University of Chester

Programme Specification
Applied Microbiology FDS
2023 - 2024

1. Final Award
Foundation Science Degree
2. Programme Title
Applied Microbiology
3. Internal Programme Title
Applied Microbiology
4. Intermediate / Exit Awards

4a. Award	4b. Title

5. Awarding Institution / Body
University of Chester
6. Programme Delivered By

St Helens College

7. Location of Delivery

St Helens College and distance learning

8. Framework

Undergraduate Modular Programme

9. Mode of Study

Full-time and Part-time

10. Forms of Study

Classroom / Laboratory, Distance, Work-Based inc.(practice / placement),

11. Normal length of study

2

12. Maximum length of study

5 Years

13. Frequency of intake / starting month

Annual - September

14. UCAS Code

C500

15. JACS and/or HECoS Code

C500

16. Disclosure and Barring Service (DBS) Check Required?

No

17. Faculty & Department

17a. Faculty	17b. Department
Medicine and Life Sciences	Chester Medical School

18. Subject Benchmarking Group

QAA benchmarking Statements applied to Biosciences.2019

19. Professional Recognition By (if applicable)

None

20. Name of Module Assessment Board (MAB)

Chester Medical School Undergraduate Module Assessment Board

21. Date of Approval

Tuesday 15th May 2018

22. Educational Aims of the Programme

- To promote knowledge and critical understanding of the well-established principles of biological sciences, and of the way in which those principles have developed.
- To encourage an ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context.
- To increase knowledge of the main methods of enquiry in biological sciences, and the ability to evaluate critically the appropriateness of different approaches to solving problems in biological sciences.
- To appreciate an understanding of the limits of their knowledge, and how this influences analyses and interpretations based on that knowledge.
- To use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis.
- To effectively communicate information, arguments and analysis, in a variety of forms, to specialist and non-specialist audiences, and deploy key techniques of biological sciences effectively.
- To facilitate further training, develop existing skills, and acquire new competencies that will enable them to assume significant responsibility within organisations.
- To increase qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and decision-making.

23. Programme Outcomes

Knowledge and Understanding

Knowledge and Understanding 1. Demonstrate knowledge and understanding of the principles of morphology, nutrition, and growth in microorganisms, (MD4020,MD4023, MD4020,MD5024,MD5025)

2. Demonstrate knowledge of the techniques used in the collection, processing, analysis and presentation of data (MD4022, MD4023,MD4024,MD4020,MD5024,MD5025). 3. Determine the structure and role of organic compounds in biological systems, (MD4021, MD4020,MD5025). 4. Demonstrate knowledge of the principles and mechanisms involved in the immune system and immunity (MD4024,MD4020). 5.Understand the biology of parasites and their medical & economic impact on Humans, (MD4024,MD4025,MD5022) 6.Demonstrate knowledge and understanding of ecological concepts and how microorganisms interact with their effective environment (MD4020). 7.Determine the importance of quality control and quality assurance in microbiology(MD5023,MD5024). 8. Demonstrate an understanding of the signs, symptoms and treatment of pathogenic microorganisms(MD4024,MD4025,MD5022). 9. Determine the role of microorganisms in the production of food (MD5024). 10.Demonstrate knowledge and understanding of the principles underpinning the nature of genetic material, microbial genetics and genetic engineering (MD4021).

Thinking or Cognitive Skills 1. Describe and illustrate concepts in biological sciences (MD4020,MD4021, MD4023, MD4024,MD4025, MD4020, MD4021,MD5022,MD5024,MD5025) 2. Identify problems and utilise problem-solving skills effectively (MD4022,MD5025). 3. Select, interpret and synthesise information using a wide range of resources, to demonstrate a coherent understanding of the task (MD4021,MD4022, MD4023,MD5025). 4. Reason critically and explain concepts in biological sciences (MD4020,MD4021, MD4023, MD4024,MD4025, MD4020, MD4021,MD5022,MD5024,MD5025). 5. Analyse and evaluate information using a wide range of resources, to demonstrate a coherent understanding of the task Practical Skills (MD4020,MD4021, MD4023, MD4020, MD4021,MD5024,MD5025). 1. Perform experimental procedures to investigate microbiological concepts and apply safe working practices (MD4020,MD4021, MD4023, MD4020, MD4021,MD5024,MD5025). 2. Use laboratory equipment safely and follow laboratory procedures competently (MD4020,MD4021, MD4023, MD4020, MD4021,MD5024,MD5025). 3. Identify microorganisms by biochemical and staining techniques.(MD4020,MD4023, MD4020, MD4021,MD5024,MD5025). 4. Develop a range of professional workplace skills (MD5023). 5. Assess the use of preservatives in microbiology (MD4020,MD5024).

6. Carry out risk and Hazard Analysis and Critical Control Point Principles (HACCP) assessment of a process (MD4020), 7. Detect organisms in sample products (MD5023,MD5024,MD5025). Key Skills

- Communication (MD4020,MD4021,MD4022, MD4023,MD4024, MD4025, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025).
- Application of Number (MD4020,MD4021,MD4022, MD4023,MD4024, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025).
- Information Literacy and Technology (MD4020,MD4021,MD4022, MD4023,MD4024, MD4025, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025).
- Improving own learning and performance (MD4023, MD4023,MD5025).
- Working with others (MD4020,MD4021,MD4023,MD4024, MD4025, MD4020, MD4021 MD4022, MD5024).
- Problem solving (MD4020,MD4021,MD4022, MD4023,MD4024, MD4025, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025).

1. Structure and communicate ideas effectively in both written and oral form (MD4024, MD4025, MD4021 MD4022,MD4023, MD5024,MD5025). 2. Manage time and learning and work to deadlines (MD4020,MD4021,MD4022, MD4023,MD4024, MD4025, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025). 3. Participate constructively in groups (MD4020,MD4021,MD4023,MD4024, MD4025, MD4020, MD4021 MD4022, MD5024). 4. Be confident in the use of information and communication technologies and develop information management skills.(MD4020,MD4021,MD4022, MD4023,MD4024, MD4025, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025). 5. Work independently and use initiative (MD4022, MD4023,MD5025). 6. Transfer techniques and solutions from one area of work to another (MD4022,MD4023, MD4020, MD4023,MD5025). Transferable Professional Skills 1. Learn in familiar and unfamiliar environments (MD4020,MD4021,MD4022, MD4023,MD4024, MD4020,MD4023, MD5025). 2. Communicate effectively (in writing, verbally and development information management skills) (MD4020,MD4021,MD4022, MD4023,MD4024, MD4025, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025). 3. Apply numerical skills in a scientific manner (MD4020,MD4021,MD4022, MD4023,MD4024, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025). 4. Use Information Technology competently and appropriately (e.g. Word, PowerPoint and Excel, internet and specialist software as appropriate)(MD4020,MD4021,MD4022, MD4023,MD4024, MD4025, MD4020, MD4021 MD4022,MD4023, MD5024,MD5025). 5. Work as part of a team (MD4020,MD4021,MD4023,MD4024, MD4025, MD4020, MD4021 MD4022, MD5024).

Cognitive Skills

All the modules of the FD in Applied Microbiology will introduce to the leaners new information.

E.g.The data analysis module would introduce the learners to statistical analysis using a computer statistical package -SPSS,

The parasite module introduces the learners to different parasitic modes of infection and transmission.

The biology of diseases introduces the students to epidemiological terms such as morbidity, prevalence and incidence of diseases.

The Microbial physiology module introduces the students to the concepts involved in the immune response.

Practical and Professional Skills

The Microbial Laboratory Techniques module introduces the learners to a variety of practical techniques ranging from simple staining assignments to viable and nonviable population estimates to biochemical testing of microorganism.

The learning at work module introduces the learners to work experience where they learn new techniques carried out in industry e.g. use of API strips and membrane filter technique.

Communication Skills

Level 5 of the programme has a heavy emphasis on seminar presentations, 5 of the 6 level five modules involve a seminar presentation where the learners present information via PowerPoint, either in groups and on their own to their peers.

The seminars enable the learners to present information they have researched in a variety of visual ways. The learners can add internet links.

24. Programme Structure and Features; Levels, Modules, Credits and Awards

24a. Programme Structure and Features (levels, modules, credits, awards)

Full-time students study 120 credits per year for the two years. Part-time students study the same quantity of credits in total but the maximum time for completion is five years. The recommended part-time route would normally take 5 years to successfully complete. However, students may elect to follow a 4 or 5 year route in order to achieve the full FD Award.

Students study six compulsory core modules each year, covering essential skills and concepts in microbiology, genetics, parasitology, biochemistry and research skills.

Credits are awarded for the achievement of the learning outcomes of the modules. The modules have been closely linked to the expertise of the staff concerned with delivering them. Within the curriculum transferrable and key skills have been developed to aid personal development.

The learning outcomes at each level are carefully graded to ensure progression. Employability and subject key skills are incorporated at each level and also delivered in a progressive fashion in keeping with national expectations of graduate capabilities. The QAA (2015) benchmark statements for Biosciences have been used to guide the content of the modules and mapping has been done to ensure coverage of the statements.

24b. Module Structure

Mod-Code	Level	Title	Credit	Single
MD4020	4	Principles of Microbiology	20	Comp
MD4021	4	Basic Biochemistry	20	Comp
MD4022	4	Data Analysis	20	Comp
MD4023	4	Microbial Laboratory Techniques	20	Comp
MD4024	4	Biology of Diseases	20	Comp
MD4025	4	Parasitology	20	Comp
MD5020	5	Microbial Physiology	20	Comp
MD5021	5	Microbial Genetics	20	Comp
MD5022	5	Medical Microbiology	20	Comp
MD5023	5	Work Based Learning	20	Comp
MD5024	5	Food and Industrial Microbiology	20	Comp
MD5025	5	Project	20	Comp

24c. Credit Accumulation

Students graduate with FdSc in Applied Microbiology on completion of Level 5 having obtained 240 credits (120 at level 4 and 120 at level 5).
Students may obtain an exit award of Certificate of Higher Education on completion of Level 4 having obtained 120 credits.
Students wishing to top up to a full BSc degree can enrol on the BSc Biology programme (Level 6) following successful completion of Level 5 of the FdSc in Applied Microbiology. Level 6 of the BSc Microbiology programme is offered on either a full-time or part-time basis and students successfully completing Level 6 will obtain an exit award of BSc Biology.

24d. Details of any derogation from University Regulations (if applicable)

25. Professional Body Requirements (if applicable)

26. Admission Requirements

The programme intends to recruit students from a varied range of backgrounds and experience. Application for admission to the programme will normally be through UCAS and all suitably qualified applicants will be considered. Offers of a place on the programme will not be based solely upon academic qualifications alone and

skills gained in the workplace will also be considered. The final decision in terms of acceptance into the programme will lie with the programme leader.

Applicants should possess a minimum of 5 GCSE's grades A, B or C including English Language, mathematics and a science. For students whose education has not been English, evidence will be required of proficiency in English. Typically applicants will need to have achieved Band 6.5 in the IELTS (International English Language Testing Scheme) and/or TOEFL (Test of English as a Foreign Language) score of 589 or above. Equivalent or one or more of the following:

- Access to Higher Education Applicants should have (or expect to obtain) the full award in a relevant course.
- Successful completion of related 'A' level study with a minimum of two subjects passed or equivalent to 120 UCAS points
- Equivalent qualifications such as Scottish Cert of Education or International Baccalaureate
- National Diploma in Applied Science or related field
- NVQ Level 3 and related occupational experience

A UCAS tariff score of 120 including at least 100 points from Advanced GCE and or Vocational 'A' Levels (6 or 12 Unit awards), National Diploma or NVQ in related area is required for standard entry to this programme. (Functional Skills points are accepted).

27. Subject Benchmark Statements

The aims of the programme have been written to follow QAA FHEQ level descriptors and guidelines of the QAA Subject Benchmark Statement on Biosciences as they define the nature of the programme and identify the skills and attributes expected to be acquired by a Foundation Degree in Applied Microbiology.

28. Learning, Teaching and Assessment Methods

For details of arrangements for 2020/21 in response to the COVID-19 outbreak please refer to section 31.

St Helens College developed a Higher Education Strategy in 1990 which has subsequently been subject to three revisions and which clearly correlates with the institution's overall mission and strategic plan. A developmental feature of the Higher Education Strategy is the recent introduction of an institution wide Learning, Teaching and Assessment Strategy that reflects the value placed by the College on being learner-centred, on widening participation, on work-based learning and on employability skills. In conforming to the College's broad objectives regarding Learning, Teaching and Assessment in Higher Education, the Programme's Teaching and Learning Strategy is founded therefore upon the following core values:

· That students' prior knowledge and experience should be utilised in the learning process at every opportunity

· That students are enabled to develop from relatively dependent to more independent learners as the programme progresses

· That teaching and learning methods clearly reflect the transition from dependence to independence and are balanced accordingly at each phase of the programme

· That variety in teaching and learning stimulus is crucial to the promotion of effective learning

· That students are provided with appropriate levels of support throughout their programme to enable them to evolve into autonomous learners

As such, teaching and learning methods employed by the Programme Team will be balanced between tutor-centred and student-centred activities that enable conformity to the above core values.

The very nature of individual module aims and outcomes serve to inform teaching and learning methodology, as will the preferred learning styles of individual students.

The following range of teaching and learning methods will be employed:

Lecture – This is used to impart a specific body of knowledge to students. In most cases, theoretical concepts generated by lectures will be developed through supporting seminars (including use of multi-media presentations, video presentations and, where appropriate, guest speakers)·

Laboratory Work – This is where the students acquire laboratory skills, and appreciate the importance of aseptic techniques and the risk assessment process.

Seminars - This functions as a forum for the presentation and dissemination of microbiological topics. This is student focussed where students will present information on a selected topic to the students.

Self-Directed Learning - The concept of independent study is an integral part of the programme. It refers to the idea of student centred learning, whereby the student takes responsibility for setting his or her own goals and creating his or her own pathway of study within the framework of the course. With this in mind, the programme team will act more as facilitators, enabling and encouraging learning by developing study skills, suggesting areas of investigation and research, and providing academic advice and counselling.

Written Work – The course involves a range of written assignments. These include essays, laboratory assignments, data handling assignment and projects.

Group Work – The QAA subject benchmark (2007) document lists teamwork as one of the six categories of graduate transferable skills that needs to be demonstrated on a higher education programme. Throughout the programme, teamwork has been incorporated with progression incorporated from one level to the next. In many modules, particularly in practical work in the laboratory or poster and seminar presentations, students are encouraged to work in groups and to share ideas. The assessment in certain modules is based on group assignments.

Visiting Lectures – Students benefit from contact with a wide range of professional activities through direct contact with industrial specialists to introduce students to up to date laboratory techniques. In some insistances the students will be acting as visiting lecturers to demonstrate laboratory techniques acquired from their work place.

Individual Tutorials – This system is an extremely important element linked to the rationale of teaching, learning and assessment at St Helens College. The individual needs of the student are effectively analysed with the aim to provide a clear pathway of learning to incorporate the style which most suits the student. These tutorials can be activated at the request of the tutor or individual student, and can be utilised in addition to the mandatory tutorials afforded to each and every individual student on the course. This process has also been informed by feedback from past and current students who have identified how advice relating to achieving learning outcomes and utilising appropriate study techniques has been invaluable in supporting them towards achieving independent study and the results associated with this.

Learning and Teaching Activities A scheme of planned teaching and learning activities for each module is issued to all students at the beginning of each Semester. Assignment briefs are issued and discussed at the beginning of each Semester in order to allow maximum planning time prior to prepare. These are detailed in each Module Handbook. All pieces of practical coursework contain an element of objective evaluation and to encourage students to investigate and examine their work. The time allocation for the programme reflects

Higher Education practice in that 10 Credits = 100 hours of learning activity. The individual time allocation given to each module per week reflects the credit rating and scheduling for that Semester. Tutor contact is in the form of lectures, laboratory work, workshops, seminars and tutorials. In addition to this, students are expected to spend the identified amounts of time in research activities such as literature reviews, book reviews, and researching microbiology journals and maintaining current knowledge of contemporary issues in microbiology. The Programme is, for the most part, delivered via six sessions per week. How these sessions are used varies according to the requirements of the module content and the pedagogic strategies of the individual lecturers. There is good accessibility of staff and this helps to ensure close co-operation between students and tutors in the development of individual learning strategies and the promotion of autonomous learning.

In addition to tutorial support students are allocated a Personal Tutorial Group and a Personal Tutor with pastoral responsibility. Further learning needs are identified and supported by this system. Established practice requires students to action plan; undertake evaluation of each assignment and to identify areas of personal strength and weakness. In addition to the tutorial systems, further learning needs, where appropriate, are supported within the Learning Centre Facility.

29. Careers and Employability

The Foundation Degree will provide students with current subject knowledge together with an understanding of the theory, practice and application of a range of traditional and modern experimental techniques that could be applied to a scientific career. In addition the *Work Based Learning* module will develop transferable skills specifically intended to promote those qualities required in gaining employment or, for those who are already employed, in career advancement

The programme has also been designed to prepare students for progression to an Honours Degree in Biology if desired. The Foundation Degree will provide a strong base for those wishing to progress to Honours level.

It is expected that students who successfully complete the Foundation Degree should be able to;

(i) incorporate a systematic and rigorous approach to academic study

(ii) integrate and synthesise knowledge and understanding from different areas of microbiology

(iv) be able to competently use a broad range of practical skills as applied to microbiology

(v) implement appropriate teamwork, problem-solving, communication and presentation skills and ICT and numeracy

30. Equality

St Helens College respects diversity and is committed to equality of opportunity. St Helens College strives to ensure that no student receives less favourable treatment on the grounds of social background, age, disability, gender, sexuality, marital status, race, religion, colour, nationality, or ethnic or national origin.

St Helens College will take positive steps to eliminate discrimination, reduce the effects of past discrimination, continue the drive to increase levels of under-represented groups and promote equality in students' admissions and their experience in College. No student should be disadvantaged by unjustifiable conditions or requirements.

It is the responsibility of all students to implement and support this policy. All students of St Helens College are expected to treat each other with respect, as well as staff and visitors. Action will be taken in the case of unlawful and/or unacceptable behaviour by students.

The monitoring of progress against the policy is the responsibility of the Equality & Diversity Committee.

31. Additional Information

The Foundation Degree in Applied Microbiology, which is run at the UCSH is taking steps to alleviate the disruption caused by the Covid-19 pandemic whilst at the same time securing an excellent academic experience for the students. During the 2020-21 academic year it is expected that the FD in Applied Microbiology will be delivered by a mode of blended online and face –to-face sessions. This statement describes how this will be implemented and should be read in conjunction with section 28 of this document and section 11 of the module descriptors associated with this programme.

The hybrid model has been planned to safeguard the interest of students whilst maintaining the UCSH academic standards. This will ensure that the students can participate in high quality learning and teaching to support them in achieving the learning outcomes for the FD in Applied Microbiology, regardless of the prevailing conditions.

Learning and Teaching methods

- Large group teaching will be delivered online and may be a mix or synchronous and asynchronous delivery dependant on the material to be delivered,
- The subject content will be delivered in a variety of different ways to suit the topic and individual learning styles.
- Seminars would be designed flexibly so that they can be conducted either online or in small group setting where this can be achieved safely.
- Practical skills will be developed through supervised sessions when these can be safely facilitated; this may involve adapting the timetable accordingly. Where this is not possible, online simulation will be provided to demonstrate the appropriate technique.

Engaging students as partners

Adopting a hybrid model of delivery will result in a different type of learning experience for many students. In order to ensure that ensure that all students are able to benefit from this, the program is seeking to engage students early and often to ensure that we continue to serve their needs appropriately.

Module leaders will canvass the student experience formally and informally about the experience of teaching online.