

Programme Specification

FdSc Applied Biosciences

FdSc Applied Biosciences (Health Informatics)

Valid from: September 2016

Oxford Brookes University
Faculty of Health & Life Sciences

and

Solihull College
School for Science and Built Environment

SECTION 1: GENERAL INFORMATION

Awarding body:	Oxford Brookes University
Teaching institution and location:	Solihull College, Blossomfield Campus, Solihull, B91 1SB
Final award:	FdSc
Programme title:	Applied Biosciences Applied Biosciences (Health Informatics)
Interim exit awards and award titles:	CertHE
Brookes course codes:	FDSC-ABI Applied Biosciences FDSC-ABH Applied Biosciences (Health Informatics) CHEN-ABI Applied Biosciences
UCAS/UKPASS code:	C701
JACS code:	C700 Molecular Biology, Biophysics and Biochemistry
Mode of delivery:	Face to face
Mode/s and duration of study:	FT (2 years), PT (3 years)
Language of study:	English
Relevant QAA subject benchmark statement/s:	QAA Foundation Degree qualification benchmarks (2010) QAA Subject Benchmark Statements: - Biosciences (2015)
External accreditation/recognition: <i>(applicable to programmes with professional body approval)</i>	N/A
Faculty managing the programme:	Health and Life Sciences
Date of production (or most recent revision) of specification:	Sept 2019 (revision)

SECTION 2: OVERVIEW AND PROGRAMME AIMS

2.1 Rationale for and/or Distinctive features of the programme

Increasing volumes of work have led employers in the health care sciences to liaise with educators to secure a workforce that is well equipped with relevant professional skills underpinned by strong theoretical knowledge of the science of human health and disease. The Foundation Science (FdSc) degree in Applied Biosciences and Applied Biosciences (Health Informatics) has been developed in close collaboration with local employers, including two NHS trusts, and provides students with a coherent, integrated programme of study that will prepare them for entering the bioscience workforce. Health informatics is an upcoming area for which the NHS trusts have expressed a need for inclusion into a degree programme. Therefore, this degree combines bioscience modules that form the bedrock of human health care (including applications such as diagnostic and clinical laboratory work, and therapeutic development) with unique modules developing the skills necessary to handle and interpret scientific and computational data. All students will have the opportunity in Year 1 to be introduced to Health Informatics, before making a choice as to whether they would like to specialise in this area. The college has recently spent £250 000 on equipment and refurbishment of laboratories for HE students. The degree provides extensive opportunities (two work placements), both within the College and with local, supporting employers, for students to apply and grow their knowledge and skills in the professional workplace.

The degree will offer students the opportunity to study current, relevant theories in Applied Biosciences, and to develop core laboratory techniques. In the first year, this will include the use of fundamental methodologies and equipment, and specialised aspects such as microbiology and biochemistry; in the second year this will include molecular biology and other skills. In addition, modules will incorporate regulatory elements critical to employers in the health care sciences, such that graduates will have a clear understanding of workplace requirements such as health & safety awareness, data protection, ethics requirements and prohibitions, etc. The design and delivery of these aspects is undertaken in close association with supporting employers including local NHS Trusts and health-care focussed industries.

The FdSc degree in Applied Biosciences with Health Informatics is designed to meet the needs of key local employers, although the programme equally supports both national and international demands and will likewise equip students to seek employment or enter advanced studies further afield. The degree strongly combines theoretical (academic) learning with work-experience, through the broad teaching of regulatory requirements across several modules, the use of a designated work experience module in the first year, and a work-based project that forms a major part of the second year. These integrated modules will be supported by local employers and will involve time spent within the workplace.

Major developments in scientific and medical technologies and the rising tide of computer generated biological data (Big Data) are rapidly outgrowing the computing and data processing tools and skills traditionally used in the bioscience area. To manage and process such complex data sets within a useable time scale increasingly requires employees skilled in bioinformatics, data handling and analysis technologies and their applications. A dedicated module within the first year offers all students on the Applied Biosciences with Health Informatics degree to develop key theories and use software packages for data handling and analysis. In addition, students can pursue this strong theme, by choosing modules in their second year that focus on more extensive training and practice in modern, advanced data analysis targeted at the very large data sets that are becoming accessible to the industry. These students will focus their work-based project in the bioinformatics or data-analysis area, although these specialised skills will continue to be supported by traditional (essential) core principles of biological sciences in other modules.

2.2 Aim/s of the programme

The FdSc programme seeks to enable students to:

- Generate a sound understanding of the scientific basis of Applied Biosciences and how theoretical knowledge can be applied in practice.
- Learn and practice the main methods of enquiry in the subject and how to apply established techniques to ask questions and analyse information.
- To evaluate critically the appropriateness of different approaches to solving problems and apply these in a professional context.
- Develop recognition of the importance of the integration of a range of linked disciplines in the bioscience and health care practices.
- Develop a range of practical skills (e.g. laboratory techniques, data handling, computing) and the ability to apply these skills to new situations, including in the workplace.
- Develop effective communication skills in a variety of forms (e.g. report writing, oral presentations and teamwork) and for a range of audiences (e.g. peers, work colleagues, managers, clients).
- Develop an appreciation of the limits of their knowledge and of scientific endeavour.
- Prepare students for careers in the biological sciences and cognate disciplines.

Students on the FdSc degree in Applied Biosciences and Applied Biosciences (Health Informatics) will have the opportunity to develop subject-specific knowledge, professional skills and personal qualities that will make them quality employees within the health care industries. They will be able to undertake further training or engage with higher studies following graduation from the degree.

SECTION 3: PROGRAMME LEARNING OUTCOMES

On successful completion of the programme, graduates will demonstrate the following Brookes Attributes:

3.1 *Academic literacy*

- Apply subject-specific scientific knowledge pertaining to applied biosciences
- Apply professional knowledge including quality, ethics and regulatory affairs
- Undertake complex laboratory tasks relevant to working as a laboratory professional in clinical environments
- Evaluate the relevance of scientific theories and practices to bioscience professions
- Communicate efficiently and effectively complex topics by a range of accepted formats, using appropriate technical, practical and subject-specific nomenclature and terminology.
- Demonstrate the ability to act and think as a member of the professional laboratory science community.

Graduates of the FdSc Applied Biosciences will also demonstrate the following:

- Demonstrate practical competence in fundamental data handling and analysis.

Graduates of the FdSc Applied Biosciences (Health Informatics) will also demonstrate the following:

- Apply informatics-related practices as a laboratory professional in clinical environments

3.2 *Research literacy*

- Apply research skills to evaluate a range of principles and concepts in order to judge the relevance of these to Applied Biosciences.

- Independently carry out a work-based project with a specific focus on one aspect of laboratory practice in a clinical environment.
- Collect, present, analyse and interpret statistical data to provide evidence-based reflection of experimental and computational data.

3.3 *Critical self-awareness and personal literacy*

- Set goals, manage time and tasks, and reflect on own practice and feedback from all sources to ensure that learning and development goals are achieved.
- Apply team-working skills in order to work productively and effectively with colleagues, members of the public, staff and figures in authority.
- Manage and evaluate their own professional practice, in accordance with the professional, ethical and legal framework within the industry regulations, recognising their own abilities and limitations.
- Engage with relevant professional bodies and employers as a recognised member of the professional laboratory science community.

3.4 *Digital and information literacy*

- Apply IT resources effectively, including the internet and library databases, to search for and retrieve reliable information.
- Demonstrate effective use of IT programmes for mainstream word-processing to report information in an appropriate format, and for data manipulation, presentation and analysis.
- Demonstrate an understanding of the current and rapidly changing technologies used within Applied Biosciences.

Graduates of the FdSc Applied Biosciences (Health Informatics) will also demonstrate the following:

- Apply data-mining practices to data sets relevant to Applied Biosciences
- Understand the practical application of decision support systems in a clinical laboratory environment.

3.5 *Active citizenship*

- Operate as a responsible and ethically sound member of the professional laboratory science community.
- Demonstrate awareness of professional codes of conduct and personal responsibility.
- Demonstrate awareness and consideration for global challenges and innovations relating to Biosciences.

SECTION 4: PROGRAMME STRUCTURE AND CURRICULUM

4.1 Programme structure and requirements:

Module Code	Module Title	Credits	Level	Status*	Semester of delivery**
SB1001	Research Methods	15	4	C	1 & 2
SB1002	Work Experience	15	4	C	1 & 2
SB1003	Laboratory Techniques for Applied Bioscience	15	4	C	1
SB1004	Cell Biology	15	4	C	1
SB1005	Anatomy & Physiology of Human Organs	15	4	C	2
SB1006	Molecular Biology & Genetics 1	15	4	C	1
SB1007	Biochemistry and Organic Chemistry	15	4	C	2
SB1008	Introduction to Health Informatics and Bioinformatics	15	4	C	2
SB2001	Work-based Project	30	5	C	1 & 2
SB2002	Microbiology	15	5	CB	1
SB2003	Data Analysis	15	5	C	1 & 2
SB2004	Molecular Biology & Genetics 2	15	5	C	2
SB2005	Cellular Pathology	15	5	CB	2
SB2006	Haematology & Immunology	15	5	C	1
SB2007	Professional Skills in Applied Bioscience	15	5	C	2
SB2008	Data Analytics	15	5	CH	1
SB2009	Decision Support Systems	15	5	CH	2

*C – compulsory for both Foundation Degrees

CB – compulsory for FdSc Applied Biosciences

CH – compulsory for FdSc Applied Biosciences (Health Informatics)

Exit Qualification (level 4): CertHE

The Certificate of Higher Education (CertHE) is available as an exit award for students who pass, within a period of three years, modules from those listed in Table 4.1 worth an accumulated credit of at least 120 credits.

Any student wishing to be a candidate for a Certificate of Higher Education must register for the award before or during the semester in which he or she expects to complete the programme requirements. The Certificate is not available to students intending to complete the Foundation Degree.

The Certificate of Higher Education may be classified as Pass, Merit or Distinction on the basis of their average mark over the 120 credits studied and passed. The award is passed by achieving an overall average mark of 40% or above. To obtain a Distinction a student must achieve an average of 70% or more over the 120 Credits. The average will be calculated on the modules passed up to and including the semester in which the regulations for the CertHE are first satisfied. A Merit grade is awarded to students who achieve an average score of between 60-69% for these modules.

Progression Requirements (to level 5);

The following requirements apply for progression within the programme:

- In order to complete satisfactorily a year of full-time study, a student must pass at least 90 credits during the year, and must include the 15 credit module SB1006 Molecular Biology and Genetics 1.
- In order to complete satisfactorily a year of part-time study, a student must pass at least 45 credits during the year, and must include the 15 credit module SB1006 Molecular Biology and Genetics 1.
- Students progressing to level 5 will choose to study either a pure Applied Biosciences pathway or Applied Biosciences (Health Informatics) pathway. In order to progress onto Applied Biosciences (Health Informatics) students must have passed SB1008 Introduction to Health Informatics and Bioinformatics.
- The Examination Committee may require a student to withdraw who does not pass at least 45 credits in any two successive semesters of study.
- The Examination Committee may require a student to withdraw if, after taking a required module three times, they have not achieved the required pass mark.

Final Award (level 5): FdSc Applied Biosciences and FdSc Applied Biosciences (Health Informatics)

To qualify for the award of a Foundation Degree, a student must, within six years of first registering, achieve 120 credits at level 4 and 120 credits at level 5.

A Foundation Degree may be classified as Pass, Merit or Distinction. To pass the award, a student must achieve an overall average mark of at least 40%. To obtain a Distinction classification a student must achieve an average of 70% or more over the 120 graded credits at level 5. A Merit classification is awarded to students who achieve an average of between 60-69% over the 120 graded credits at level 5.

SECTION 5: PROGRAMME DELIVERY

5.1 Teaching, Learning and Assessment

Completion of the FdSc in Applied Biosciences requires full-time students to pass 14 single modules and one double module. There are eight modules in year one spread over two semesters with some modules run over a single semester, while some are run over a whole year. Year two comprises of a double work-based project module run over the whole year with three single modules taught in each semester. Part time students normally complete the programme over 3 years. A significant focus of this programme is the work-based element, and the relevance to the employment of the learners within the health care industry, and as such is both strongly informed and supported by local NHS Trusts. Wherever possible, assessments will be contextualised to the specific industry practices and made directly relevant to the career development of the learners, and the programme is committed to supporting work-based learning as an integral part of the students' development. This is informed by the Brookes Assessment Compact.

Following successful completion of the first year (8 modules at level 4), students can progress to higher (level 5) studies in one of two streams, depending on their interests. Both streams lead to the FdSc qualification, and share compulsory, fundamental modules that support core learning outcomes and use common teaching, learning and assessment strategies. In addition to the core modules, students can choose to pursue a taught module and a work-based project that will develop focused knowledge and skills in either the health care or the health informatics areas.

Teaching methods are varied and informed by contemporary practice in science teaching in higher education. All modules use the Solihull College's Virtual Learning Environment - Moodle (typically for locating course and module resources, but also for discussion forums, collaborative information gathering, journal logs and coursework submissions and feedback). Most modules use lectures (on average 24 hours for a single credit module) to provide a framework for learning and to introduce more difficult concepts. Practical work (on average 12 hours for a single credit module) is a key feature of most modules, enhancing learning and enabling development of skills needed for a successful career. Other teaching methods include seminar discussions or debates, one-to-one or small group tutorials and problem-solving workshops. Reflective learning is encouraged through use of self, peer and staff formative feedback on assignments, group work and work placements, where industry partners also contribute to the students learning and development.

Within the FdSc Applied Biosciences programme, the Level 4 Work Experience module incorporates a work-based learning log book delivered using a blended learning approach. The unit will require Foundation degree students to undertake a work placement period of 10 days or equivalent in a relevant work place. The College provides support to students in finding an appropriate placement for their interests and needs, and then in securing and maintain it via the work-experience coordinator.

The emphasis is for full-time and part-time students to complete a further 10-days work-based learning during the second or third year of academic study. The Level 5 Professional Skills module develops knowledge and understanding of critical regulatory elements that employers adhere to and expect of their employees and placement students. Throughout the course, students will be encouraged to share their work-based experiences, examine case studies and apply newly gained knowledge to work scenarios.

All these activities develop academic literacy, critical self-awareness and personal literacy.

The integration of contemporary technologies and practical facilities allow undergraduates to develop their academic and vocational skills to industry standards. Academic sessions are widely supported using laboratories where students have access to practical activities and have the opportunity to develop laboratory skills.

Research literacy is widely taught and practised throughout the modules, although it receives emphasis in the Laboratory Techniques and Research methods modules in the first year, culminating in the Work-Based Project module in the second year. In this module, students will be able to undertake a guided project within a focused area relevant to and supported by employment links within the health care industry (e.g. University Hospital Birmingham and Heart of England NHS Trusts).

Development of active citizenship attributes will form a part of the core ethos of the programme and will be considered in detail in discussions and debates around ethical and welfare topics to do with health care in national and global contexts. In particular the following modules lend themselves to the development of active citizenship: Microbiology; Professional Skills in Applied Biosciences; Data Analysis; Work Experience; Work-based Project.

Summative assessments for modules are vocationally contextualised and are either combined coursework and examination or coursework only. Coursework assignments are diverse and develop research literacy and digital and information literacy. Indicative assignments include essays, laboratory and field notebooks, work diaries, practical reports, video diaries, seminar and poster presentations and problem-solving exercises. Where assessments include examinations, these will be scheduled at the end of the module.

Assessment is aligned to the University Assessment Compact, which seeks to ensure student progression towards meeting programme outcomes, while experiencing a balance of assessments within and between modules and equity in module workloads. Within some assessments students are able to tailor their submission to their own vocational area of interest. Solihull College is

committed to providing students with clear assessment criteria, and useful and timely feedback on all of their work.

Programmes are characterised by an appropriate breadth and depth of content that is informed by relevant benchmark statements, the requirements of accrediting bodies and the latest research.

The Brookes Assessment Compact is jointly prepared by students and staff of the University. It can be found at:

http://www.brookes.ac.uk/services/ocslid/resources/assessment/assessment_compact_09.pdf

5.2 Assessment regulations

The programme conforms to the Oxford Brookes University Foundation Degree Regulations which can be found at:

<https://www.brookes.ac.uk/Documents/Regulations/Current/Specific/B1-Foundation-Degrees/>

SECTION 6: ADMISSIONS

6.1 Entry criteria

Entrants to the programme should normally possess the following:

Either:

- A BTEC Level 3 Diploma or Extended Diploma in Applied Science, normally with an overall Merit profile (MM or MMM)
- A relevant Access to Higher Education Diploma with 45 Level 3 credits and at least 30 of these at Merit or above
- Two A-levels in Science or Maths with minimum D grades

And:

- Three passes at GCSE (grades A*–C or 9–4) or O-level (grades A–C), normally including Mathematics, English Language and Science

Or:

- A minimum of two years' relevant work experience, a current role in an appropriate workplace setting and a Line Manager's letter of support and recommendation

Other qualifications will be considered on a case-by-case basis

All applicants will be interviewed (telephone interviews may be carried out for international applicants if they cannot attend in person). Offers of a course place are dependent on a successful interview and a strong UCAS application with an appropriate reference.

English Language Requirements.

Applicants whose first language is not English must also demonstrate that their level of English is acceptable, by achieving a score in a recognised test such as:

- British Council IELTS: normally minimum level 6.0 overall with a minimum of 6.0 in the reading and writing components;

Accreditation of Prior Learning (APL)

It may be possible, in certain situations, to gain accreditation of prior learning to enable students to enter the course with advanced standing or gain exemption from an element/ elements of the

programme. This is assessed on an individual basis and is awarded in line with Oxford Brookes University's regulations on accreditation of prior learning, available at

<http://www.brookes.ac.uk/regulations/current/core/a2/a2-5/>

6.2 DBS Checks

DBS disclosure may be applicable, depending on the individual work placement gained. If appropriate, this will be carried out after enrolment.

6.3 Occupational Health Checks

Occupational Health Checks may be applicable, depending on the individual work placement gained (mandatory in NHS pathology laboratory placements). This will include a review of vaccination records and, where necessary, additional immunisations may be required.

Students will be liable for any costs incurred in obtaining satisfactory DBS and Occupational Health Checks.

SECTION 7: STUDENT SUPPORT AND GUIDANCE

Students will be supported in the following ways:

- An induction programme before the start of formal teaching to include information on the programme structure and timetable, introduction to the library and College support services. Information will be provided during induction on allocation of work-placements and the necessary DBS and/or Occupational Health Checks will be implemented where required.
- A personal tutor at the College to help with academic development, offer personal support and provide information about College support services.
- A work-experience coordinator will be provided to support learners in gaining the maximum benefit from their placements.
- The College has an additional needs team to support students with a learning difference or disability. The personal tutor will provide the link between the additional needs team, the student and the HE teaching team to ensure coordinated support is provided.
- Students are provided with a programme handbook, and detailed module handbooks at the start of each semester.
- The College has the following other departments who provide specific support in their areas of expertise: library staff including a named librarian to support the science students; counsellors; a welfare officer; student services including finance and accommodation support; Open Access staff who support students in use of computers, the intranet and software packages.

SECTION 8: GRADUATE EMPLOYABILITY

The skills and knowledge gained on this course are directly relevant to a number of careers in NHS and linked health care industries. Many of our graduates will find employment within careers such as laboratory scientists and technicians, supporting diagnostic, development and even research industries. Graduates will also be able to readily apply their learning to wider careers such as teaching, sales, management, journalism and the media and leisure industry.

Graduates will have the opportunity to apply for the BSc (Hons) Applied Biosciences or the BSc (Hons) Biological Sciences courses. Similar top-up courses at other institutions are also a

potential route for further education (acceptance onto these courses is always subject to individual HE providers' admissions and APL policies).

SECTION 9: LINKS WITH EMPLOYERS

Solihull College recognises and understands the importance and value of work-based learning in equipping graduates for the work place and in enhancing academic study. Students will benefit from increased employability prospects or, if already in employment, with further professional skills. In recent years, the college has implemented a clear policy and guidance on work-based learning to ensure staff, students and employers work together to provide the best possible experience.

Work-based learning providers are invited to regularly feedback back their views on the student's progress and on the work placement process via communication with the work-experience coordinator and/or programme lead.

Individual staff and the College as a whole have strong connections with the profession, and link personnel within local NHS trusts and bioscience business organisations can help students develop further links. Visits to various organisations during the course and guest speakers also increase the industry links. Students are provided with opportunities to gain further careers advice during their course from their personal tutor and the college's Careers department.

SECTION 10: QUALITY MANAGEMENT

Indicators of quality/methods for evaluating the quality of provision

The programme adheres to the nationally accepted QAA Foundation Degree qualification benchmarks (2010) and the QAA subject benchmark statement for Biosciences (2015).

The quality of academic provision for students is assessed regularly by programme teams, principally through the course's annual monitoring report and quality improvement plan via student evaluations of each module, regular student questionnaires, programme quality board meetings, and through critical evaluation of the annual external examiner report. Dissemination and encouragement of good practice is facilitated through staff development activities, peer lesson observations, regular staff team meetings, and support from the Teaching and Learning Coaches at Solihull College and the OCSLD (Oxford Centre for Staff and Learning Development) at Oxford Brookes University.

The main indicators of quality are:

- The annual scrutiny of the programme and assessment of students by an External Examiner to ensure consistency and comparability of standards across the HE sector;
- Employment success rate of current and past graduates;
- Feedback from students in the module and course evaluations, student surveys (including NSS) and via the programme quality boards
- Annual Review
- The University's periodic review of all courses
- Feedback from work placement providers;
- Lecturers' extensive experience of teaching and working with the industry, plus their maintenance of subject currency via on-going annual CPD and academic scholarship.

The programme also conforms to the structure and regulations of the University's Foundation Degree Framework.

The College has a number of Committees which ensure that quality management of higher education is at the heart of the work of the College. A Higher Education Strategy group chaired by the Principal steers the development of the higher education offer. A Quality and Standards Board meets twice termly, Chaired by the Vice Principal and manages cross College quality improvement. A Higher Education forum for HE teaching staff meets every half term and shares good practice and informs staff of key higher education developments including HE quality. The HE student council meets every term and is chaired by HE Heads of School in rotation. The overall quality of the programmes is managed in the curriculum Area by the relevant Head of School. Each Higher Education programme has a designated Course leader.

The quality of teaching and learning is assured and improved upon by the College's internal mechanisms. These include HE course SARs which reviews every programme on a termly basis, followed by an Annual Monitoring Report. From the Annual Monitoring report the College prepares and externally validates a Higher Education Self-Assessment report.

The overall quality of programmes will be regularly reviewed within the College's and University's management structure via Course Team Meetings, Course Team Management Meetings, Partnership Meetings, Area Meetings and Programme and Quality Board meetings and the College HE Committee structure.