

# **A model for the UG Program at IIT Rajasthan**

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# The New Reality

- India is a global economic power
  - Aspirations of the society have increased
  - Demands on industry have drastically changed
- Address major paradigm shifts
  - Globally competitive
  - Rapidly evolving technological needs
  - Rising expectations of students and parents

# Stakeholders

- **Students**

- IITs attract the cream of the country's students
- Black box approach
  - Motivational deficit
  - Lack of intellectual curiosity
- Poor experimental skills
- Poor communication skills
- Ignorance of world around

- **Teachers**

- **Overemphasis on analysis**

- Scope for tapping students' creative potential limited
    - Very little synthesis
    - Inadequate connection to real engineering problems

- **Industry/R&D**

- **Vision**

- **Cutting edge technologies**

- **Adapt technology to changing environment**

- **Address law of diminishing returns in technology development**

# Focus

- Carve a niche in Science & Technology
  - Provide avenues to hone skills
    - Managerial
    - Entrepreneurial
    - Social
- Technological solutions to local problems
- Nation building through technology development
  - Sensitise students to local needs
  - Inculcate spirit of team work
  - Cultivate leadership qualities
  - Instill national pride

# Skill-Sets

- Mathematical skills
- Analytical skills
- Experimental skills
- Hardware friendly
- Scientific temper
- Inter-disciplinary orientation
- Synthesis
- Communication skills
- Cultural and social awareness

# Current Curriculum

- Strengths
  - Science-based education
  - Emphasis on fundamentals
  - Rigorous analysis
  - Humanities and social sciences

- **Weaknesses**

- Less emphasis on working with hands and tinkering
- Too much content
- Lack of flexibility to select courses vis-a-vis maturity, aptitude and interest
- Little scope for inter-disciplinary specialization
- Little stress on communication skills in evaluation

# Looking Ahead

- Broad-based, holistic education
- Emphasis on inter-disciplinary education
- Develop aptitude for experiment and exploration
  - Project-based laboratories
  - Minimum laboratory credits
- Flexibility
- Mid-stream course correction
- Earning credits with universities of repute
- Project-oriented internships in industry/R&D
- UG research

	HSS	Sc	Esc	TA	Deptt	Open/Core Electives
Original 1963	18.7	22.6	13.2	11.3	34	
I UGRC 1970	16	20	10	10	32	12
II UGRC 1981	10.9	12.9	15.2	6.5	41.3	12.9
III UGRC 1992	10	15	15	5	42.5	12.5
IV UGRC 2001	9.6	19.2	9.6	2.4	50.0	2.4
<b>V ARC 2008 Proposed</b>	<b>12-15 Includes Mgt.+ Comm Skills+ Foreign Lang.</b>	<b>20 Compulsory Electives</b>	<b>10</b>	<b>2-5 Manufact. + Engg. Drawing</b>	<b>35-40 Comulsory : 25-30  Electives: 10</b>	<b>15</b>

# Inter-Disciplinary Flavour

- Inter-disciplinary minors
- Second Bachelors/Masters degree
  - Option for a second degree exercised at the end of III year
  - Switching between Science/Economics and Engg. Degrees
- B.Tech. in Engineering Sciences
  - It will have a compulsory core like other students.
  - Stress will be on engineering sciences.
  - Multiple minors or interest-based course stream in departmental compulsory slots

# Organisation

- Pre-requisites
  - Retain inherent strength of existing departments.
  - Promote inter-disciplinary education.
  - Seamless integration in teaching and research.
  - Flexibility to students.
  - Faculty on the “edge”.
  - Government rules.
  - Sense of security.
- Structure
  - Departments with an overarching “school.”
  - Aggregation based on synergies.

Thank You!