

Module Details	
Module Title	Sustainable Product Development
Module Code	PHA5017-B
Academic Year	2024/5
Credits	20
School	Life Sciences (Faculty-wide)
FHEQ Level	FHEQ Level 5

Contact Hours	
Type	Hours
Directed Study	170
Lectures	9
Tutorials	3

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims
To understand and critically appraise theories, strategies and tools for change that could be used to push economies and societies onto sustainable development pathways. To provide a critical understanding of the role of green processing technologies, environmental working group (EWG) guidelines and scores for personal care products, formulations with low carbon footprint, herbal ingredients and their analysis and sustainability.

Outline Syllabus
<p>Critically appraise concepts of sustainable development. UN Sustainable development goals. Organisational-level tools for change ? consumer behaviour interventions, standards and certifications, digital technologies.</p> <p>Sustainable product development: formulation ingredients with low carbon footprint, sustainable resourcing, approaches for developing sustainable formulations, green manufacturing technologies including downstream treatment.</p> <p>EWG scores for personal care products, herbal ingredients and their variability, analysis, sustainable development goals (SDGs in particular SDG 3. Good health and wellbeing, SDG 4. Quality education, SDG 8. Decent work and economic growth, SDG 9. Industry, innovation and infrastructure and SDG 12. Responsible consumption and production), and regulatory guidelines.</p>

Learning Outcomes	
Outcome Number	Description
01	Understand and critically appraise theories, paradigms, and concepts of sustainable development.
02	Applying knowledge and understanding to address familiar and unfamiliar problems in sustainable product development through ?real world? problems.
03	Systematically evaluate key issues relating to the established principles and practice of EWG guidelines for personal care products.
04	Critically appraise pharmaceutical and cosmetic formulations with low carbon footprint.
05	Critically and systematically evaluate cosmetic products made with herbal ingredients and their variability, analysis and sustainability.
06	Demonstrate effective communication, teamwork, problem-solving and critical-thinking skills.

Learning, Teaching and Assessment Strategy
<p>Students will develop the knowledge, critical understanding and problem-solving skills necessary to meet the learning outcomes of the module through the active and collaborative learning and teaching strategy Team-Based Learning (TBL). Throughout the semester, in three units, they will study the core knowledge-based content of the module out of class through guided reading, supported by interactive student support sessions, and will be assessed in a readiness assurance process (RAP). They will then engage in classroom-based team activities to ensure understanding and critical application of their developed knowledge. Activities will be based in a number of settings including classrooms and workshops. Resources for self-directed study will be provided for students. Self-directed study will include guided reading and completion of TBL Study Packs, preparation for RAPs, Application Exercise, and workshop sessions.</p> <p>TBL follows a range of assessment from individual to team and written to oral. Students are assessed through individual readiness assurance tests (iRATs). On completion of the iRATs students form their pre-assigned teams (5-7 students) and retake the assessment as a team (tRAT). Once all of the answers have been collated, students receive instant in-class feedback from the academic expert. In subsequent sessions, the same teams of students will take student-led research engagement, apply their new knowledge to a number of formative and summative Application Exercises (AEs), including role plays, problem solving and submission of reports.</p>

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Team-Based Learning Assessment	TBL (iRATs 15%, tRATs 5%, AEs 10%) [Supplementary assessment will be a reflection, 1000 words, 30%]	30%
Formative	Classroom test	Application exercise - Formative - 30 mins	N/A

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

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