

# BSc (Hons) Forensic & Applied Biology

## PROGRAMME SPECIFICATION

- 1 **Awarding institution/body** University of Worcester
- 2 **Teaching institution** University of Worcester
- 3 **Programme accredited by** Course accredited by [Forensic Science Society](#)
- 4 **Final award** B.Sc. Hons
- 5 **Programme title** Forensic and Applied Biology
- 6 **Pathways available** Single, honours only
- 7 **Mode and/or site of delivery** Face to Face delivery of theoretical and practical work with some blended learning via Blackboard. All modules delivered on the sites of the University of Worcester.
- 8 **Mode of attendance** FT & PT normally during hours of 9:15 to 18:15 Monday to Friday.
- 9 **UCAS Code** FC41
- 10 **Subject Benchmark statement and/or professional body statement** QAA Biosciences Benchmark Statement (2007) and [Forensic Science Society Interpretation, Evaluation & Presentation of Evidence and Crime Scene Investigation component Standards](#)
- 11 **Date of Programme Specification preparation/revision** September 2011

### 12 Educational aims of the programme

Forensic and Applied Biology at Worcester is a specialist course that is accredited by the Forensic Science Society. It offers a number of specialist modules along with a number of modules taken from our Biology programme at Worcester. The course is very practical offering students the opportunity to gather practical skills in both Biology and in some areas of Forensic Science. Students also have the opportunity to gather some skills in Archaeology. There is also an opportunity to undertake an independent project in their third year, which is not offered by all Forensic-based courses in the UK. The emphasis on the development of 'hands on' practical skills provides students with useful skills for their future careers. The unique Worcester science personal development planning (PDP) scheme is designed to support student personal and career development.

In particular the course aims to:-

- a) provide a broad practical laboratory and field based Forensic/Applied Biology curriculum.
- b) provide a supportive learning environment which acknowledges and responds to the diversity of student backgrounds and experiences, and which allow students the opportunity to realise their academic potential;
- c) provide students with the opportunity to study Forensic and Applied Biology at a depth and level appropriate to honours degree standard;
- d) develop to the appropriate pathway level the knowledge, skills and aptitudes of Forensic and Applied Biology, within an interdisciplinary, undergraduate degree scheme;
- e) enable students to work independently, analytically and critically;

f) encourage students to develop a range of subject-specific and transferable skills appropriate to graduate employment and/or postgraduate study in Forensic and Applied Biology.

### 13 Intended learning outcomes and learning, teaching and assessment methods

At the end of their course, students should be able to:

- a) have knowledge of material and an understanding of a range of biological and forensic concepts and principles at a variety of levels (from sub-cellular to whole organisms);
- b) access information from a variety of sources and show proficiency in assessing, evaluating, analysing, and synthesising the scientific information and data;
- c) communicate biological information and principles in an appropriate manner, employing skills of written, oral and visual communication, numerical analysis and information technology;
- d) design, execute and critically evaluate the outcomes of investigations carried out individually and in groups;
- e) record data accurately, analyse and interpret those data and test hypotheses;
- f) have practical skills in laboratory and/or field work, and be able to work safely and appropriately in these environments;
- g) have an understanding of ethical issues related to their chosen award;
- h) work co-operatively with others, while demonstrating an increasing understanding of how to be an independent learner;
- i) plan, carry out and present a piece of hypothesis-driven work for an independent study.
- j) develop specific skills in forensic work such as crime scene analysis, evidence recording, evaluation and assessment, and laboratory and field analysis techniques;
- k) communicate complex scientific concepts to lay audiences such as a court.

Tables mapping the learning outcomes of the course to the modules are detailed in the [Forensic and Applied Biology student handbook section 1](#).

#### 13.1 Learning and teaching assessment methods

The Forensic and Applied Biology course aims to provide supportive, student-centred learning environments that acknowledge and respond to the diversity of student backgrounds and experiences. The structure of the course enables students to move towards increasing independence in their studies from level 4 to level 6 in line with the Framework for Higher Education Qualifications (FHEQ) and University policies for assessment and curriculum design. Level 4 modules offer students structured tutor support for their learning, whilst at level 5 this support becomes less structured, although the extent to which this occurs varies with the difficulty of the task. All level 6, modules offer students opportunities for more independent learning, although specific tutor help will always be available. Learning outcomes, and hence assessments will always be more demanding at level 6.

Students will participate in a wide range of learning experiences. Teaching, assessment and private study are interlinked in that they are all aspects of each student's personal and

academic development. A list of the range of learning experiences that may be encountered on the course are given below:-

Lectures, practical sessions, practical demonstrations, seminars, student-led seminars, self-instructional workbooks, workshops, tutorials, field work, field classes, field trips, field visits, directed reading, independent study, group projects, web conferencing, self-directed study, reflective accounts of own work, group work, self-study packages, blended learning, laboratory investigations, class discussions, computer simulations, case studies, museum visits, independent research, role-play, visiting speakers, test digs and crime scene simulations, reflective learning, interviews, simulated court environment.

The course employs a variety of assessment methods, for more details please see section 14 of this programme specification.

### 13.2 Student skills

Students will be able to obtain a wide range of skills on this course, e.g. a range of subject-specific and transferable skills appropriate to graduate employment and/or postgraduate study in Forensic and Applied Biology, for details please see [PDP tables](#) in the student handbook.

## 14 Assessment Strategy

The approach to assessment is to use a wide range of assessment techniques (see [Table 4.2.1 in section 1 in the Forensic and Applied Biology student handbook](#)), each module normally has at least two different types of assessment. Every module will carry at least one form of formative assessment and will deliver extensive feedback on assessments to allow students to improve their performance.

The assessment structure has been developed to support student learning by providing assessment procedures that reflect the nature and learning experience of each module, and by ensuring that the students are able to demonstrate ability in a wide range of qualities and skills appropriate to the course.

Forensic and Applied Biology is a very practical course so there is considerable emphasis on coursework, although examinations and other forms of assessment are also utilised. We define formal formative assessment as formative work that is formally scheduled in modules. Formal formative assessment is offered on modules at all levels of the course but is especially prevalent at level 4 in the new 30 credit modules ([Table 4.2.1 in student handbook](#)). Here, rapid feedback via personal response systems will be used. Informal formative assessment is also offered on all modules on the course. A range of assessment methods is utilised to assess the learning outcomes of the course. Coursework assessment includes practical files, practical reports, forensic reports, essays, presentation of evidence, Forensic notebooks, portfolios and case studies. Examinations comprise, long answer, short answer, multiple choice, practical examinations and seen examinations or combinations of two or more of the above methods. This wide range of assessment methods has been devised to test a wide range of student skills.

A number of assessments, especially in the final year, test the ability of students to communicate complex scientific ideas in lay terms so that participants in a court of law can understand them. This skill is of the utmost importance to anyone contemplating a career in Forensic sciences and is also useful for other careers such as scientific writing.

The Forensic and Applied Biology course employs the UW generic undergraduate assessment criteria (see University Handbook), specific interpretation and elaboration of which will be outlined in assessment briefs within each individual module handbook given to the students. A table showing how each of the modules is assessed can be found in section 1 of the [Forensic and Applied Biology student handbook](#).

## 15 Programme structures and requirements

### Award Map.

Modules are delivered at levels 4, 5 and 6 of the Framework for Higher education Qualifications (FHEQ). Note that all modules are 15 credits with the exception of the independent study and some modules which are 30 credits operating over both semesters. All modules are mandatory unless alternatives or options are specified.

### AWARD MAP FOR A SINGLE HONOURS AWARD

Title: BSc Forensic and Applied Biology

Year: 2011

Last Updated: September 2011

LEVEL 4					
Module Code	Module Title	Credits	Status (Mandatory (M) or Optional(O))		Prerequisites (Code of Module required)
			Single		
BIOS 1010	Introduction to Human Anatomy	15	M		None
BIOS 1102	Introduction to Forensic Biology	15	M		None
BIOS 1200	Biological Diversity	30	M		None
BIOS 1201	Cell Biology	30	M		None
BIOS 1104	Introduction to Forensic Science	15	M		None
ARCH 1004	Introduction to Fieldwork in Archaeology	15	M		None

#### Single Honours Requirements at Level 4

*This specialist course only operates at single honours. All modules in year 1 are mandatory.*

LEVEL 5					
Module Code	Module Title	Credits	Status (Mandatory (M) or Optional(O))		Prerequisites (Code of Module required)
				Single	
BIOS 2003	Work Experience*	15	O		BIOS 1201
BIOS 2004	Research Methods	15	M		None
BIOS 2024	Aerobiology	15	O		BIOS 1200 or 1201 or 1204
BIOS 2040	Botany	15	O		BIOS 1201 & 1200
BIOS 2100	Molecular Genetics	15	M		BIOS 1201
BIOS 2054	Crime Scene Investigation	15	M		BIOS 1102
BIOS 2104	Human Genetics	15	M		BIOS 1201
BIOS 2105	Medical Forensic Science	15	M		BIOS 1010, 1201 & either 1203 or 1204
BIOS 2102	Animal Welfare and Ethics	15	O		None
ARCH 2011	Environmental Archaeology	15	O		ARCH 1004
ARCH 2014	Death & Burial	15	O		ARCH 1004
PSYC 1409	Introduction to Forensic Psychology	15	O		None

\* Please note due to the nature of security clearance required and the Official Secrecy Act it is not possible to arrange work placements with forensic science providers. Those selecting this module are responsible for arranging any work placement though help will be given selecting a placement.

### Single Honours Requirements at Level 5

Students must take the five (5) Mandatory modules (BIOS 2004, BIOS 2100, BIOS 2054, BIOS 2104, and BIOS 2105). They must also choose three (3) of the optional modules from above, there are no free modules on this course.

LEVEL 6					
Module Code	Module Title	Credits	Status (Mandatory (M) or Optional(O))		Prerequisites (Code of Module required)
				Single	
BIOS 3002	Independent Study*	30	M		BIOS 2004
BIOS 3050	Interpretation, Evaluation and Reporting of Evidence	15	M		BIOS 1102
BIOS 3051	Forensic Archaeology	15	M		ARCH 1004
BIOS 3052	Forensic DNA Analysis	15	M		BIOS 2100
BIOS 3053	Biological Indicators for Crime Reporting	15	M		None
BIOS 3106	Pharmacology	15	M		None
BIOS 3100	Integrated Studies in Biology**	15	M		None

\*Students completing BIOS 3002 will be expected to complete a forensically themed independent study.

\*\*Students completing this module will reflect on skills appropriate to the course and will be examined on the range of modules taken for the course.

### Single Honours Requirements at Level 6

Single Honours students must take the double mandatory Independent Study module (BIOS 3001/02) over one or two semesters, **plus** the six (6) mandatory modules (BIOS 3050, BIOS 3051, BIOS 3052, BIOS 3053, BIOS 3100 and BIOS 3106).

### Animal welfare

All students should be aware that animal welfare and ethical regulations apply to this course and they must not be in breach of current legislation.

## 16 QAA Academic Infrastructure

The course has been developed to follow, where possible, bioscience benchmarks and the component standards set out by the [Forensic Science Society](#). (See section 1 of the [Forensic and Applied Biology Student Handbook](#)). Both sets of criteria have been used to inform course outcomes. We also follow the QAA and UW guidelines on work experience. The course operates at levels four, five and six of the Framework for Higher Education Qualifications.

## 17 Support for students

- Forensic and Applied Biology students experience a wide variety of learning and teaching methods detailed in 13.1 above
- An induction programme extended throughout year in one of the 30 credit modules in year 1.
- Year 2 and 3 induction sessions at the start of each academic year.
- All students have a personal tutor who is available to guide them through completion of a PDP related to the current Biosciences Benchmarks. All tutors also have an open door policy.
- A course leader to offer more specific help on module choices within the course.
- Library and Information and Library Services induction.
- Opportunities to take IT training via Information and Learning Services at the University.
- Study Skills provided within the subject and by UW student services.
- Library, IT, Media and Print support is provided by Information and Learning Services (ILS) staff through desk services and the support of professionally-qualified librarians including a dedicated Academic Liaison Librarian for ISE. The Academic Liaison Team offers a portfolio of professional information services, including information literacy programmes for cohorts and one-to-one support, both in-person and online
- The Careers Service provides information, advice and training opportunities for career planning in addition to such opportunities offered within the course.
- Career planning skills also developed in BIOS 3100.
- Science PDP scheme to develop student skills.
- Equal opportunities via the Disability & Dyslexia Service which provides advice and support for students who have mental health difficulties, dyslexia, sensory or physical impairments and other difficulties. There is a dedicated Assistant Disability Coordinator for students with sensory impairments. Advice is also available on access to technology such as voice recognition and text-to-speech software. Much of the support provided is funded through the Disabled Students' Allowance (DSA).
- A Virtual Learning Environment (Blackboard Learning System) to provide module-specific material, documents, activities.

- Students can obtain details of module availability, registration and results via the student online learning environment (SOLE page).
- A range of student support services, including finance and accommodation advice.
- Detailed module outlines (module handbooks), which include planned teaching activity, attendance requirements, assessment brief, assessment criteria and reading lists.
- Student Handbook (published on an annual basis), which adheres to the latest University template for such documents.
- Opportunities to study abroad (optional)
- Student and academic support, representation and social networking via the Students' Union.
- A 'Forensic Forum' for mutual student support across all levels of the course.

Section 1 of the Forensic and Applied Biology student handbook provides detailed information on the course and information on modules and options available.

## 18 Admissions policy, criteria and procedures

### Admissions Policy:

The University aims to be accessible; it is committed to widening participation and encouraging diversity in the student population. The Institute of Science and the Environment works closely with central student support services, including the Admissions Office, the Disability and Dyslexia Service and the International Office, to support students from a variety of backgrounds. We actively encourage and welcome people from the widest range of economic and cultural backgrounds, and value the contribution of mature learners.

### Entry requirements:

The minimum entry requirements are 4 GCSEs (Grade C or above) including English and Maths plus a minimum of 2 and maximum of 3.5 A Levels or equivalent Level 3 qualifications, with a UCAS Tariff score as stated in the University prospectus. Applicants must have studied Biology or Chemistry to at least AS level or equivalent, and normally applicants must have an A level pass in Biology, although applicants who have not studied science for sometime or do not have a science background will be considered.

Students may also enter with EDEXCEL qualifications e.g. EDEXCEL (BTEC) National Certificate or Diploma to in a suitable subject

The University will also consider applications from candidates holding qualifications outside the UCAS Tariff, including those awarded by professional bodies and overseas qualifications (including the European Baccalaureate).

Details of acceptable level 3 qualifications, policy in relation to mature students or applicants with few or no formal qualifications can be found in the prospectus or on the University webpages. Information on eligibility for accreditation of prior learning for the purposes of entry or advanced standing is also available from the University webpages or from the Registry Admissions Office (01905 855111).

### Admissions Procedures:

Full-time applicants apply through UCAS (FC41)

Part-time applicants apply directly to University of Worcester (UW)

Non-standard entry students, such as mature students, may be asked to attend an interview.

### **Mature Students:**

We welcome applicants who hold alternative qualifications/experience and mature students who can demonstrate the ability to benefit from the course and show their potential to complete the course successfully. Although recent preparatory study at an appropriate level (e.g. an Access to Higher Education Diploma) is recommended, students may be considered on the basis of prior evidenced professional/work experience and/or other assessment procedures, and the assessment of personal suitability. University Admissions office staff can offer information, advice and guidance on this process.

### **Accreditation of Prior Learning:**

Students with relevant previous study at HND or degree level or extensive experience may be considered eligible for Accreditation of Prior Learning.

Entry may be possible to Year Two or Three of the course, depending upon the qualifications or experience gained. Credit can also be given for individual modules.

Please contact the Registry Admissions Office for further information or guidance on 01905 855111.

### **Admissions/selection criteria:**

All applications received by the deadline date are considered and offers are made on the basis of meeting the following criteria:

- Does the candidate have the required number of GCSE's in the correct subjects?
- Does the candidate have an A or AS level equivalent qualification in Biology or Chemistry?
- Does the candidate have an A or AS level equivalent qualification in another science?
- Does the candidate meet the required UCAS tariff score for the subjects they have taken?
- Does the candidate have a satisfactory reference (for most this will be on the UCAS form)
- Does the candidate satisfy any other recognised UW entry route (mature student, APEL, foundation/access course)?

## **19 Methods for evaluating and improving the quality and standards of teaching and learning**

Mechanisms for review and evaluation of teaching, learning and assessment, the curriculum and outcome standards include:

- Student Module evaluation and feedback
- An Annual Evaluation Report completed by Programme Leader
- Periodic Review and revalidation including external scrutiny
- Peer teaching observation
- External Examiners' Reports
- Academic staff annual appraisal
- Staff Development Away Days and other events
- ISE Policy on Approval (Module Outlines and Assignment Briefs) and Moderation of Student Work

Committees with responsibility for monitoring and evaluating quality and standards:

- ISE Quality Assurance Committee
- Biology Programme Committee

- Academic Quality Standards and Quality Enhancement Committee
- ISE and UW Ethics Committees
- Learning, Teaching and Student Experience Committee

Mechanisms for gaining student feedback on the quality of teaching and their learning experience:

- Module feedback questionnaires
- Biology Programme Management Committee
- Forensic Forum
- Meetings with module tutors and personal tutor
- National Student Survey
- Induction, exit and other ad hoc surveys

## 20 Regulation of assessment

### Requirements to pass modules

- Modules are assessed using a variety of assessment activities which are detailed in the module specifications.
- The minimum pass mark is D- for each module.
- Students are required to submit all items of assessment in order to pass a module, and in some modules, a pass mark in each item of assessment may be required.
- Some modules have attendance requirements.
- Full details of the assessment requirements for a module, including the assessment criteria, are published in the module outline.

### Submission of assessment items

- Students who submit course work late but within 5 days of the due date will have work marked, but the grade will be capped at D- unless an application for mitigating circumstances is accepted.
- Students who submit work later than 5 days but within 14 days of the due date will not have work marked unless they have submitted a valid claim of mitigating circumstances.
- Students who fail to submit an item of assessment lose their right to reassessment in that module, and will be required to retake the module.
- For full details of submission regulations see Undergraduate Regulatory Framework (URF).

### Retrieval of failure

- Students are entitled to resit failed assessment items for any module that is awarded a fail grade, unless the failure was due to non-attendance or non-submission.
- Reassessment items that are passed are graded at D-.
- If a student is unsuccessful in the reassessment, they have the right to retake the module (or, in some circumstances, take an alternative module).

### Requirements for Progression

- Students at Level 4 may be permitted to progress to Level 5 when they have passed at least 90 credits at Level 4.
- Students at Level 5 may be permitted to progress to Level 6 when they have passed at least 90 credits at Level 5.
- A student who fails 90 credits or more due to non-submission will be required to withdraw from the University.
- Students who pass less than 90 credits but have submitted all items of assessment will be required to retake modules

### Requirements for Awards

Award	Requirement
CertHE	Passed 120 credits at Level 4 or higher
DipHE	Passed a minimum of 240 credits with at least 105 credits at Level 5 or higher
Degree (non-honours)	Passed a minimum of 300 credits with at least 105 credits at Level 5 or higher and a minimum of 60 credits at Level 6
Degree with honours	Passed a minimum of 360 credits with at least 105 credits at Level 5 or higher and a minimum of 120 credits at Level 6

### Classification

The honours classification will be determined by whichever of the following two methods results in the higher classification:

- Classification determined on the profile of the best grades from 45 credits attained at Level 5 and the best grades from 120 credits at Level 6. Level 5 and Level 6 grades count equally in the profile.
- Classification determined on the profile of the best grades from 120 credits attained at Level 6 only.

Institute-level Assessment Boards review and confirm results for modules, and the Board of Examiners considers students' mark profiles to make decisions about progression, awards and degree classifications as appropriate.

For further information on honours degree classification, see Section 17 of the [Undergraduate Regulatory Framework](#).

## 21 Indicators of quality and standards

External examiners have consistently stated that our standards are the equivalent of standards in other UK higher education institutions. They are particularly impressed with the level of feedback on offer to students.

The University underwent a QAA Institutional Audit in March 2011. The audit confirmed that confidence can be placed in the soundness of the institution's current and likely future management of the academic standards of its awards and the quality of the learning opportunities available to students. The audit team highlighted several aspects of good practice, including the student academic representative (StARs) initiative, the proactive approach which supports the student experience for disabled students, the comprehensiveness of the student online environment (SOLE), the wide

range of opportunities afforded to students to enhance their employability, the institution's commitment to enhancement, and the inclusive approach to working with its collaborative partners.

Members of staff in Biology have been involved in a number of projects of note including an extended induction programme and work on the science PDP project, both of which have been presented at national conferences and have been identified as good practice within the university. Funding from Hereford and Worcester Lifelong Learning Network enabled Biology staff to develop an interactive e-learning quiz which is now used in several Institutes across the University.

One full time and one part time member of staff are current forensic practitioners making their expertise available to students on the course. The course has also been accredited by the [Forensic Science Society](#).

Scholarly activities of staff include practical research, writing of text books, writing scientific papers, pedagogic research and consultancy/practice.

## 22 Career Opportunities & Links with Employers

Careers advice is embedded in the curriculum at all three levels. In Level 4, students are introduced to the Careers Service in BIOS 1012 Cell Biology as part of the Science PDP scheme. This is followed up in BIOS 2100 Molecular Genetics, with a more substantial careers session which looks at careers options and strategies. Finally, the Careers Service contribute to the Level 6 capstone module BIOS 3100 Integrated Studies, where one of the assignments takes the form of an interview and submission of a CV. Students also have the opportunity to take a Work Placement module at Level 5; this adheres fully to the university guidance on placement learning, which in turn is informed by the relevant QAA infrastructure.

### *Career opportunities (Forensic)*

- Forensic science service both as Reporting Officers and assistant Forensic Scientists
- Independent forensic contractors such as LGC (now merged with Forensic Alliance), Forensic Access and Orchid Biosciences Europe (Independent DNA Testing)
- Police laboratories such as West Mercia Constabulary as Scene of Crime Officers and in laboratories
- Forensic Science Agency of Northern Ireland as the forensic science service but for Northern Ireland
- Horse racing Forensic Laboratory,
- The Home Office

### *Career opportunities (Applied Biology)*

- Government Agencies (e.g. Environment Agency & English Nature)
- Non-governmental Organisations (e.g. Greenpeace & Local Wildlife Trusts)
- Local Government (e.g. Environmental Health)
- Technical Posts (e.g. Microbiological monitoring & medical technicians, water companies, hospital technicians)

- Education (e.g. teaching, lecturing & research)
- Other Graduate Professions (e.g. accountancy & management)
- Further Study: M.Sc., M.Phil or Ph.D.
- Scientific and medical sales

We have links with the National Pollen and Aerobiology Research unit, Worcestershire and Herefordshire Wildlife Trusts and Birmingham Sea Life Centre, with whom Biology staff liaise to arrange Independent Studies and employment opportunities. An employee of Worcestershire Wildlife Trust (and ex- student) also sits on the University Strategic Biodiversity Management Group, chaired by a member of the Biology staff. We also have links with West Mercia Police, the Forensic Science Service and Hereford and Worcester county council. Staff from the Forensic Science service and West Mercia Police teach on the course.

### **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 s/he 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 study guides and course handbook. The accuracy of the information contained in this document is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education

