Symposium on Engaging Undergraduates in Research And Inquiry:

A scholarly Dialogue, May 20, 2011, HKUST

1. **Project/Course title**

Innovative project design competitions

2. **Project/Course team**

Name	Institute	Post	Department/ Division	E-mail
Course Instructor/Project leader: Prof Tim WOO	HKUST	Visiting Assistant Professor	ECE	eetim@ust.hk
Members (if any):				

3. Project/Course objectives (or Intended Learning Outcomes) *(Suggested number of words 30-40 words)*

What did you intend students to learn from this project/course?

```
The independent design project encourages students to participate in design
projects, targeted mainly for external design competitions. The experience
will enable the students to gain technical skills in designing and building
prototypes, sharpen their communication and presentation skills, apply
technology creatively in practical applications, and learn and experience
how to cooperate as a team to accomplish a competitive project.
The objective of the courses is to develop students' motivation and
independence in creating and designing innovative solutions to both everyday
and engineering problems. A highlight of the courses and a keen motivator
for the students is that their resultant designs are also entered into
various external design competitions.
```

After completing this course and entering into an external project competition students are expected to be able to:

- Apply technology creatively in practical applications;
- Gain writing skills in proposal and technical report writing;
- Sharpen communication and presentation skills;
- Gain technical skills in designing and building prototypes;
- Learn and experience how to cooperate as a team to accomplish a competitive project.

DURING

4. Inquiry Based Learning Activities (*Suggested number of words: 75-85 words*)

What did students do (inquiry-based learning activities) during the course/project?

- Workshops (if any): encourage student to attend workshops for preparing the proposal and/or presentation
- Scheduled class time: encourage student to participate in class discussions
- Written project proposal, project report: students have to address their design concepts in laymen terms.
- Two Rehearsals of presentation: help the students to prepare their final presentation.
- Final Presentation:
- A3 poster: Students provide a summary of their design project
- A hardware prototype (if any): gain technical skills in designing and building prototypes
- Students' Project Portfolio: Keep students' work in well-organized html file.

AFTER (*Suggested number of words for items 5 & 6: 50-60 words*)

5. How did you assess the effectiveness of students' learning?

Please give an account of the assessment methods and results.

Students were assessed on their proposals, progress and final reports, presentations and holistic development by the instructor, self and peers using the grading rubrics.

6. What were the major outcomes of this project/course? Do they match with your objectives (or Intended Learning Outcomes)?

Examples of outcomes include educational software, improvement in student learning or change in student attitude.

More than 80% the surveyed students of two courses agreed or strongly agreed that (1) the rubrics for the course project was clear to them, (2) the progress meeting report and final report helped them to track their progress and summarize their experience in the course project. These assessment methods are also applied in the Robotic Design Competitions

Students' awareness of the needy in the community was also aroused. A more humanistic image / angle of engineering which social benefits layman can relay to was cultivated in students' mind.