

An Environment Designed for Holistic and Integrated Learning
◆ The New Engineering College Honors Program ◆

Preface

The College of Engineering's Honors Program currently offers preferential enrollment, extended library privileges, first-year scholars-hall housing, a one-quarter freshman level seminar and does not have a Mission Statement. Although Engineering students are welcome at some of the Arts and Humanities Honors Program offerings, these students deserve a program designed to meet their own needs. I want to develop a new Honors Program that facilitates: personal reflection and empowerment (revealing and tapping into the rich resources of this population), academic and social integration, humanitarian connections between the classroom and the community, intellectual and experiential connections with industry, and early exposure to the amazing research thriving under our own roof.

Proposed Mission Statement

The Honors Program in the College of Engineering is (being) designed to enrich the academic, community, and individual engagement of its highest achieving students and to foster their intellectual and personal development in a nurturing, and challenging, learning environment. The Program supports the campus Mission Statement by advancing the University's goals of excellence in education, research and public service, and upholds the College's promise of a strong scientific education at the cutting edge of innovation and technology, with industrial and entrepreneurial exposure.

Literature Review

Honors Programs provide essential opportunities beyond the classroom, extending the rewards and challenges of higher education. Robinson (1997) agreed that programming for gifted undergraduate students should encourage them to invest in their own development through

internships, mentor-ships and engaged scholarship in the greater community. Hersh and Schneider (2005) remind us that learning styles vary between students and that a rich assortment of teaching approaches will serve the widest spectrum of participants. They also reported that “empowered and informed learners are also responsible” and that open-minded and empathetic students more easily connect classroom exercises to the real world (p.10). Wankat and Oreovicz agreed that active learning via group projects, simulations, and coops, provided students with experiential learning that increased engagement and retention rates (2003). Honors programs help students bond with other high achieving students and connect them to campus, enrich and personalize their curricula and provide experiences that integrate academic and social development (Mitchell, 2002). The College of Engineering can accentuate and accelerate the holistic learning of our gifted students through interactive and integrated experiences that tie academia to the heart, to the community and to the world, as well as to the mind.

Honors Program students need opportunities to engage in dialogues and exercises beyond the interest and grasp of some of their classmates, creating missed opportunities in the traditional lecture hall. Mitchell agrees that professors need to help students achieve positive learning outcomes. Robinson added that students asking incisive questions, posing multi-discipline arguments, and displaying higher-order thinking (Kuh 2004), need faculty to encourage them to pursue additional challenges, and to provide gateways to pursue their high aspirations. Small Honors Seminars and Honors Research Contracts provide the environment for faculty and students to delve into theoretical discussions and activities impossible in a large lecture hall. These faculty-student interactions should be infused with references to ethical and moral implications (Hersh and Schneider), social and humanitarian sensitivity and connections that situate new knowledge into multi-dimensional context for students.

In *Principles and Strategies for Enhancing Student Learning*, Newton and Smith (1996) describe the outcomes of college as the ability to process and use new knowledge, to be an effective communicator, have the ability to critically reason and draw conclusions from your analysis, to efficiently grasp new concepts and processes, think objectively about morals, values and beliefs, render critical and objective evaluations, and to make decisions in the face of uncertainty. That compliments Hersh and Schneider's findings that colleges need to teach students how to use their new knowledge responsibly, in a culturally diverse, ecologically sensitive and globally interdependent society. An honors program should incorporate various learning styles and environments to engage students beyond the curriculum and help them understand and meaningfully apply the integrated wealth of their college education.

Service learning connects academics with community-based projects (DiMaria, 2006). It enhances personal development, community involvement, knowledge application and acquisition, and critical thinking in real world situations (Wells and Grabert, 2004). Service learning also increases interpersonal skills and self-confidence through civic action (Strange, 2004) and provides an opportunity to reflect on personal values and to evaluate one's worth on a communal, rather than an individual basis (Setingo, 2006). It clearly contributes to students' development (Berger and Milem, 2002) by integrating theory, practical application, and community awareness and civic service, beyond the insulated environment of the classroom. Service learning creates opportunities that enhance student intellect and personal development while serving the common good of the community.

Experiential learning is the process of 'knowing something new' because a new experience transforms related information into new knowledge for the learner (Evans et al, 1988). This transformative learning is frequently meaningful and well retained. Experiential

learning is cyclic with the 'experience' linked to reflection and observation, abstract conceptualization, experimentation, followed by the creation of new knowledge, which leads to new experiences which lead to more reflection and contemplation. Hamrick et al. (2002) added that life experiences and environmental settings affect experiential learning. Structured internships (Billett, 2005) and group projects both facilitate experiential learning and should be included in Honors Program offerings. Students forget part of what they hear, remember more of what they observe but do not truly understand until they are actively involved in the learning process.

Many of the activities that can enrich an Honors Program employ both service and experiential aspects of learning. Peer mentoring can provide reciprocal benefits to both the tutee and the tutor (Hendriksen et al., 2005, Bruce & Trammell 2003, Peterman, 2003, and Smith 1986). Teaching is a powerful learning tool, so tutors gain experience in clarifying and presenting material concisely and simply. Tutees are more apt to ask questions that disclose a lack of knowledge or confusion, to a peer, rather than to a professor. Discussion of current events and critical issues help students put their world-view and experiences into perspective and help them put their education into context (Predmore, Hess). An exposure to technology management, new product development, the art of being a CEO and how to secure venture capital, help students understand the potential of their education and are complimentary to an engineering education (Mulrine 2006). Movie nights are a great way to turn a recreational evening into a developmental learning experience (Seyforth & Golde, 2001) and enjoy high attendance. The inclusion of alumni at Honors Program functions gives perspective on life after graduation (Stepp 2005), provides strong role models and potential networking connections for future internships and career positions. The literature showed that experiences, big and small,

that assist students in making connections between themselves and the surrounding world, expand their horizons and better prepare them for life after college.

The literature showed that contemporary learning environments should be designed to include mechanisms that incite intellectual risk-taking (Newton and Smith) and facilitate faculty/student/researcher/industrial dialogues via active learning, in supportive, community-based environments. Small-group honors seminars, honors group projects, service learning projects, internships, peer mentoring and peer tutoring and hands-on research all provide rich opportunities to integrate the curricula with life outside the classroom (Robinson). An Honors Program should provide such an environment.

Learning Objectives for the New Honors Program

Students will become more adept in processing and applying new knowledge, be more effective communicators, have the ability to critically reason and draw conclusions from analysis, efficiently understand new concepts and processes, think objectivity about morals, values and beliefs, render critical and objective evaluations, and be better prepared to make decisions in the face of uncertainty. Students will gain an understanding of the importance of teamwork, clear and timely communication, brain-storming, creative and critical thinking, shared responsibility, and personal accountability.

Program Opportunities and Implementation

An Honors program should offer a variety of activities designed to cultivate holistic growth among its participants. Despite the rich resources of the campus, the College currently only offers one Honors seminar per year. Many of these proposed activities will be planned in the Scholars Hall Lounge, so students can join-in without having to hike a mile across campus to participate. I need to strike a balance between offering a wide selection and offering too much

during a single quarter. Quality programming includes the quality and quantity of participants, and as you found at Point Loma, often less *is* more. The following is a list of ideas designed to provide a robust selection of enrichment opportunities that will challenge, delight, puzzle and push the college's brightest students in directions beyond the curricula:

1. Honors Seminars exploring the past, present and future of technological innovation and scientific contributions by engineers in each major discipline.
 - Many high achieving students need a broader exposure to the engineering field in order to focus their studies appropriately and to verify they are pursuing a major that fits their dreams and aspirations.
2. Group projects on realistic industrial scenarios to foster teamwork, brainstorming and critical thinking, integrated problem-solving, personal and community responsibility, and verbal and written communication skills.
 - Industrial scenarios allow students to assume various roles while attempting to solve realistic industrial and corporate problems, these exercises evoke the critical thinking and brain-storming, teamwork and detective work required to manage complex projects/situations. (See Appendix A for a detailed example)
3. Honors Service Projects will provide domestic and international community service opportunities by teaming with Community Action Council and Engineers without Borders.
 - Service learning seamlessly blends academic application, social service, and psychosocial growth in win-win situations. I will use "Dig In" from my Learning Experience Notebook to provide this opportunity.
4. Honors Research Contract – earn units while working in faculty labs

- Provide a mechanism to match Honors students with faculty researchers for pre-graduate laboratory experience, currently this is mostly an untapped source of experiential learning
5. Honors Internships - local and regional internships for experiential learning for Honors units, stipends or salary.
- I believe that internships in the college can be transformed (no pun intended) into deeper and more meaningful experiential experiences by requiring a reflective report of the student's experience that is shared with a faculty or administrative mentor after the work experience.
6. Peer tutoring – is beneficial to both students.
- The results of my Program Evaluation course project indicated that EOP students utilizing peer tutoring were retained in their major and at the university at a rate higher than EOP students not involved in peer tutoring; each student tutee also made statistically significant increases in their cumulative GPAs between the beginning of fall and the end of spring quarter. The student tutors used it as a mechanism to solidify their own understanding of the material, practice teaching, hone organizational and communication skills, and to contribute back to the campus. (I love those win-win situations)
7. Peer mentoring of new students, match current junior and senior level Honors students with new, incoming Honors students to help the new students transition prior to matriculation.
- I will use “Peer Mentors in Engineering” from my Learning Experience Notebook as a foundation for this offering.

8. “Cool-aid, Cookies and Current Events” schedule by-monthly discussions on local, national, and global issues.
 - Invite faculty and staff to discuss current events as they relate to academics, society, politics and religion to help students put their world-view and experiences into perspective and help them put their education into context. I could invite a Nobel Laureate (4 within the college) to join a Current Event Night, to really ‘kick it up a notch’. It is wonderful to see students’ awe, admiration and nervousness, melt into comfortable respect when they realize that these Nobel prize winners get holes in their socks just like the rest of us.
9. Read, Listen, Discuss - The College Technology Management Program hosts numerous lectures annually, given by internationally acclaimed scholars and scientists.
 - Honors students should select a couple of journal articles related to the guest’s topic, read the articles, attend the lecture and attend, if not participate, in the round-table discussion after the talk. This would introduce students to new innovations and discoveries and have them integrate the passive learning from reading and listening, into active learning while participating in post lecture discussions.
10. Movie night – Show a deliberately selected movie for an evening of pop, popcorn and discussion about the movie.
 - “Desi has a New Girl” is about a Latina’s sexual identity awakening, “Return of the Titans” is about racial tension and prejudice, “King of Hearts” is about mental illness, these and other films can prompt valuable discussions about timely issues.

- Have students ‘assume’ the roles of the main characters in the movie. Pose questions to help students identify differences and similarities between the character and their own personality and surmise how the character might act or react in various situations that parallel the movie themes. This is a nice change from reading and lecture based learning
11. Alumni connections – invite graduates to attend multiple Honors Program events, Parents’ Weekend and Recruitment activities.
- Involve Honors Program alumni in the planned learning of Honors Program activities. It is important to include graduate in various stages of their career/life, ie furthering their education in graduate school, a variety of working engineers and graduates who have pursued careers outside engineering or science.
12. Field trips – do not forget to include engineering fetes, as well as factories and firms that rely on or produce ‘engineered’ products.
- California provides thousands of field trip destinations. Although the Mechanical Engineering seniors tour the Hoover Dam (and spend a few days at Lake Mead and in Las Vegas) there isn’t a formal debriefing afterward. Field trips should be arranged to provide time for discussion and reflection. Engineering is everywhere, students need time and prompting to observe, reflect and connect various aspects of their field learning to their academic pursuits.

An Honors Lounge and Study Hall would be awesome but is not a current reality. I do have multiple indoor and outdoor spaces that I can use without charge, but ‘dedicated’ Honors space is one of my goals. Numerous other activities, amenities and associations would buoy this program remodel are:

Use some of the rich postings from my cohorts Learning Experience Notebooks

Sports Night – go to a Gaucho game (purely social activities yield benefits too)

Honors Intramural team – get non-participants to attend as fans

Create an Honors web-board to share ideas about potential activities and adventures

Encourage students to make plans to explore Santa Barbara County:

Historic Missions, Botanic Garden, Art, Natural History, and Nautical Museums

Santa Inez wineries, Dutch Solvang, Summer Theater, Summer Solstice Parade

Hike the foothills, stroll the beaches, bike from campus to Glenn Annie peak

Visit Vandenberg Air Force Base or Port Hueneme Naval Base

Perhaps most importantly, I need to build bridges with the College of Letters and Science Honors program, to coordinate some shared activities between the colleges and to invite them to join in some of the College of Engineering's new Honors offerings.

The new Honors Program is designed to expand the collegiate experience of these students by providing opportunities to practice their new skills, discuss subjects related to and beyond engineering and to engage in events outside their comfort zone. The new Honors Program provides activities for students to experience planned and spontaneous learning in a variety of environments that foster integrated learning. Like silly putty, students need to be continually stretched to maintain their elasticity.

Epilogue

The new Honors Program will require participation in a broad spectrum of activities which employ holistic strategies encouraging students to participate in, and direct, their own collegiate journey. The program offerings are being designed to help students connect all the parts of their collegiate experience, to empower them via the process and outcomes of their own

education. I want them to leave college with an open mind, an accepting heart, a sense of social responsibility and a lifelong passion for learning. Students (and parents) need to be reminded that college is more than the fast track to a high paying job; it is the gateway to inquiry, purposeful curiosity, disbelief and validation, self-discovery, and exposure to new ideas and ideals. Student affairs professionals are called to envision and invest in tomorrow by virtue of the services we render today; only an engaged and holistic approach to higher education will yield optimal returns on these dreams and investments. Students need help in understanding that higher education is a complex adventure of interactions, revelations, connections, distractions and a perpetual treasure chest of discovery; which can transform them into well-informed, well-oriented, problem-solving, globally aware, self-assured and conscientious graduates.

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