Report from the breakout session of the Curriculum Industry Advisory Board, Chaired by Denny Branca:

**Overall Hiring Needs of Industry**
- Need a talented pipeline of electrical engineers
- Need a reliable pipeline of EEs – from both numbers and knowledge-level
- Turnover in industry is a problem – one company cites each EE turnover equivalent to $300K and 2-year investment loss
- On-line education an effective component of education
- (From show of hands), advisory board needs 50% undergrad EEs vs. 50% masters/PhD EEs
- Consider German-model of 2-tiered EEs – full degree (more specialized & hands off) vs. certificate/diploma (more general and hands on)
- Different roles in industry require different skill levels
- Need EEs who understand, or have experience with, troubleshooting. Too many are analytical, but no practical hands-on experience
- Systems-thinkers vs. product-thinkers. Industry needs systems people.
- Coops/Intern programs are still valuable/recommended. Getting industry tied to academia in sophomore->senior years helps student, university and industry
- Need to connect middle and high schools with universities to get kids excited about EE
- Cross-discipline training of EEs makes them better --- like senior design projects with ME’s or biomed-E’s.
- For power electronics sector, need EEs that have more experience with thermal packaging, high-performance controls, labs with real equipment
- Work in “ethics, verbal communications, loyalty, teamwork” themes in instruction – students need these values/messages, not just analytics
- Need visualization, digital signal processing skills

**Feedback on Flip-Course Teaching Style**
- Many high schoolers are used to videos/clickers in the classroom, so should be very adaptive/supportive of this style
- Short pre-work assignments seem much more effective than ‘read Ch. 1’ for preparation
- Encourage consortium to show this teaching method to community colleges --- they are the feeder system to many universities
- Voting with clickers is far less intimidating than raising hand – more participation
- Concern with ‘first video made’ becomes the sole voice/authority on subject. Teachers have biases, blindspots, etc., so need 3+ videos on same topic and improve/refine from there
- Clickers/videos may mean students never have to verbalize themselves – need verbal comm’n skills too

**10-Second Soundbites – Messages from Industry Board to Educators**
- Troubleshooting skills are key – labs, coop assignments, etc.
- Consider German educational system – specialized vs. general degrees/diplomas
- Interdisciplinary study/experience is to be encouraged
- Undergrads need basics, fundamentals, EE coursework; Graduate-level need specialization and niche EE coursework
- Encourage students to make site visits to industry settings
- Systems thinkers >> component thinkers
• Integrate labs and lectures
• Encourage/advertise IEEE PES scholarships for power EE students
• Promote intern/coops with one company vs. hopping around companies
• Industry needs those on-line courses for continuing education!!
• Consider verbal examinations as a part of curriculum
• Need energetic/passionate teaching --- you model what EEs and industry looks like to students!
• Expose NERC reliability standards to EEs – power engineers