2016-2017 Guidelines To

Keystone Project

Fan Gongxiu Honors College



GUIDELINES TO KEYSTONE PROJECT 2016-2017

Fan Gongxiu Honors College, BJUT

I. Introduction

The Keystone Project is designated to open to sophomore students at Fan Gongxiu Honors College who have completed major fundamental courses and started core courses in the fields containing their prospective program choices. Such required courses include, but not limited to, Calculus, University Physics, Introduction to Engineering Basics, Engineering Graphics, Circuits Analysis, Mechanics, Electronics, etc. The goals of the Keystone Project is to further expand the design capability, hands-on experience, and project management of the students in their own fields of study. The project, accompanying two University Honor courses of Research Method (UHN 201), and Project Management (UHN 250), also trains the students systematically in solving real-world problems in their broad engineering disciplines.

II. Educational Objectives

The Keystone Project has a number of educational objectives. Although each Keystone Project is different and the relative emphasis will vary, the subject will involve students in:

1. Bringing together and integrating college-level fundamental knowledge and engineering skills learned so far as a whole;
2. Reinforcing and developing competencies that have not been sufficiently emphasized in the fundamental subjects;
3. Defining a substantial engineering study or design task and carrying it to completion within a specified time and to a professional standard;
4. Completing a comprehensive written and bound report that places the Keystone Project in context, defines its objectives, and describes the work done with the resulting conclusions or recommendations;
5. Bridging the gap between the fundamental studies and concentrated major studies, and demonstrating improved professional competencies and capabilities;
6. Demonstrating initiative and creativity, taking pride in the achievement of a task with moderate complexities.

Through this project, students are expected to be more focused and prepared in their respective major studies.

III. Types of Keystone Project

The proposal to each project is essential to be in line with the Keystone core spirit and general requirements. Projects should be heuristically viable by identifying substantial design and conceptualization potential instead of merely minor changes on the scale of design or duplication of existing systems. It also should be delimited under a six-month time-frame. In view of previous experience, we have effectively broached and crystallized three types of projects:

1. **Industry Projects:** Industry representatives would define the project requirements, and provide guidance to the student team during the semester. These projects are often those which the company needs to have completed, but either does not have the resources to complete, or is willing to treat them as "back-burner" needs. Sometimes the project can provide opportunity for a fresh look at efforts underway within the company. The company needs to identify a resource person within the firm to answer student questions, meet with the student team periodically for progress reviews, and attend the final presentation at the end of the semester.
2. **Student Extra-Curricular Projects:** BJUT students are involved in a number of extra-curricular projects every year guided by faculty members, such as the Spark Project, National Innovation and Entrepreneurship Project, Excellent Student Training Project, as well as self-initiated faculty research projects in each academic departments. There are often specific design efforts which can be carved out of these projects for the Keystone design teams. These projects also have opportunities for industry participation or sponsorship.
3. **Student Design Competitions:** There are several engineering organizations that sponsor student design competitions. Our university revises and publishes a list of such student competitions every two years. For example, IEEEXtreme is a global challenge in which teams of IEEE Student members—advised and proctored by an IEEE member—compete in a 24-hour time span against each other to solve a set of programming problems. The next competition IEEEXtreme 11.0 will happen in Fall, 2017. Other student design competitions include National Virtual Instrument Competition, National Electronics Design Competition, National Mechanical Design Innovation Competition, etc., as well as others at provincial and municipal levels. These projects also have opportunities for industry participation or sponsorship.

IV. General Information and Requirement of the Keystone Project

1. All students need to form teams to work on the project, with clearly identified team leader. A maximum of 4 students per team is allowed in each team.
2. The project has to be HIGHLY engineering and related to the fields containing the future of your major program choice. The fields in this year are restricted to be in one of the following four broad fields: (1) Electrical and Computer Engineering, (2) Materials Science and Engineering, (3) Civil and Transportation Engineering, (4) Energy and Environmental Engineering.
3. The project discussion will share significant class hours with UHN 201 (Research Methods), and require a proposal, an update, a final report, and showcase as the course goes on. The detailed format and organization of each report will be announced separately.
4. The Keystone advisors can be selected from the adviser database of the Honors College or other voluntary advisors that the team feels appropriate.
5. The Honors College provides funding support for each project up to 10,000 RMB. Additional cost can be requested in the proposal and evaluated upon

qualification from the judgement committee.

V. Timeline

1.	Proposal	First Week of Spring Semester, 2017
2.	Update	Second week of May, 2017
3.	Final Report	Last Day of the 18th academic week of Spring Semester, 2017
4.	Show Case	Annual Scholarship Awards Ceremony of 2017