





2016-2017 Guidelines To

Cornerstone Project

Fan Gongxiu Honors College

Cornerstone Project: Introduction

The Cornerstone project at Fan Gongxiu Honors College is your opportunity to complete a major research or creative project in your freshmen year, in partial fulfilment of the requirement of the University Honors Course UHN 101 & 102, Introduction to Engineering and Engineering Design. It is how you fulfill the Honors "Width" requirement. You choose the topic yourself in major engineering disciplines; you have the resources of a major research university at your disposal; you are mentored by a faculty member you have asked to supervise you; and you complete a project that serves as the "Cornerstone" of engineering majors: the foundation of your entire undergraduate career. For many it also marks the beginning of a serious research or professional trajectory. It's an exciting, pivotal project.



Projects typically take one and half semesters to complete, and they come in many varieties: robotics, mechanical design, software development, transportation planning, materials synthesis, water treatment, microelectronics fabrication, building environment, biomedical devices, automobiles, information security, internet of things, and more. Students who have completed Cornerstone projects routinely cite them as the most lastingly important part of their undergraduate education. They also give the same advice, year after year, to the students who follow them: choose a topic you are passionate about, and begin early!

Cornerstone begins in the late fall of your freshmen year when you select a topic, find an advisor, and submit the Cornerstone Proposal Form to Honors for approval. You'll learn more about how to do that below. The following Spring, you continue to develop your project with your advisor, and submit an Update Form describing your progress in April. This process assures that you make a strong start on the project, and are able to continue to work on the project over the whole semester.

Fall semester of your freshmen year is a crucial time: you will complete much of your background review/study and begin writing drafts of your research proposals. Students who act fast may have started the first iteration of their project. At this point, you should be meeting with your advisor every week to review your prepared

work and exchange ideas. By the end of the semester, you will have a clear planning of your research project. During the Fall, you also need to register for UHN 102 (Introduction to Engineering and Engineering Design II) for Spring. You have to continue to work on your proposals during the winter break, if necessary.

In the Spring semester, it is time that you be significantly involved in the research project and eventually complete the project. At the beginning of the semester, you should be submitting a completed research proposals. You will need to ensure that the quality of your proposal matches the quality of your project; this may entail working with the Honors Writing Consultant, in addition to working with your Cornerstone advisor. The completion of the project will include your successful pass of the interim report, submission of the entire project on Cornerstone Project Due Day, and present it to the wider Honors community on Cornerstone Presentation Day. At Honors Convocation we celebrate your achievement: you are individually recognized and given a medal to wear to your College Convocation -- and to keep. Every completed project is printed in a bound volume and held in the college as part of the college history; stop by to have a look at them.

There is significant funding for Cornerstone projects, awarded competitively, averaged in amounts up to 10,000 RMB each, through the Undergraduate Spark Fund and Fan Gongxiu Honors College Student Research program. Additionally, prizes (including 1000 RMB cash awards) are given annually for the best project in the Honors Convocation.

Getting Started

Many students begin on their own: you come up with a topic, find a faculty member to mentor you, and you're on your way. There are also significant number of Spark Fund project titles available for you to choose from, if you want to use one of them as your Cornerstone project.

Remember that you must submit a signed Cornerstone Proposal by the end of the Fall Semester!

If you want additional help, here are some options. Whatever path you follow, be sure to choose a topic you are enthusiastic about!

- Attend one of the Honors "Getting Started" Assemblies for the Honors College in the Fall. We present information and suggestions to help you brainstorm a topic, find an advisor, and get started on your project. For many students, this is sufficient to get them started.

- Many departments in the freshmen orientation series offer "Undergraduate Research & Competition" seminars which guide you through the start-up process. Usually such seminars will provide the basis for your Cornerstone project with fellow students to help you begin. No two seminars are alike, so find out if your intended major offers one and check it out.

- The UHN 101 course instructor will also answer your questions regarding how a Cornerstone project is best scheduled. You can also talk to your UHN 120 (Science and Engineering Colloquia of Honors College) instructors for possible research options. First research what kinds of work those faculty are pursuing in their labs, then talk to them about joining.



Cornerstone Proposal

You begin by submitting a Cornerstone Proposal Form through the Honors Cornerstone project web site, signed by your Cornerstone advisor.

Don't obsess – yet!

Remember that this is the initial proposal, not the finished product! You will need to do preliminary investigation and planning, but you don't need a fully detailed plan for the entire project. You need a clear exposition of your project idea, and an advisor who attests that this is a "workable" project and has agreed to mentor you. Your proposal should be your best current understanding of what the project involves. We know, and so should you, that the project will evolve as it progresses. Your advisor will help you refine your topic – narrowing or expanding as necessary. The point is to make a strong beginning. Yes, you're an Honors student, and we expect you to be thorough. But save that "obsessive-compulsive" energy for the end of the project! Here we want to see you dig in and get started.

Cornerstone Update

In the Spring, you submit a Cornerstone Update Form. The Update asks for information on your progress: an initial bibliography, a brief explanation of your methodology, and a fleshed out timeline. This helps assure that you, your advisor, and the Honors Program are all "on the same page" about your progress and the timeline for your future work. The forms are on our website; they include a useful outline to help you fill them out.

Our goal is for you to end the mid-semester with the momentum you need to continue your research and creative work over the rest of the semester and ready to shift into high gear. Doing so will help you have a more successful – and much less stressful – Spring Semester!

Cornerstone Timeline

You construct an individual timeline with your advisor; timelines vary depending on the type of project you are completing. But the due dates for Proposal and Update apply to everyone.

Fall Semester	Begin selecting a topic and finding an advisor
Late November	Honors “Getting Started” Assemblies
Jan 13	Cornerstone Proposal Due
Feb - April	Work with your Cornerstone advisor to develop your project
April 15	Cornerstone Update Due
April - June	Continue and Accelerate your research/creative work
June 9	Submit first draft or version of your complete project to your advisor
June 16	Submit revised draft or version of your complete project to your advisor.
June 23	Submit final draft or version of the complete project to advisor for last revisions.
July 1-14	Cornerstone Presentation Day and Convocation
July 14	Final Due Date for all Cornerstones

Remember: To continue your Cornerstone project, you must submit a Cornerstone Proposal by the end of the Fall Semester!

Types of Cornerstone Projects

The Cornerstone project allows you, working closely with an advisor, to define and complete a line of research or creative activity appropriate to the start of a serious and substantial undergraduate program of study. The Project is typically done in all varieties of engineering major, although it may be directly related to your intended major in the future. Projects can be undertaken in any engineering discipline offered at the university, and may take a variety of forms, including engineering design projects, fundamental studies, in-depth research papers, computer programming, and more. You may base your Cornerstone upon work completed for a Spark Fund project in your intended major, but to qualify as an Honors Cornerstone, your project must be greater in extent than the “standard” Spark Fund project, and deemed by your advisor to be of honors quality. Students with multiple majors generally complete their Cornerstone project in one, but often incorporate insights or expertise from their other major(s) into the final work. Fully interdisciplinary projects are also possible. The Cornerstone project provides excellent preparation for your future study in engineering and is also a solid credential. But its most important satisfactions are intrinsic: it allows you thoroughly and creatively to pursue a question, problem, or project about which you care deeply.

The Cornerstone projects generally culminate in one of the following: a model, prototype, or computer program, etc. For example, an engineering student, for example, might design and build a prototype of a new airfoil, invent a new robotic control mechanism, or create a new software program. Even though the main work of such Cornerstone project is executed in a lab or studio other than academic writing, it must be accompanied by a written essay that discusses issues such as the pertinent scholarly or professional literature on the subject, design and construction challenges faced and their solutions, relevant historical and social considerations, and the overall significance of the project.



Faculty Mentors: Cornerstone Advisor

Who can be a Cornerstone Advisor?

Cornerstone projects are directed by full-time faculty members in the university. Under special circumstances, part-time or adjunct members of the university may serve as a Cornerstone Project Advisor with the prior written approval from the Honors College. Often the advisor is a more crucial choice than the topic. You should choose your Cornerstone Project Advisor by taking into consideration both the faculty member's expertise and the potential for a close working relationship, because one of the most rewarding features of the Honors Cornerstone project is regular consultation with your advisor. Honors seniors and graduates confirm that the Advisor-Advisee relationship is the key to the success of the project.
You select your advisor during the Fall semester. You ask a faculty member whose class has been of special interest and importance to you or whose field of specialization coincides with your own interests. You should always ask in person, and you should not be reluctant to approach several faculty members to discuss Cornerstone project supervision. You may also consult Honors staff members for suggestions about potential Cornerstone Project Advisors.

Responsibilities of the Cornerstone Advisor

Your advisor supervises your work from start to finish, helping you refine, research, and develop your topic and produce a polished creative work or piece of undergraduate scholarship of which you will both be proud. Your advisor guides you through the research, creative, or experimental process, suggesting avenues to investigate and questions to explore, pointing out relevant resources, imparting the relevant technical skills and knowledge, and commenting thoroughly on iterations of the work, from initial stages to the final product. Your project may involve you in your advisor's own research. Your advisor also helps you make your prose as strong as it can be. The final product must be an excellent piece of writing. Typically, a project goes through several iterations. Please be sure to give your advisor ample time to review and comment on each one. You would not, for example, turn in a draft on Friday and expect feedback on it by the following Monday or Tuesday.



Together you develop a strategy and timetable for the work's completion. You and

your advisor should meet regularly from the outset until the work is complete. (The last months of the project typically involve much more frequent meetings -- often daily.) At these meetings you ask questions and seek advice and your advisor gives direction and encouragement. Typically, the topic is formalized during the Spring semester, pursued in entire semester, and completed in the summer. You and your advisor should agree on an exact timetable for the completion of stages, and of course, such a schedule will vary substantially according to discipline.
It is crucial to get started early allowing sufficient time for both substantive and detailed editorial and other revisions. Your advisor should review a complete first draft or iteration by early June of Spring semester.

Responsibilities of the Cornerstone Student

Remember that while your advisor is there to guide you, this is your project. You need to:

- propose a meeting schedule
- come to every meeting well prepared, and
- keep up the momentum on the project

Don't expect your advisor to play that role: he or she provides the expertise; you provide the initiative!

Cornerstone Project Funding

Have a great idea, but need funding to make it happen?

The Honors College provides matching funding to support Cornerstone projects. For those teams who want to use the Undergraduate Spark Fund projects as your Cornerstone projects, we match the fund up to 10,000 RMB per project.

Here's what we'll fund:

- reimbursement for research materials, supplies and expenses
- research travel
- a combination of these items
- other necessary and reasonable expenses

This is also a good opportunity for you to learn how to efficiently and effectively manage research funding!



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