. 2,4,7 and 8 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 classificatory computer programmes. 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 supported by practical work in 1,2,3,4 and 5. 6 and 7 are taught 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 is tested by an oral presentation. 7 is tested by an essay.

C. Practical skills	**Teaching/learning methods and strategies**
1. Use keys to identify plants. 2. Carry out field surveys 3. Use statistical and classifications computer packages. 4. Manage plant collections. 5. Carry out laboratory work with microscopes, chemicals and a variety of metering instruments. 6. Dissect and describe a flower.	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. *Assessment* 1 and 6 are assessed in an identification quiz. 2 is assessed in fieldwork reports 7 is assessed in the research project 4 and 5 are assessed in laboratory reports on practical work.

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