



Not Making The Grade:

Analysis Of Baccalaureate Data Reveals Engineering, Physics, Math And Computer Science Are Laggards In Achieving Diversity In Their Graduating Classes

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Menlo Park, CA—Two new reports¹ issued today by Engineers Dedicated to a Better Tomorrow (a.k.a., *DedicatedEngineers*) identify engineering (including engineering technology), physics, mathematics and computer science as academic fields of study badly lagging in achieving gender and/or racial/ethnic diversity in their graduating baccalaureate classes.

Both studies examined recent (2004) and historical baccalaureate data to address a critical, “bottom-line” question: How diverse are the graduating classes in Engineering and five closely-related fields (namely: Chemistry, Physics, Mathematics, Computer Science, and Engineering Technology) when compared to the diversity seen in the graduating class of all Science & Engineering (S&E) fields combined?

The results show that while S&E is doing reasonably well in terms of achieving diversity in its overall graduating baccalaureate class, a closer look reveals areas of significant weakness within S&E. In particular, the following fields were identified as substantial laggards in achieving diversity in their graduating baccalaureate classes:

- **For Women: Physics, Engineering, Engineering Technology and Computer Science.** Collectively, only about one-in-five students earning baccalaureates in these fields were women in 2004, compared to a one-in-two rate seen when considering S&E as a whole. Within Engineering, the sub-disciplines of Electrical and Mechanical Engineering were found to be particularly weak areas where collectively only 14% (about one-in-seven) of baccalaureate-earners were women in 2004 – exactly just one-half the 28% level recorded for all other Engineering sub-disciplines combined.
- **For Minorities: Physics, Mathematics and Engineering.** For both Physics and Mathematics, substantial under-representation as baccalaureate-earners is seen for all three minority groups considered (Blacks, Hispanics and Native Americans), while for Engineering, substantial under-representation is seen for both Blacks and Native Americans, with such under-representation generally extending throughout the various sub-disciplines of Engineering.

Given these findings, the issued reports look to serve as a “call to action” to colleges/universities, relevant professional societies, and other appropriate entities to undertake and/or support new or additional efforts specifically focused on increasing the enrollment and retention of women and minorities nationwide in the academic fields identified. In this regard, the reports put forth the following specific diversity goals:

- **For Women:** Achieving 33% (one-in-three) female baccalaureate-earners in Physics, Engineering, and Computer Science – and 25% (one-in-four) in Engineering Technology – by the year 2020. To achieve the 33% goal in Engineering, particular focus needs to be placed on the lagging sub-disciplines of Electrical and Mechanical Engineering, given that they account for about one-half of all baccalaureates awarded annually in Engineering.
- **For Minorities:** Achieving diversity levels in Physics, Math and Engineering baccalaureates-earners on a par with corresponding levels seen for S&E as a whole (which, for 2004, was: 8.4% Black; 7.3% Hispanic; 0.71% Native American). Based on the data examined, increases on the order of 50-100% in the number of baccalaureates in those fields that are “minorities of concern” (Blacks, Hispanics and Native Americans for Physics and Math; Blacks and Native Americans for Engineering) are needed to achieve such a goal.

To aid in women/minority recruiting efforts, *DedicatedEngineers* has simultaneously released today “Improving Engineering’s Public Image: Ten Guiding Principles,” a document (available [online](#)) detailing a 10-point set of guiding principles for establishing a “new and improved” image for engineering and engineers, one designed to be particularly compelling in regards to attracting today’s youth to engineering studies and careers.

Engineers Dedicated to a Better Tomorrow (a.k.a., *DedicatedEngineers*, online at www.DedicatedEngineers.org) is a charitable/educational non-profit [IRS 501(c)(3)-approved] dedicated to “making a difference,” both in terms of advancing the engineering profession, as well as in helping improve the world through the practice of engineering.

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¹ The two issued reports (both available online at www.DedicatedEngineers.org) are:
 “Women in Engineering & Related Fields – Diversity Analysis of Students Earning Bachelor’s Degrees”
 “Minorities in Engineering & Related Fields – Diversity Analysis of Students Earning Bachelor’s Degrees”