NEWNHAM COLLEGE
CAMBRIDGE CB3 9DF

The Newnham Engineering Prize 2016-17

The Newnham Engineering Prize is open to all **girls currently in Year 12** (Lower Sixth) at a UK school. The prize may be of particular interest to those studying Physics, Mathematics, Further Mathematics, Chemistry, Biology, Design and Technology or Economics, but we welcome entries from interested students studying any combination of subjects.

Entrants are invited to submit a response to any **one** of the questions overleaf. Submissions should be 2,000 – 2,500 words, including footnotes and captions, but not bibliography. All sources must be appropriately acknowledged and cited, and the bibliography should include websites consulted. Up to **five** entries may be submitted per school.

There are many angles from which to approach each topic. Good submissions will present a clear argument, be well illustrated where appropriate, and specific examples or cases where possible.

Each of the Newnham Essay Prizes has a first prize of £400, a second prize of £200, and third prize of £100.

Entrants should upload their submissions to the webform, found here:
http://www.newn.cam.ac.uk/admissions/undergraduates/newnham-essay-prizes/

The **cover sheet** should also be uploaded to this webform. Please ensure that a school/college representative has completed the appropriate section. Entries will not be valid without this information.

The deadline for receipt is **12pm on Friday 3rd March 2017**. For any queries not answered here, please contact Sophie Parry (Schools Liaison Officer) by email at slo@newn.cam.ac.uk or by telephone on 01223 330471.

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The Newnham Engineering Prize Questions: 2016-17

1. Select some interesting industry (in decline, or thriving) or engineering construction (historical or contemporary), either local or that you have come to know about, and outline and discuss the physical phenomena and scientific and/or engineering principles that it is based upon or applies.

   For an industry in decline you might consider the reasons and whether any further application of science or inventiveness might improve matters: for a thriving industry you might also consider the reasons, and what might improve matters even further. For a construction you might consider whether things could have been done better, e.g. with different design or layout, or different materials.

2. Write an essay on one of the following:
   a. Will HS2 bring benefit or the reverse to the nation? (and will it be worth the expense, in view of alternatives?)

   b. Should the push for energy supplies not dependent on fossil fuel concentrate on solar panels in preference to wind farms, or on some other technology?

   c. The 'hyperloop' - will it help solve our transport problems?

   d. Engineering in medicine.

3. On the website of the Royal Academy of Engineering at http://www.raeng.org.uk/publications/reports/the-universe-of-engineering is a report on The Universe of Engineering. In Annex 2 Case Studies of Leading-edge Engineering there are brief notes on six topics: Drug delivery systems engineering, Performance sportswear, Counter terrorism, Crowd management, Environmental fashion, and Noise control.

   Select just one of these six topics – not the other two listed in Annex 2, which were much written about earlier - do some appropriate reading and searching of websites, and present an expanded description of what is being done or developed, concentrating on the various physical phenomena being exploited and scientific and/or engineering principles being applied.