

# Dr Deborah Adkins

## Expertise: Building Physics and Low Carbon Heating



Lecturer - Building Physics and Sustainability  
 Program Lead - BEng Architectural Environment Engineering



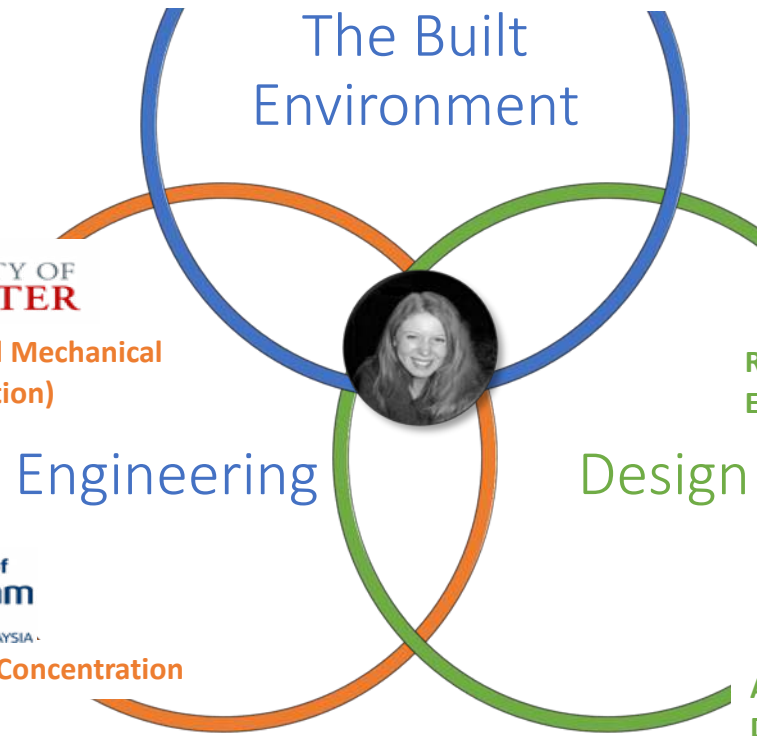
Wallcourt Fellow in Sustainable Buildings  
 Senior Lecturer - Building Physics and Sustainability



Masters in Advanced Mechanical Engineering (Distinction)



PhD in Photovoltaic Concentration



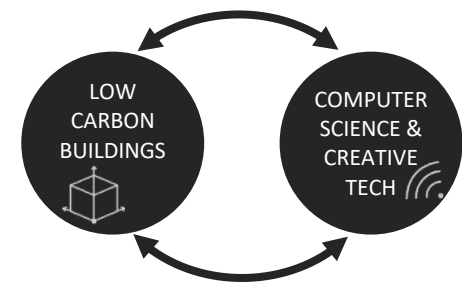
**Imperial College London**

Research Fellow, Dyson School of Design Engineering, Imperial College London



**Royal College of Art**  
 Postgraduate Art and Design

Associate Lecturer: Engineering Analysis, Energy and Design and GIZMO mechatronics and robotics



### The Average UK Home: The Hidden Costs

A semi-detached house built in the 1930s

90m<sup>2</sup> Approximate floor area      7.5kW Current floor heat  
 1 in 6 UK homes were built between 1930 and 1950      4 million Properties in UK

**Energy Use**

Taking an average 1930s semi-detached house of 90m<sup>2</sup> floor area, with some insulation and gas-fired central heating, uses approximately 20,000 kWh of energy per year for heating, hot water, cooking, lighting and appliances.

Heat costs are approximately £1600 per year and carbon dioxide emissions are approximately 4.6 tonnes per year.

**Insulation**

Insulation	Cost	Energy Savings	CO <sub>2</sub> Savings
Loose-fill cavity wall	£1000	10%	0.5 tonnes
Loose-fill loft	£1000	10%	0.5 tonnes
Loose-fill garage	£1000	10%	0.5 tonnes
Loose-fill under floor	£1000	10%	0.5 tonnes
Loose-fill around windows	£1000	10%	0.5 tonnes
Loose-fill around doors	£1000	10%	0.5 tonnes
Loose-fill around roof	£1000	10%	0.5 tonnes
Loose-fill around ground	£1000	10%	0.5 tonnes
Loose-fill around driveway	£1000	10%	0.5 tonnes
Loose-fill around garden	£1000	10%	0.5 tonnes
Loose-fill around fence	£1000	10%	0.5 tonnes
Loose-fill around path	£1000	10%	0.5 tonnes
Loose-fill around wall	£1000	10%	0.5 tonnes
Loose-fill around gate	£1000	10%	0.5 tonnes
Loose-fill around fence	£1000	10%	0.5 tonnes
Loose-fill around path	£1000	10%	0.5 tonnes
Loose-fill around wall	£1000	10%	0.5 tonnes
Loose-fill around gate	£1000	10%	0.5 tonnes

**CO<sub>2</sub> Emissions**

Space heating (54%)  
 5% of the heat comes in through the building fabric, 1% due to the heating system and 9% due to infiltration and ventilation.

Electricity use for lighting and appliances (26%)  
 9% due to lighting and 27% of emissions are attributed to appliances.

Hot water (16%) and cooking (6%)



[Deborah.adkins@uwe.ac.uk](mailto:Deborah.adkins@uwe.ac.uk)