



PARTNERS ACADEMIC SUMMER SCHOOL 2025

Syllabus for Biomedical Sciences & Nutrition

Subject Area

This syllabus is for PARTNERS applicants seeking to progress to the degrees of:

- B100 BSc Hons Physiological Sciences
- B122 MSci Hons Physiological Sciences
- B210 BSc Hons Pharmacology
- B211 MSci Hons Pharmacology
- B401 MDiet Dietetics
- B46D BSc Hons Human Nutrition
- B4D6 BSc Honours Human Nutrition with Placement
- B900 MSci Hons Biomedical Sciences
- B901 BSc Hons Biomedical Genetics
- B902 BSc Hons Biomedical Sciences (Deferred choice)
- B903 MSci Hons Biomedical Genetics
- B940 BSc Hons Biomedical Sciences
- BD46 BSc Hons Nutrition with Food Marketing
- BD64 BSc Hons Nutrition with Food Marketing with Placement
- C700 BSc Hons Biochemistry
- C701 MSci Hons Biochemistry

Aims

To allow students to demonstrate their potential to succeed in specified degree programmes by showing a grasp of entry-level subject-specific knowledge, understanding, cognitive and subject-specific skills.

Learning Outcomes

A good knowledge and understanding of ...

1. Core Microbiology Concepts

Lab plating techniques: Understanding how to culture microorganisms from samples (e.g. local/personal environments).

Staining and microscopy: Techniques for identifying bacteria using microscopes and differential stains.

Identification of bacteria: Practical lab-based analysis of bacterial colonies using

visual and biochemical cues.

2. Antimicrobial Mechanisms

How antibiotics work: Mechanisms of action, bacterial resistance, and implications for treatment.

3. Applications in Health

Faecal transplants: Exploration of their use in treating disease, such as *C. difficile* infections.

Feeding as treatment: Microbiome-focused interventions and gut health.

4. Scientific Reasoning and Group Work

Hypothesis testing and group discussion/teamwork

Reflection and scientific communication.

5. Research & Lab Skills

Lab induction and practical skills

Data collection and interpretation

The ability to apply this knowledge and critical understanding to...

- Hands-on laboratory work
Students will carry out practical activities such as plating techniques, bacterial staining, and microscopy—applying microbiology concepts in real-world lab settings.
- Problem-solving tasks and groupwork
Activities like treasure hunts, group-based experiments, and analysis of results allow students to apply scientific reasoning and teamwork to solve challenges.
- Interactive teaching sessions
Students will engage in discussions on topics such as “How antibiotics work” and “Feeding as treatment,” encouraging them to connect theoretical knowledge with clinical relevance.
- Research exploration
Sessions like “Research faecal transplants” help students apply critical thinking to understand real biomedical case studies.

Competence in...

- Microbiological laboratory techniques (e.g. plating, staining, microscopy)
- Data collection and observation from practical experiments
- Bacterial identification and analysis using lab and visual cues
- Scientific reasoning and interpretation of experimental results
- Collaborative problem-solving and teamwork during group tasks
- Scientific communication through discussion boards and group presentations
- Application of research knowledge to real-world biomedical topics (e.g. faecal transplants)

Summer School Syllabus

This summer school week is packed with engaging, hands-on experiences to help you explore key themes in biomedical sciences. Through lab work, discussions, and online tasks, you'll gain practical skills and a deeper understanding of how science connects to real-world healthcare challenges.

Content: What You'll Be Learning

Throughout the week, you'll explore a range of topics in microbiology and biomedical science, including:

- Microbiological lab techniques (e.g. plating, staining, microscopy)
- Bacterial identification and classification
- How antibiotics work and the rise of antibiotic resistance
- Clinical applications of microbiology, such as faecal transplants and nutrition-based therapies
- How to interpret experimental data and communicate scientific findings

Teaching Methods: How You'll Be Learning

You'll take part in a variety of learning activities designed to be interactive, practical, and collaborative:

- Practical lab sessions – hands-on experiments to develop your technical skills
- Group discussions and problem-solving tasks – work together to analyse data and explore real-world scenarios
- Mini-lectures and research briefings – gain insights into the science behind current healthcare topics
- Online and asynchronous learning – complete tasks and reflect on your findings through discussion boards and pre-recorded lectures

Formative assessment – present your results and conclusions through group sharing and discussion activities

Purpose & Objectives: What You're Aiming to Achieve

By the end of the week, you will:

- Gain confidence in core laboratory techniques used in microbiology
- Understand how scientific knowledge is applied to real-life healthcare solutions
- Develop skills in data collection, analysis, and scientific communication
- Experience what it's like to study and work in a biomedical sciences environment
- Build your teamwork and critical thinking abilities through collaborative tasks

Activities for Personal Study

To support your learning and help you get the most out of the Summer School experience, the following independent study activities are recommended. These will help you prepare for sessions, reflect on what you've learned, and develop your

understanding beyond the lab.

Compulsory Activities

Pre-session preparation

- Watch the pre-recorded lecture provided before your on-campus lab sessions. This will introduce key concepts and techniques you'll need in the lab.
- Complete any pre-lab worksheets or reading guides provided during the first day.
- Post-lab reflection
- Contribute to the online discussion board with your group's findings and interpretations. Reflect on what your results mean and how they connect to wider biomedical issues.

Optional (Recommended) Activities

Suggested reading

- Explore the Microbiology Society's resources for schools:

<https://microbiologysociety.org>

Explore online case studies

- NHS England case study on faecal transplants:

<https://www.england.nhs.uk> (search for "faecal microbiota transplant")

Watch: "Antibiotic Apocalypse" (BBC Horizon) – available on YouTube or BBC iPlayer.

- Skill-building tasks
- Practice using a lab notebook or observation log to document your experiments and data clearly.
- Try a free microscopy simulation online (e.g., BioMan Biology or Learn Genetics) to reinforce visual identification skills.

On-Campus Teaching:

Wednesday 2nd July (PM only) Thursday 3rd & Friday 4th July

Online Teaching:

Monday 30th June & Tuesday 1st July

Formative Assessment Details

A report, short answer posts and a multiple-choice quiz

More details will be given during the event by your Academic Strand Lead.

Hand-in Method

Digital

Assessment deadline

Friday 11th July