

# ***Report from Issues in Educating Veteran Engineers***

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This is a summary of the breakout sessions of the conference held Tuesday, June 15, 2010 at the University of San Diego. Overall recommendations for how the NSF may support educating veterans to become engineers are presented first. This is followed by a summary of strategies that universities might employ to support veterans and some resources needed that were not unique to a particular breakout session. Finally, tables are presented that summarize the ideas derived during Session I: *Attracting Veterans to Engineering*, and Session III: *Transitioning Veterans to Engineering Careers*.

## Summary Recommendations to the NSF

- Increase NSF funding in this area.
- Include veterans as a target population in the evaluation of the impact of NSF proposals.
- Establish veterans projects across NSF Directorates, e.g. a REV program similar to the REU program.
- Work with the DOD to develop joint programs that will help universities graduate veteran engineers.
- Support ASEE Summer Faculty/Exchange programs with the military that are not research-based so faculty understand challenges and capabilities of veterans.
- Encourage faculty to teach at military bases and on ships through sabbatical or summer programs to help prepare veterans for full-time undergraduate study.
- Fund the development of bridge programs designed to help veterans make the transition from the military to starting engineering studies.
- Establish fellowships and scholarships for veterans pursuing B.S. degrees with possible emphasis on supporting students whose GI Bill benefits have run out.
- Sponsor workshops and discussions at FIE and ASEE conferences.
- Work to make it easier for universities to assess ACE classes so that individual schools can determine how university credit may be awarded. (E.g. ready access to syllabi, learning objectives, prerequisites, etc.)
- Coordinate a database that summarizes the credit given for ACE classes at different universities.
- Develop a “Troops to Engineers” or “Helmets to Hardhats” program along the lines of the “Troops to Teachers” program
- Leverage existing knowledge about outreach programs for minorities and women to develop outreach program to active duty military personnel.
- Increase participation of universities and industry in the discussion about how veterans can become engineers.
- Focus on developing and providing resources to help schools work with veterans rather than national policies that might conflict requirements or goals of individual universities and programs.
- Support multi-institution collaborations on veteran issues.
- Support social science studies of questions such as the impact of military culture on the career paths of veterans. E.g. how can we respond to reports that veterans often do not receive timely career counseling because the military culture discourages people from saying they are leaving the military.
- Work to establish a “Society of Veteran Engineers” along the lines of SWE, SHPE, and similar professional organizations.

- Work to identify and promote incentives for faculty who support veterans' issues.
- Establish standardized recommendations for veterans' services that should be offered by universities.

## **Strategies and Resource Requirements that were not tied to a particular breakout session**

### Strategies

- Identify a point person/office that is responsible for all aspects of veteran student interaction within the program, college and university.
- Expand mission of campus VA office to encompass responsibility for retention and success of veterans.
- Use your (veteran) alums as a resource for mentoring and philanthropy.
- Include at least one veteran on every industry advisory board meeting (as board member or invited participant).
- Establish a promotion and tenure structure that encourages faculty participation in activities that benefit the university/college, but that won't lead to publications.
- Improve buy-in from campus leadership.
- Publicize everything that you do.

### Resources

- Identify and deploy your own veteran faculty.
- Develop service credit, stipends, release time, etc. for faculty participation in veterans activities.
- Development/Sponsored Program Officer specializing in military affairs.
- More engineering faculty with a military background.
- Establish sustainable funding for veterans initiatives.
- Solicit support from state and federal legislators.

## Session I – Attracting Veterans to Engineering Careers

What are the major challenges?	What are you doing at your institutions?	What other strategies might you employ?	What resources would you need to pursue your selected strategies?
<p>How and when do you identify prospective students (esp. when school is not collocated with institution)?</p>	<ul style="list-style-type: none"> <li>• Individual recruitment of students.</li> <li>• Campus referrals</li> <li>• Information re: veterans is not shared with engineering.</li> <li>• Recognition programs</li> <li>• Veteran outreach to prospective and current students.</li> <li>• CA Dept of Veterans Affairs will provide spreadsheet with a list of recently discharged veterans. Contact: Ted.Puntillo@cdva.ca.gov.</li> <li>• Develop brochures and videos targeted for the military/veteran community.</li> </ul>	<ul style="list-style-type: none"> <li>• Target veterans who work on technical projects.</li> <li>• Contact TAP program detailers.</li> <li>• Identify publications used by transitioning military personnel.</li> <li>• Visit local military facilities. Admissions staff and academic staff should contact diverse groups and programs on the base.</li> <li>• Employ e-media (Facebook, Lined-in, Twitter).</li> <li>• Begin to make contact 12-18 months before discharge so veterans can prepare.</li> <li>• Look at materials on <i>Troops to College</i> website: <a href="http://www.troopstocollege.ca.gov">www.troopstocollege.ca.gov</a>.</li> </ul>	<ul style="list-style-type: none"> <li>• Need lists of Military Education Offices and publications.</li> <li>• Need lists of military facilities within specified range of campus.</li> <li>• Improved understanding of engineering and veterans by admissions officers.</li> </ul>

What are the major challenges?	What are you doing at your institutions?	What other strategies might you employ?	What resources would you need to pursue your selected strategies?
<p>Cost of attending college is still too high for some veterans.</p>	<ul style="list-style-type: none"> <li>• Provide part-time jobs in labs.</li> <li>• Hired a veteran as a lab manager.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide additional campus support for veterans with families (housing, children support...).</li> <li>• Increase the use of coop programs by vets as early as their first year in the program.</li> <li>• Create class schedules that make it easier for students to hold internships.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase GI Bill funding for engineering and other programs of high priority and long completion times.</li> </ul>
<p>How can we provide support to veterans before coming to campus and while they are on campus?</p>	<ul style="list-style-type: none"> <li>• SVO</li> <li>• Veteran Affairs Office</li> <li>• There is no representative within College of Engineering devoted to veterans' affairs.</li> <li>• Interdisciplinary Wounded Veterans lab funded by an alumnus. Can be used to attract students as well as support them.</li> </ul>	<ul style="list-style-type: none"> <li>• Hire person to handle veteran affairs.</li> <li>• Peer-based mentoring from veterans who are succeeding.</li> <li>• Establish a One-Stop resource (online and brick/mortar) with consistent, accurate information.</li> </ul>	<ul style="list-style-type: none"> <li>• Continuing financial support for veterans services for engineers.</li> <li>• Have base colleges teach calculus and physics.</li> </ul>

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<p>Poor understanding of the needs/ concerns of veterans by most engineering faculty.</p>	<ul style="list-style-type: none"> <li>• Faculty/Staff training including online instruction.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase communication between faculty and veteran affairs including dept meetings, new faculty orientation, and HR programs.</li> <li>• Point out that veteran students come with money and may be good graduate students.</li> <li>• Conduct info sessions with representative from VA, campus admissions, student services, etc. that are targeted to engineering faculty.</li> <li>• Look across your campus (e.g. web site) to see what resources may already exist.</li> </ul>	<ul style="list-style-type: none"> <li>• Release time or stipends to encourage attendance.</li> <li>• Encourage veterans-related programs at FIE, ASEE, and regional (e.g. ASEE-Pacific SW) conferences.</li> </ul>
<p>Active duty military personnel do not understand engineering opportunities.</p>	<ul style="list-style-type: none"> <li>• Very little engineering outreach is conducted by admissions.</li> <li>• Point out engineering disciplines to military personnel.</li> </ul>	<ul style="list-style-type: none"> <li>• Need connections with military personnel to talk about engineering careers (e.g. Educational Services Offices).</li> <li>• Enlist help from professional societies.</li> <li>• Credit a public advertising campaign as has been done for nursing.</li> <li>• Use veteran alumni; have them talk with prospective students and current student veterans.</li> <li>• Outreach activities that show how their jobs relate to engineering.</li> </ul>	

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<p>Time to degree is greater than many other majors.</p>	<ul style="list-style-type: none"> <li>• Help with (math) preparation at community colleges.</li> <li>• Spread the word about which courses are the most important for prospective engineers to have completed.</li> <li>• Bridge program.</li> <li>• Develop tutorial materials that will help veterans succeed in engineering programs.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop customized program that helps veterans receive engineering degree.</li> <li>• Improved preadmission advising by the universities.</li> <li>• Improve processing of VA benefits to ensure that students meet university financial deadlines.</li> <li>• Establish more flexible deadlines for veterans how have confirmed benefits.</li> <li>• Use technology to help active duty military complete classes.</li> <li>• Identify ways to enable veterans to enroll in Master's programs after clearinghouse.</li> <li>• Create summer bridge program that is broad enough to address wide range of veterans' backgrounds and preparation.</li> <li>• DOE Veterans Upward-Bound to address math/science deficiencies without using GI Bill benefits.</li> <li>• Early intervention at military/civilian transition.</li> </ul>	<ul style="list-style-type: none"> <li>• Community colleges can help with preparation before veterans leave the military.</li> <li>• Have base colleges teach calculus and physics.</li> </ul>

What are the major challenges?	What are you doing at your institutions?	What other strategies might you employ?	What resources would you need to pursue your selected strategies?
Awarding credit for military service in light of institutional and ABET requirements.		<ul style="list-style-type: none"> <li>• Work with universities to be more flexible about nontechnical courses accepted by university.</li> <li>• Bring ABET, ACE, and ESO together to establish common understanding of content and requirements.</li> <li>• Develop CLEP-like exams for common engineering classes.</li> <li>• Develop bridge classes that can add content missing from military training to match university classes in fewer contact hours.</li> <li>• Have veterans who complete your classes compare them to their ACE courses.</li> <li>• Use credit awarded by other universities as a benchmark for assessing ACE courses.</li> </ul>	<ul style="list-style-type: none"> <li>• Assistance from ABET to help convince faculty and administration that military training can be used to meet ABET requirements.</li> <li>• NSF Grants.</li> </ul>
Campus is not military-friendly.		<ul style="list-style-type: none"> <li>• Create VA student orgs, networking groups, ...</li> </ul>	
“For Profit” problem- GI Bill benefits used to obtain education from profit-based programs that don’t offer training that is likely to lead to a career.		<ul style="list-style-type: none"> <li>• Legislation to require accreditation of programs where GI Bill benefits are used.</li> </ul>	<ul style="list-style-type: none"> <li>• Lawyer/lobbyist.</li> </ul>



Other challenges that were not explored in further detail

- Unique position of women who are leaving military and entering engineering; neither culture is female friendly.
- Veterans are non-traditional students (age, diversity, education, experiences).
- No evaluation/assessment plan or support system devoted to veterans. VA Office people may not be fully invested in veterans' success.
- Sharing resources across campus.

### Session III – Transitioning Veterans to Engineering Careers

What are the major challenges	What are you doing at your institutions?	What would you like to be able to do?
<p>How do we help veterans identify and take full advantage of full range of their experiences and capabilities (work ethic, teamwork, strategic planning, soft skills...)?</p>	<ul style="list-style-type: none"> <li>• Mostly informal connections with nothing targeted to veterans.</li> <li>• Personal one-on-one advising.</li> </ul>	<ul style="list-style-type: none"> <li>• Have a staff person in engineering who focuses on veteran recruitment and placement.</li> <li>• Informed, vet-centric academic and career advisors within the program/college.</li> <li>• Create support services using the model that already exists in athletics departments.</li> <li>• Access to resume writers who know how to translate military lingo and duties into civilian equivalents.</li> <li>• Educate prospective employers on military lingo.</li> <li>• Online resources that can provide self-help to transitioning veterans.</li> <li>• Have a program that helps support veterans as they pursue jobs in areas such as interviewing skills, transportation, professional clothing...</li> <li>• Create capstone experiences that leverage student internships.</li> <li>• Workshops or seminar classes devoted to helping veterans find jobs.</li> </ul>

<b>What are the major challenges</b>	<b>What are you doing at your institutions?</b>	<b>What would you like to be able to do?</b>
Current economic situation makes it difficult for engineers with no experience to find jobs.	<ul style="list-style-type: none"> <li>• Some counties have Veteran’s Services Offices that help veterans with transition.</li> <li>• Career fairs, but not restricted to veterans.</li> <li>• Required coop program.</li> <li>• Emphasize importance of internships.</li> </ul>	<ul style="list-style-type: none"> <li>• Have stronger relationships with local industry.</li> <li>• Establish internship/coop programs for veterans.</li> <li>• Create Society of Veteran Engineers as interdisciplinary professional organization that can help in many areas including job placement.</li> <li>• Create an annual industry conference day to build connections with industry.</li> <li>• Conduct study to determine ROI from hiring veteran (time on job, career growth rate...)</li> </ul>
Who decides whether a veteran is more suited for a particular job than a nonveteran? How can those people and jobs be identified? How can veterans be given preferential treatment, legally?	<ul style="list-style-type: none"> <li>• Los Angeles awards time in service as years on-the-job to city workers.</li> </ul>	
How can we provide meaningful employment while a student that will lead to a job after graduation?	<ul style="list-style-type: none"> <li>• STEP summer internships.</li> <li>• Career Fairs and Open House events.</li> <li>• Apprenticeship model (e.g. South Bay Workforce Investment Board work and CSUN partnerships) .</li> </ul>	

Other challenges that were not explored in further detail

- How can we build closer relationships between campus Career Services and Engineering?



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