**“Giving Girls another Chance to Choose Physics and Engineering”**

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**Alternative admissions criteria for Physics to remove barriers for applicants without traditional Maths and Physics Higher qualifications**

**Background research**
- Although girls show an interest in physics at an early stage, gender balance in Physics A-levels and Higher has remained static for the last 30 years.
- The number of women taking civil engineering at UCL "surged" in 2015 after it dropped the requirement to study physics and maths at A-level.
- "Disruptive Diversity" (Dawn Bonfield, 2015) quoted interventions in Canada and US, where removing Physics A level criterion helped students and parents consider engineering. Increase from 18% to 30% female intake in 8 years at the University of British Columbia.
- Widely reported lack of physics teachers in UK. Schools not offering Physics Higher, or requiring students to go to other schools for Physics.

1. **Research conducted/planned**
   - **Initial Plan**
     a) Examine potential impact of changing from traditional Admissions Criteria. Initially Physics, also looking at Mechanical and Civil Engineering and Games Technology.
     b) Pilot project using gathered field approach, perhaps favouring female applicants.
     c) Consider revised standard offers in Physics, Engineering and Computing subjects for future years.

Following internal discussions we considered the following:
- Dropping requirement for Physics, for all female applicants only. Dropping the physics requirement was thought to be fairly low risk academically.
- Dropping requirement for Maths, for all, for female applicants only. Dropping the Maths requirement "could" work academically. Current Physics students take their first year Maths modules alongside other subjects without Maths Higher.

**Opening trial for Male and Female applicants**

(With guidance from ECU, and to avoid formal use of Positive Action at this point.)

2. **Research planned**
   - Deliver questionnaires to schools in Paisley. S5/S6 pupils. June 2017
   - Conduct Focus Groups to S5/S6 pupils.
   - Analyse and discuss collected data.
   - Type of school selected for Focus group and questionnaire activity, on interest in Physics at S5/S6 by students who have / have not taken Physics Higher.

<table>
<thead>
<tr>
<th>School</th>
<th>Physics Taken</th>
<th>Bright / No Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SIMD 20</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mixed SIMD 20</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>High SIMD 20</td>
<td>1</td>
<td>1</td>
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3. **Activity to date**
   - Background research and producing project proposal.
   - Papers and presentations prepared for School Board, Education Forum, of School of Engineering and Computing.
   - Looking into the Physics and Maths entry requirements in relation to UWS and local area. Attracting Diversity institutional visit to UWS by Prof Liz Thomas, and David Bass November 2016, including meetings with Dean of School and Programme Leaders.
   - For the first time Programme Data Profiles by gender made available via dashboards in the University and recommended for use in School Annual Monitoring.
   - Dean met with Programme Leaders. An agreement on Standard Offers was established.
   - L7 entry criteria for Aircraft Engineering, Mechanical Engineering and Physics/Physics with Nuclear Technology for 2017/18 becomes:
     - Higher: BBBC including Maths and Physics or Physics/Physics H: BBB including Maths at B grade and Nat. 5 Physics at B grade.
   - Intended for Schools to be informed by letter in January 2017 – this was delayed.
   - Interested external stakeholders have been kept informed since November 2016 (and before). ECU Scotland, IOP (Scotland and UK), IOP Improving Gender Balance project, some schools, Royal Academy of Engineering.

4. **Planned activity**
   - Meeting of School team (Admissions, Programme Leaders) to ensure that aims of project are clear, and admissions procedure will work for these applicants.
   - Evaluate and evolve the standard admissions criteria for Engineering and Physics for 2018/19, plus potential revision of year 1 for Physics and Engineering.
   - Consider other subjects in the School with Maths/ Physics entry criteria, e.g. Computer Games Technology.
   - Carrying out focus group project on attitudes of local pupils, carried out in schools, to get more local context. Also questionnaires for pupils. Also further informal gathering of information.

5. **Learning to date**
   - Importance of reducing barriers. Identify the ones we (Universities) can actually influence.
   - Need to target a different approach to gender balance than purely outreach - Physics is not an unpopular subject overall.
   - Internal attitudes within the disciplines are very significant in resisting change.

6. **Initial findings**
   - Findings relating to institutional implementation.
   - Results from focus groups with schools will be obtained after 15/06.

7. **What we need?**
   - **Info/data that anyone holds / is aware of:**
     - Outcomes from any similar recent initiative.
     - Relevant new analysis of recent data.

8. **What can we offer?**
   - Experience of this project.
   - Share knowledge and references.
   - New data from our focus groups.
   - Any results from applications in 2017/18.