

A model for UG education in Engineering Sciences

Gurunath Ramanathan

&

Anandh Subramaniam

IIT Kanpur

With inputs from

- Prof. P. K. Kalra
- Prof. Nishith Verma
- Prof. D. Mazumdar
- Prof. K.S. Venkatesh
- Dr. J. Subramaniam
- & others



Justification

- Focus areas of importance need skills across disciplines
- B. Tech. MBA is a sought after combo of courses
- Placement data from IIT Kanpur

Placement 2009

Department	Total	Placed	Core sector*	Non-core sector*
EE	52	49	18	31
ME	47	44	12	32
CE	40	26	11	15
CHE	35	30	16	14
CSE	23	22	12	10

*- core definition – job that only their sub discipline training is a requirement; 40% went to core; Non-cores include industries like - consultancy, IT, finance/ banking, analytics and the like

Paradox

- non core sectors are retraining our graduates.
- Our graduates rarely use what they learn in our technical school for these jobs
- Can we change the curriculum to tailor the non-core industry needs?
- Focus on problems of the future like
 - Energy
 - Infrastructure
 - Geomatics
 - Health
 - Engg. Entrepreneurship etc.

Avante-Gardé course structuring

- focus on what the non-core/ emerging areas need rather than on conventional disciplines
- eg. In energy (one requires a bit of civil, Electrical, mechanical, computers, chemical, management etc.)

Course structuring

- Academic restructuring?
 - 3 schools of Natural sciences, Engineering sciences & Humanities and social sciences
 - 1st year is a common program of basic sciences, humanities and physical education
 - 2nd year + 3rd year – super core (a basket of courses drawn across disciplines to fulfill the above needs).
 - 3rd and 4th year – minors in the any 2(or 1) traditional sub disciplines

Advantages

- We give the skills required for the non-core sector.
- More hands on training during super cores enables one to make a better product for the industry
- Meet the current demands of the society and the industry