

Presented to the Yale College Faculty, September 25, 2008

In keeping with its important role in a Yale undergraduate education, the senior requirement is reviewed periodically by the Course of Study Committee. The last such review took place in 2002.

The scope and ambition of the current review was made possible by the staff of the Office of Institutional Research, who helped design and administer the extensive surveys that underpin our report. In our survey of current practices we had the cooperation of about sixty percent of the departments and programs that offer undergraduate majors, hearing from both DUSes and chairs on specific questions from the committee. The report also draws on the input of over 1300 alumni from four recent graduating classes, whom we surveyed in detail about their experience of the senior requirement. Our findings and recommendations below reflect this wide-ranging effort and the thoughtful contributions of the Course of Study Committee members.

Review Process and Findings

The committee's first task was to find out what departments and programs across Yale College were currently requiring of their seniors, beyond what we could learn from the YCPS. To this end, we surveyed the DUSes of all departments and programs asking for more detailed information about the options offered to students. We also surveyed the chairs of all departments and programs with two broader questions addressed to the department as a whole: What are the intellectual goals of the undergraduate major, and how does the senior project reflect those goals?

The responses demonstrated the enormous variety of senior work required of Yale students. Most majors offer multiple ways to fulfill the senior requirement, and departments—often depending upon the size—have various ways of overseeing this work. Although the variety of the results defy meaningful statistical analysis, one finding was clear: disciplinary specificity is vital to the design of the senior requirement.

The survey revealed dozens of worthy avenues towards a capstone experience and affirmed the committee's sense that there could and should never be a uniform senior requirement across Yale College. Such homogenizing would work against precisely what our majors strive to teach: the specific knowledge, questions, methods, and standards entailed in an academic discipline, and, where interdisciplinary work is undertaken, the thoughtful balance of multiple, historically tried, modes of inquiry.

The alumni survey revealed that there is a high level of satisfaction with the senior requirement among our graduates. 68% of the respondents rated their senior project either "valuable" or "very valuable" (64% sciences, 73% humanities, 65% social sciences). 58% said that it was the capstone or culmination of their learning in the major. It should be noted, in this context, that 70% reported being "very" or "extremely" challenged by their work.

These encouraging findings are not to say, however, that we cannot make improvements to the senior requirement at Yale or usefully generalize about what makes for a successful capstone experience. Below we describe what emerged as best practices for capstone work.

Best Practices for the Senior Requirement

1. Independence: Senior projects take on the quality of a capstone experience when they entail a new level of independence and originality, distinct from other work the student has done in the major. We found that students valued the independence of their work even while they looked for high quality support, and also that they often found ways to self-advise and to find peer advice—another indicator of the value they placed on independence. (71% of the alumni surveyed reported completing an independent essay or project for the senior requirement.)

2. Challenge: Students appreciate challenge in the senior project; indeed, some students noted that they regretted choosing less challenging options, and many noted that they worked harder than they ever had before and that the experience was worth every ounce of effort. Projects that require a new level or kind of knowledge while drawing upon the work the student has done previously in the major seem to serve students best.

3. Preparation and Direction: Several practices that pertain to the direction of senior work make a difference to the success of students' projects:

Informed choices: Students repeatedly stressed the need for information about their options for the senior requirement prior to the senior year. This might include lists of labs available to work in, and descriptions of what different labs do, information about potential advisors, information about the differences between various senior options in the major, guidance about what kinds of questions to ask when speaking to a potential advisor.

Preparation during the junior year or earlier: Students who thought about their projects or otherwise prepared for them during the junior year or earlier reported having a better experience; those without this preparation regretted the lack. This is especially true among students wanting to do a senior project that entails field or lab research, for whom a summer of work prior to beginning the project makes a significant difference in their senior experience. The importance of this prior research—and the fact that not all students find a lab placement—may help to explain why comparatively fewer science majors in our alumni survey found their senior project to be a capstone experience (45% in the sciences, compared with 67% in the humanities and 54% social sciences).

Responsive advisors: Senior projects work best when advisors are responsive to student questions and help students working on large projects to progress appropriately throughout. Advisors should both offer structure and help students develop the intellectual substance of the project.

Advisors knowledgeable about the subject and the major: Senior project advisors should know Yale's standards, and be familiar with the kind of work done by majors in the department in order to appropriately guide senior projects. This suggests that caution is needed when asking visiting faculty to advise senior projects, especially in their first term at Yale, and that departments need to properly guide any faculty who are new to senior project advising.

Interim deadlines: Students stressed the importance of interim deadlines to help them pace and structure their work.

4. Closure: Intense periods of work ideally produce a proportionate response from those in a position to evaluate and validate that work. This is certainly true for seniors working on long-term projects. Three kinds of response were particularly important in bringing students' projects to a productive and satisfying close.

Public presentation of senior work: Senior projects, in keeping with the ideal of producing original research in the relevant field, should be seen routinely to speak to a larger audience than work done for other classes. This may mean that senior essays are read by someone in addition to the advisor of the project; it may mean students present work to a departmental colloquium or a Mellon Forum in a residential college. Where actual publication—locally or nationally—is possible, this can be most rewarding.

High, fair standards of evaluation and substantial feedback: Students were most satisfied when they understood the criteria for evaluation of their work, felt that those criteria were challenging, and received specific feedback about their work both during and after they completed their project.

Celebration of the work: Because senior work is often a personal as well as an intellectual capstone experience, students also appreciate having a way to celebrate the completion of the work. This might be an aspect of public presentation, or call for a separate occasion.

Recommendations

To encourage these practices, the Committee recommends several concrete steps that may be taken by Yale College and by individual departments. Most of these are gleaned from departments that have successful senior project support in place and where majors expressed satisfaction with their senior work. Our hope is that these tried methods can extend across Yale College. (A compendium of good ideas that have worked in particular departments can be found in Appendix A.)

For Yale College

- For seminars used to fulfill the senior requirement, add a question in the course evaluation asking whether and how the seminar provided a capstone experience in the major. These responses would be made available to other Yale students.
- Increase funding for interested science majors to stay at Yale during a summer to work in a lab prior to the senior year. This would extend to more lab research-focused majors a benefit enjoyed by students who, for example, win a Dean's Summer Research Fellowship or who find PIs to include them on a grant. (Students choosing a literature review as the senior project in the sciences would not require such funding.)
- Increase funding for visits to archives, other research travel, and creative projects tied to the senior requirement for students in the humanities, social sciences, and the arts.
- Given the fact that advising is valued differently in different departments, Yale College needs to encourage what is essential teaching work. This might include the incentive of modest research funds given by the college for those who advise a certain number of projects in a year;

modest cumulative course releases in recognition of advising (perhaps earning a course release over time for every ten projects advised); or Yale College-sponsored prizes or other recognition for senior project advising.

For Departments

Many of these recommendations are meant to support advising and to facilitate the self-advising that students already do.

- Ensure that all the options available are sufficiently challenging and distinct from other kinds of work in the major.
- Make information available to students about the projects done in the past, and which faculty members have advised them. An online list of projects (title or short description provided by the student) and their advisors, linked to the department's general description of the senior requirement, might be most useful. (This information could also be centralized through a Yale College web site.)
- Make models of successful or prize-winning senior projects available on departmental web sites for students to peruse (within the Yale access network only).
- Consider a department-based forum for the presentation of senior work done outside of seminars, either at the completion of the projects or along the way.
- Provide advice to all fall-term juniors about preparing for the senior project. Doing so in a general meeting for majors (with a few current seniors there to talk about their projects) or through a written guide ensures that all majors receive the same level of advice, rather than relying on individual advisors to know all the options. Such information should detail any courses (for example, in Econometrics, or statistical analysis, or other research methods) that are needed in the junior year for specific kinds of senior work.
- Provide information on available advisors or about labs or research projects where it is possible to work.
- Direct students to information about travel grants and summer research funding that are available to support summer preparation for senior work.
- In larger majors, assign a faculty member to oversee the senior projects. Duties might include convening a committee to consider and give feedback on student proposals, reminding students and advisors about departmental deadlines throughout the term, collecting the information necessary for juniors' planning and ensuring it is disseminated, coordinating the evaluation of senior projects by outside readers, and organizing any public presentation or celebration of student work.
- Institute interim deadlines at the departmental level.
- Educate visiting faculty expected to advise senior projects about the form and expectations of such projects within the major. For visitors who are not academics elsewhere and do not

regularly advise student work, delay senior project advising at least until their second term at Yale, so they have time to become more familiar with the educational culture.

- Acknowledge and reward the advising work done by faculty, and encourage the equal distribution of such work. Make public the expectation that faculty members participate in such advising as part of their teaching for the college.
- Review senior requirements regularly, soliciting feedback from students and faculty.

Report prepared and respectfully submitted by Amy Hungerford, Chair, 2007-2008 Course of Study Committee.

Appendix A

A Compendium of Good Ideas

In answer to the question, "What is the best thing you do for seniors completing the senior requirement?" DUSes gave the committee some inspiring answers. Below is a selection that departments across Yale College may find useful; it should be required reading for DUSes.

(Answers lightly edited for clarity and economy. Ideas that mainly reinforced general points made in this report have been left out for brevity's sake.)

- We give seniors the option of writing a senior essay and taking the senior seminar OR taking the senior seminar along with the senior seminar in another department. (African Studies)
- We offer them an elective year-long senior essay option, supported by a senior essay coordinator/colloquium. Especially for students who want to do ethnographic field work, the option allows them to do original fieldwork in the summer, analyze data in the fall, and write up in the spring. This has produced great essays that serve as springboards for graduate school in sociology, anthropology, unique law or medical school careers, and creative community-based program development or administration. (American Studies)
- The very best thing we have done for the seniors (although it sometimes occurs before the junior-senior year summer) is to require a summer of intensive field work and to provide generous funding for travel and expenses. (Archaeological Studies)
- The best thing we've done for seniors actually doesn't happen senior year, but rather in the summer before. We've made an (informal) commitment that all our majors who want to can have a summer research experience (with pay). The way this works is that students who are interested apply for competitive REU ("Research Experience for Undergrads") programs at other places (major observatories etc) but we backstop it by guaranteeing that if they don't get an offer, we provide a similar experience here, which often morphs into a senior project. This has greatly reduced stress on the students, and generated some excellent projects. (Astronomy)

- 1. We have all of our senior majors present their in-progress thesis work to their fellow senior majors (along with some junior majors and selected faculty) in a seminar setting.
- 2. We hold a year-end dinner which students attend accompanied by their advisor or other mentor. At the dinner, we present each of our graduating seniors with a book related to their thesis topic. Each book is by a living author, who inscribes the book to the student. (We contact the authors in late March and send them blank gummed bookplates; we insert these bookplates in the books that we have purchased. No one has ever turned down our request to do this.) This gives students a sense that they are members of a wider intellectual community, alerts our colleagues at other universities to the excellent work that our seniors are doing, and gives our students a nice sense of closure to their Yale careers. (Cognitive Science)

- We instituted the following requirements:

1. Students must submit a 3-page description of the project and a list of deliverables, signed by the advisor, by noon on the fourth Friday of classes. This ensures that the student has an advisor and that both know about the relationship, the nature of project, and what is expected.
2. Students must submit a set of web pages describing the project, including a copy of the final report, at the end of reading period. These pages give other students some idea of what is expected in a senior thesis. (Computer Science)

- We had an orientation session at the end of the fall for spring senior projects. We have also had a series of deadlines for them to turn in the proposal, prospectus with bibliography, draft, and final version. (East Asian Languages and Literatures)

- Two things - having an annual presentation of essays -- a symposium, if you will - and required that each essay is read by at least 2 faculty. (Ecology and Evolutionary Biology)

- We feel that the best thing we have done for the senior requirement is that we require students to find an advisor, propose a topic, and give a short 10-minute presentation of what they will be doing at the end of their junior year, at the same event where the seniors present their completed senior projects. Along with the posters that the seniors prepare, this forces juniors to act early and guides them appropriately as to what is expected of them. It also serves as a bonding and reinforcing experience early on, as they find this presentation session a fun, pleasant collegial environment. (Electrical Engineering)

- The best thing done for seniors is the practice, common in many senior seminars, of "ramping up" to the final 20-page essay by introducing some secondary reading, conferencing on the final topic, requiring and responding to a partial final draft in preparation for completion of the essay. (English)

- The honest answer to this question is "take them all out to dinner". But a more academic answer would be "allowing our seniors greater freedom with regard to the content of their senior essay" i.e. they may write about any aspect of French or Francophone studies (we have one senior currently working with a professor in the Law School) and not just about traditional literary topics. (French)

- The single best thing we have done this year is institute a real Junior seminar. This will help seniors in that it will focus on preparation for the senior essay, and concentrates on issues of

research methodologies. I think the best thing we could do for seniors is to mentor them better in the junior year, for instance by also encouraging them to engage in summer research before they begin their senior essay. (German)

- The best thing we have done recently is to require that seniors meet for an hour or so with the reference librarian in the Arts Library. In addition to submitting their essay proposals at the start of the term to the DUS, seniors are instructed to send them to the librarian, who then prepares an individualized instruction session. Seniors have been particularly appreciative of the expert and customized help, and the resulting essays have been richer in terms of resources consulted. (History of Art)

1. We have a student research symposium at the end of every year at which students present talks and posters on the independent research projects they have done. We give out prizes for the best presentations. All our students, not just seniors, benefit from this.
2. We instituted a prize for the best graduating senior in MB&B - they get a nice recognition they can put on their CVs as well as a pretty nice cash prize, and their name engraved on a brass plaque.
3. We just started a new advanced seminar course that is taken mostly by seniors - small group discussions of papers from the primary literature. This is NOT the senior requirement, but a special nice advanced course that seniors can electively take.
4. We annually have an evening meeting with a nice catered dinner, sometimes at a professor's house, to which we invite students interested in going to graduate school. These are mostly juniors and seniors. There we discuss how graduate school works, the application process, etc. to facilitate the process of our students applying to graduate school. We have professors and postdocs who have attended the leading graduate programs around the country there to answer questions about specific programs.
5. We have a pretty nice BSMS program that ~6 seniors a year complete. This provides a special experience for a small group of our best students. (Molecular Biophysics and Biochemistry)

- The best thing we have done is require those embarking on independent projects to submit a proposal or prospectus by the end of the semester prior to starting the project. This guarantees that when the semester begins they will "hit the ground running" rather than waste precious weeks searching for or narrowing their topic. (Philosophy)

- Providing a structured optional time for seniors to meet during the Spring semester as they work on their senior essays with a member of the department for accountability and refining their essays. (Religious Studies)

- We nominate graduating majors for admission to the National Slavic Honor Society, Dobro Slovo. (Slavic)

- The best thing for our seniors is the option of adding a senior project production to the research for their senior essay. With 30 seniors this year, we are winding up with 20 productions (some with more than one senior in them). We have also begun to frame and mount the posters for these productions in the THST office -- they are very beautiful -- GODOT, FAUST, SALOME, MISS JULIE, AS YOU LIKE IT, among others -- and very impressive especially to the prospective students and their parents when they drop by. (Theater Studies)

- We host a luncheon (or two depending on how many majors we have that year) during reading period of the fall semester, at which each senior gives a 5-10 minute presentation of how they are framing their senior essay. There is then lively discussion among the 20 or so in the audience: faculty, grad students, juniors, staff members. This gives the seniors feedback at a time that they can still incorporate new ideas, and gives everyone an investment in the projects. It also gives the DUS a clue about which faculty might want to be readers for the essays. (Students enroll in a Senior Colloquium to start work in their independent essays in the fall, and typically complete the essay in the spring while enrolled in the Senior Essay.) (Women's, Gender and Sexuality Studies)