



## SISP 1314

# Engineering Design of Solar Car

### Course Description

The main objective of the course is to encourage students to develop their own project idea and/or extend their knowledge and skills to design engineering related product, i.e. solar car. Various fundamental knowledge, including configuration of the solar car, battery and its performance, motor and its application, fundamental of design and manufacturing in mechanical system, as well as solar panel and thin film will be covered. Students will be given an opportunity to design and build a solar car in small scale through laboratory sessions. They will work in teams, preferably with teammates across different schools to identify the needs for their proposed idea, thereby developing their problem-solving, communication, interpersonal and project management skills via this entire experiential learning approach.

### Topics

1. Introduction to Solar Car, team formation
2. Design: Understand How Designers Use Inspiration from Nature  
Discussion 1: Conceptual design of the Solar Car
3. Technical knowledge on solar panel and thin film  
Discussion 2: Innovative idea of Solar Car  
Build 1: Introduction to CAD drawing
4. Build 2: Practical design via CAD drawing
5. Solar panel experiment
6. Build 3: Practical design via CAD drawing
7. Build 4: Finalize the Solar Car

### Grading Scheme

- Assignment (20%)
- Course Participation (20%)
- Experiment (30%)
- Presentation (30%)

[Topics and grading schemes are subject to change as deemed appropriate. Students will receive information and guidelines in class on how they will be assessed for the course.]

### Attendance Requirement

Class attendance is expected and required. The minimum attendance required is 70%.

### Teaching mode

The course will be conducted via Zoom.

### Instructors

#### **Prof. Robin MA**

Prof. Ma obtained his Ph.D. in the School of Materials Science and Engineering at the University of New South Wales (UNSW), Sydney. He has been active in engineering education for over 15 years. He is an Electron Microscopist, having carried out nearly 8 years of research work in the world class electron microscope centers in both Sydney (Electron Microscope Unit at UNSW) and Melbourne (Bio21 Institute). He was also an engineer at the AJAX Engineering Fasteners (Melbourne) in 2006. He also has an increasing involvement with new approaches to education, including experiential learning, blended learning and undergraduate research. He believes that this broader contemporary approach is beneficial for students, especially for engineering students preparing for professional careers. On the other hand, he is the Director of the Centre for Industry Engagement and Internship (IEI) in the School of Engineering (SENG) at HKUST.