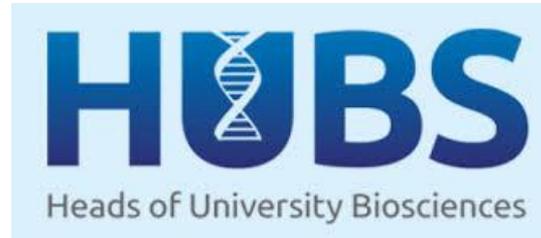




Swansea University
Prifysgol Abertawe

College of Science
Coleg Gwyddoniaeth



Work-integrated learning: Enhancing graduate employability **Swansea University Biosciences**

Heads of University Biosciences,
Royal Society of Biology

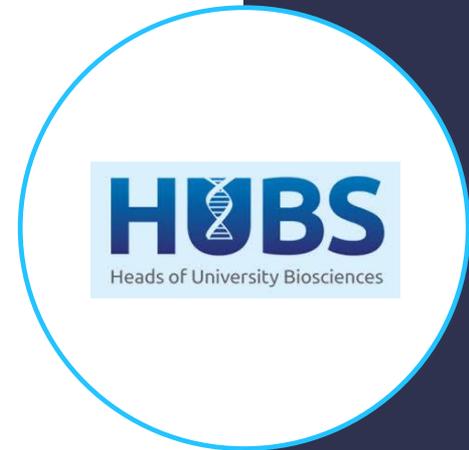
Welcome and faculty introductions

- Dr Penny Neyland, Programme Director, Biosciences
- Dr Laura Roberts, Director of Learning and Teaching, Biosciences
- Department is part of the **College of Science**
- Offer three primary UG programmes: **Biology, Zoology** and **Marine Biology**
- **Suite of Foundation, Year in Industry** and **Year Study Abroad** offers
- Environmental/ecological focused research and teaching
- Offer a lab-based stream



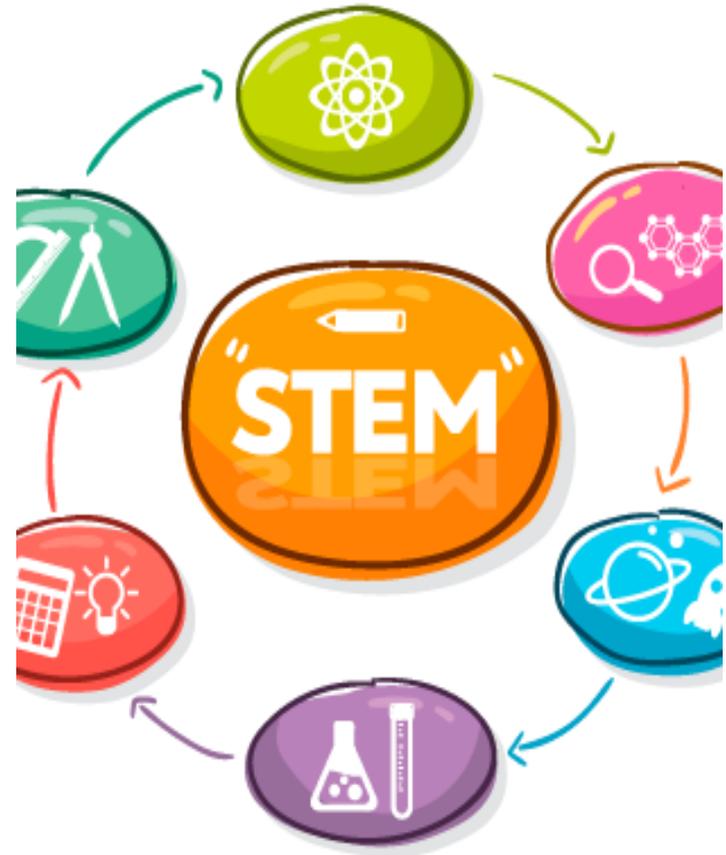
Heads of University Biosciences

- Workshop was funded by the HUBS
- Special Interest Group of the Royal Society of Biology
- Grants for teaching & learning workshops
- ***Aims to evaluate current WIL approaches and create strategies for overcoming the breadth of challenges as graduates face an uncertain economic landscape***



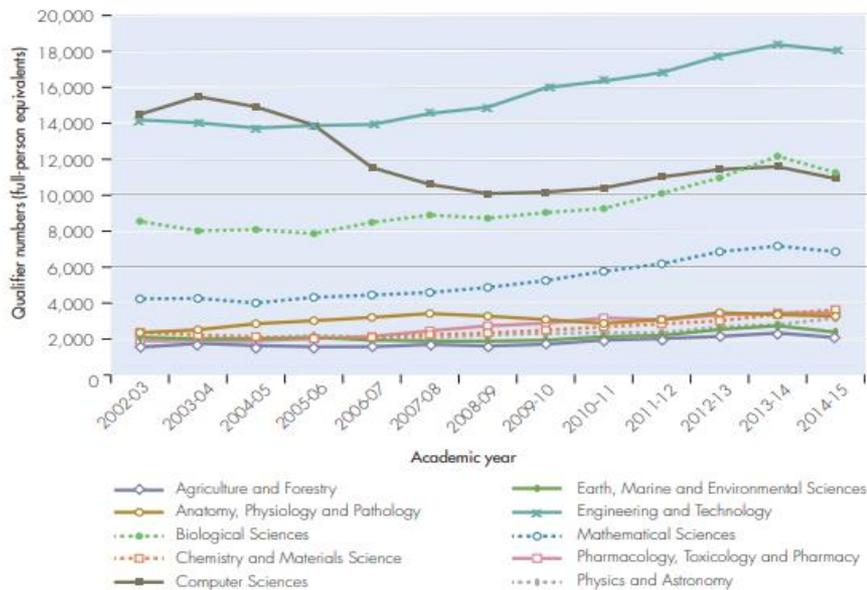
STEMM skills and knowledge gaps

- Central to **economic growth**
- Develop future innovation and services
- Policy makers, industrial and educational leaders have highlighted dissatisfaction with STEM graduates as they **lack technical and transferable competencies**
- Reports highlight **decreasing employment** outcomes for graduates (UKCES 2015)
- HE fails to produce graduates that are **'oven ready'** and **'self-basting'** (Atkins, 1999)



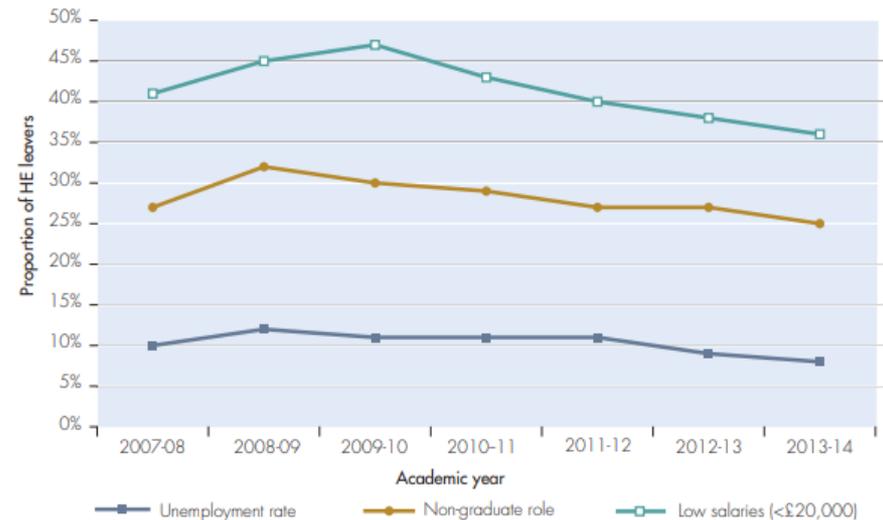
Wakeham Review of STEM Degree Provision and Graduate Employability (2016)

Figure 2 Numbers of full-time first degree graduates from STEM subjects (including Agriculture and Forestry): graduates from publicly-funded English HEIs by STEM discipline, 2002-03 to 2014-15



Source: HEFCE analysis of the HESA standard qualifications obtained population, 2002-03 to 2014-15.

Figure 3 Employment outcomes of UK-domiciled full-time first degree graduates from STEM subjects (including Agriculture and Forestry) six months after leaving HE: graduates from publicly-funded English HEIs by employment measure, 2007-08 to 2013-14



Source: HEFCE analysis of the HESA standard qualifications obtained population, 2007-08 to 2013-14. Graduates who subsequently provided a valid response to the Destination of Leavers from Higher Education (DLHE) survey six months after leaving HE.

Recommendation 5 – Increased engagement between industry and HE providers

Employers and HE providers should work more closely together in order to improve graduate employment outcomes. In particular, they should consider addressing the following areas:

- Improving the opportunities for students to take up work experience and to maintain its quality
- Embedding the development of soft skills into degree courses and improving work readiness
- Better matching degree courses to employer demand for skills
- Improving STEM careers advice and awareness of job opportunities for graduates and students, as well as even earlier in the education pipeline

- Particular shortfalls in **Biological, Environmental and Food Sciences** (Wakeham, 2016)
- Also Marine and Freshwater Biology (IEEM, 2011)
- Need to provision future generations with the ability to develop and apply innovative strategies to address high risk environmental damage
- Particularly important as human population expansion, climate change and unparalleled species extinctions challenge global health
- Limited evidence an **employability-based agenda** has transferred into employment



How do we actually know what employers want?

- 25 years of an employability agenda and debate surrounding graduate skills
- Confederation of British Industry (CBI):
 - 34% businesses said the **quality of STEM graduates** was **not good enough**
 - 46% said they **lacked experience** in the workplace.



Questionable underlying assumptions:

1. *The knowledge and skills **we provide are what employers need***

- How do academics know what employers need?
- Is there a cultural divide between research-led academic programmes, traditionally focusing on pure theoretical concepts, diverging significantly from the applied nature of the ecological sector jobs?



2. We know how to develop these skills into *meaningful* learning experiences

- Graduates themselves sense they are inadequately prepared for employment in practical work, lacking specialist knowledge and advanced technical applications (Scott 2005)



3. We are not *detracting* from critical subject skills and replacing with general transferable skills

- Employment driven agendas focusing on transferable skills **replace the pure, in-depth pedagogical processes** associated with the theoretical study of a discipline (Hennemann & Liefner, 2010)
- Examples of best practice indicate teaching transferable skills should be **non-mutually exclusive and taught concurrently with hard knowledge-based topics** (Scott, 2005).
- Can lead to **crammed curriculums** and requires trade-offs and compromise
- Likely to incur **planning and prioritisation** errors and requires continuous review and refinement



HEI pressures to produce work-ready graduates

- Increasing pressure:
 - **Subject level TEF metrics:**
 - Highly skilled employment or higher study
 - Sustained employment or further study
 - Above median earnings threshold or higher study
 - **Guardian league table:**
 - Career after six months
- Metrics often fail to consider **economic flux and uncertainty, demographics and student profiles**



Work-integrated learning

- *Deliberate pedagogic approaches that blend the study undertaken by students within the classroom with experience of practice in the workplace* (Sachs and Rowe 2016)
- Students benefit by gaining a **better comprehension of industry-required** skills and an appreciation of the world of work (Jackson 2015).
- **Benefits are mutualistic:**
 - graduates with work experience conform to the **needs of stakeholders**
 - **promise a better return on investment** as they provide skilled, adaptable, low-cost employees that can enhance long-term national productivity (Smith 2014).



A range of WIL activities are now employed, each with variability in their application and utility;

- modular to programme level
- departmental to institution
- regional, national and international (Patrick *et al.*, 2008; Sacks *et al.*, 2016).

employability

experience

occupational

training

work-re

career-ready

integrated learning

internships

placement

practice-based

fieldwork

practice

vocational

learning

Current HE strategies for WIL

Within the institution

- Integration into learning outcomes within modules
- Stand alone courses
- Work-simulated learning

Both workplace and institution

- Work experience modules

Within the workplace

- Year in Industry/Sandwich year
- Funded short term (4 weeks) experience
- Funded internships

Trade-off and compromise

Each WIL strategy persists on a continuum of **benefits and costs** for students, HEIs and employers.

variation in faculty verses employer control of content,

delivery,

logistics,

administration,

study duration,

financial and resource costs

Continuous evaluation and adaptation

- Each factor can **unpredictably fluctuate** and requires regular reviewing and strategic intervention.
- E.g., in the UK there has been a rise in the number of programmes offering year-long industrial placements
- Recent cuts to **maintenance loans** has compromised their accessibility (Gov.uk, 2019).
- This is particularly problematic for disciplines within the ecology and conservation sector (Blickely *et al.*, 2012).



Towards a national strategy?

- Australian Government has recently adopted a National Strategy on Work-Integrated Learning in HE
- No such national strategy exists in the UK
- Institutions independently drive their employability opportunities (Smith, 2012; Jackson 2015, HDfE, 2017).



Aims of the workshop

- Observe and evaluate strategies for WIL
- Consider best-practice and identify beneficial strategies
- Develop a strategy for enhancing own practice

