Offering an alternative research experience within a taught masters programme

Louise Horsfall
• iGEM introduction
• iGEM as a teaching resource
• MSc programme integration
• iGEM influence
iGEM introduction

• iGEM* is a synthetic biology competition

*International Genetically Engineered Machine
iGEM introduction

• Requiring multidisciplinary teams or interdisciplinary working

“And that’s why we need a computer.”
• Promoting synthetic biology teaching and understanding

“What I cannot create, I do not understand.”

- Richard Feynman
• Providing the community with genetic parts and ensures the adoption of synthetic biology standards
iGEM introduction

• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
Democratising and popularising synthetic biology
iGEM introduction

• Democratising and popularising synthetic biology
iGEM introduction

- Democratising and popularising synthetic biology

2010
• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology
• Democratising and popularising synthetic biology

40+ countries
340 teams
5000+ attendees
35,000+ member community
iGEM introduction

• Provides students with an international experience
• Welcomes them into an international research community
• Unites them through a shared experience
• Networks them with leaders in the field
• Encourages both entrepreneurship & further study
iGEM as a teaching resource

- respects individual learners
- demonstrates the effectiveness of self-regulated learning
- strengthens teaching-research synergies
- educates through hands on problem solving
- offers an authentic research experience
- transparent assessment/learning criteria
- evolving to further interdisciplinarity

- incredibly resource intensive, eats time and money
MSc programme integration

- Uses teaching lab space & technician
- More realistic research experience
- Individual projects for individual dissertations
- Degree takes priority until submission deadline
- iGEM deadline ~ October
- Interdisciplinarity becomes a challenge

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>60 credit taught component</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSB Design project</td>
<td></td>
</tr>
<tr>
<td>70% - 10 credit</td>
<td></td>
</tr>
<tr>
<td>Biodesign – 10 credit from 2020</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>60 credit taught component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research project proposal</td>
<td></td>
</tr>
<tr>
<td>75% - 10 credit</td>
<td></td>
</tr>
<tr>
<td>Social Dimensions</td>
<td></td>
</tr>
<tr>
<td>20 credit</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>60 credit research component</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Research lab</td>
<td></td>
</tr>
<tr>
<td>- Industrial placement</td>
<td></td>
</tr>
<tr>
<td>- iGEM team</td>
<td></td>
</tr>
</tbody>
</table>
• teach skills to enable independence
• importance of peer learning and self-regulated learning
• offer a rich, lively and vibrant learning experience
• ensure students can identify high quality work and can relate this knowledge to their own work
• continuing professional development and annual evaluation/revisions
Preparing for independence

- guided learning experience for both students and supervisors
- 2 levels of supervision, advisor and instructor – open to all
- experience in seeking funding, resource management, supervision, interdisciplinarity, translating through to impact
- focus on the medals not prizes the criteria are clear!
- as a supervisor, identify what worked and why
- pass it on
- builds networks for all
• not sponsored by
• not endorsed by
• not approved by

• iGEM diversity committee member
Thanks to...

And thank you for listening!