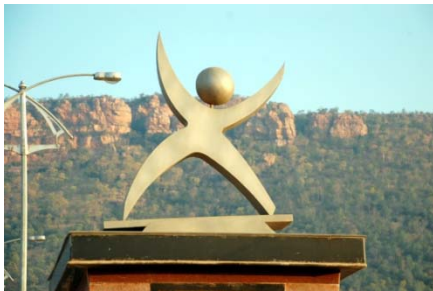


Leveraging ICT in a Unique Way for Education – The RGUKT Experience

RGUKT - On Course of Providing Access of High Quality Engg Education to Rural Youth of AP

Prof. R. V. Raja Kumar
Vice-Chancellor

**Professor, Dept of E&ECE, IIT
Kharagpur**





About RGUKT



- Established in 2008 by Govt. of A P
- Empowering the disadvantaged rural youth through high quality engg education
- 85% of seats for rural best (Mandal basis); 70% - Govt
- 2000 rural best students taken into each of the 3 IIITs every year
- Top 1% of those passing 10th class
- Free education, food, ...

Basara



R K Valley

Nuzivid



Mahabubnagar dt



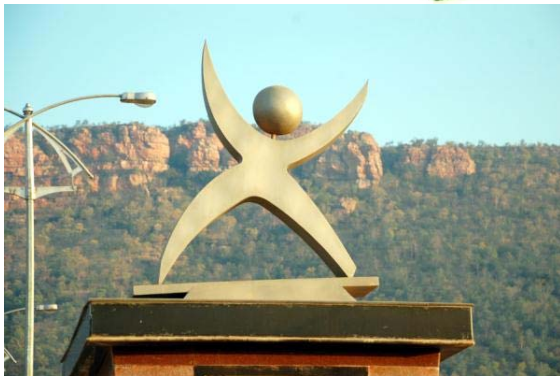
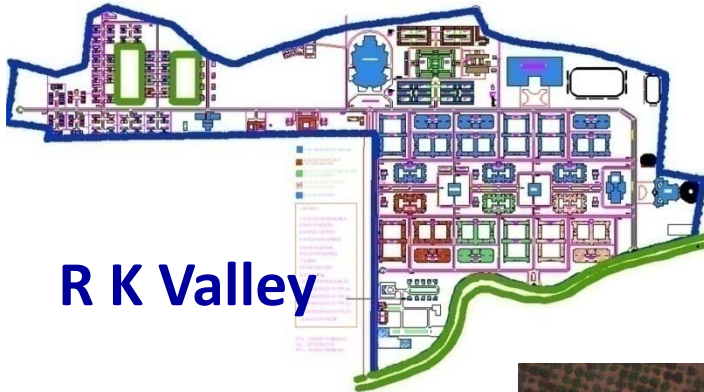
Campus Infrastructure



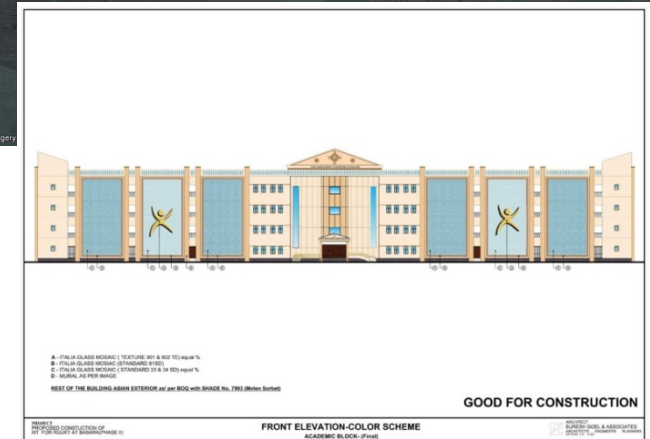
Basara



R K Valley



Nuzivid



RGUKT



Academic Programs @ RGUKT

- 6 years (PUC+BTech) with one Major in
ECE / ME / CE / Chem Engg / Mat Sc.,/CSE

Scope for one (or two) Minors Science / Humanities /
Management and 2nd Major in CSE

- MTech in Computational Engg .
- A strong PhD programme from July 2011



The Objective



- Share the unique pedagogical exercise and overcoming of the scale problem.
- Share the experience with sister universities and society.
- Encourage the sister universities to adopt the mechanism and resources.
- Provide support to the NMEICT initiative



A Unique ICT Based Education → Scale Problem

- ICT based education
- Pedagogy emphasizes self learning and learning by doing
- Dedicated laptop for every student
- 150 ICT enabled semi-virtual class rooms in each campus
- Three semester system

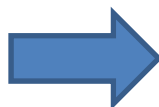




A Hybrid of Learning-by-Doing and Conventional Lecturing



Conventional
• 50 min class



RGUKT's hybrid mode

- 45 min conv/video lecture +
- 45 min browsing cum interactive +
- 30 min problem solving

- Video lecture is from the best of professor's in the country/abroad.
- Lecturing & Interaction session from v. good faculty.

The best of both methods



A Typical Class Room





Actual Learning and Holistic Education



- Strong technical education supported by ICT and actual laboratories
- Human values
- Soft skills and Professional development
- Extra computer and Humanities courses



e-Resources Used in Class Rooms



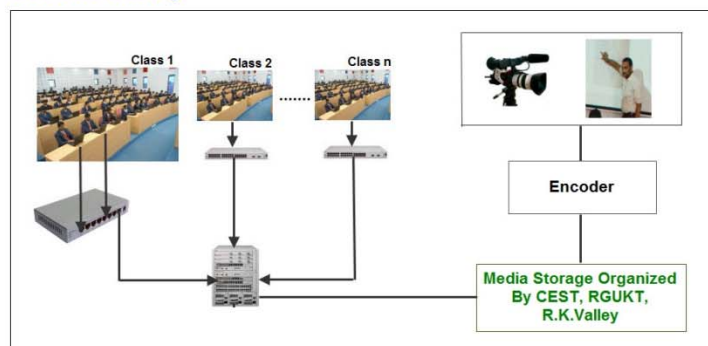
- Video courses from very selected experts
 - RGUKT's own courses
 - NPTEL courses
 - p-NPTEL courses
 - Other resources (MIT, public domain lectures)
- Traditional lectures
- e-content for browsing
 - RGUKT's own books, e-text books, NPTEL and p-NPTEL web courses
- e-journals, information on www



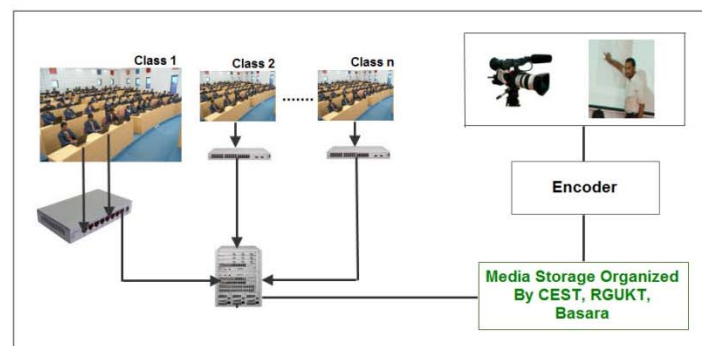
The IT Infrastructure



IIIT R.K.Valley

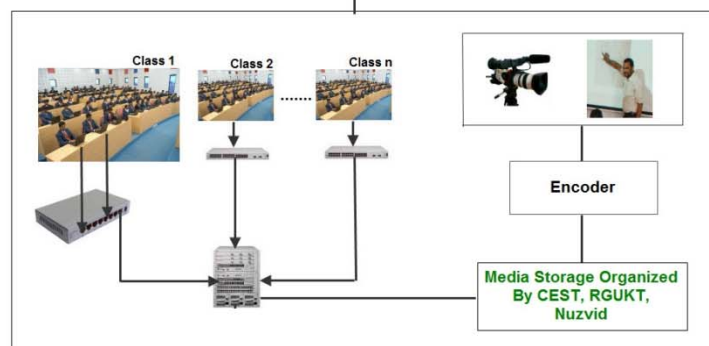


IIIT Basara

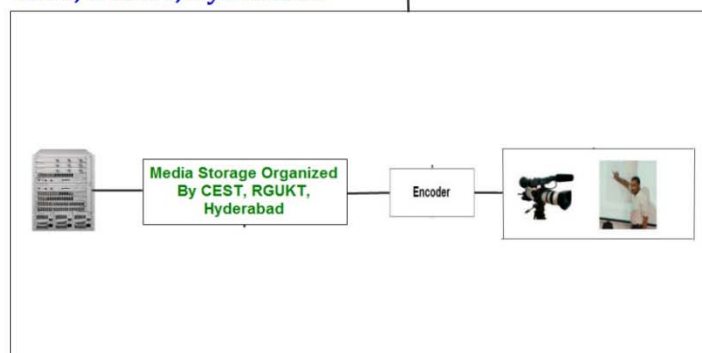


National Knowledge Network

IIIT Nuzvid



CEST, RGUKT, Hyderabad






Full Video Courses Created by RGUKT, p-NPTEL, NPTEL....




Introduction
Circuit Symbol for FET
Characteristics of a MOSFET
Construction of an Enhanced Mode MOSFET



15:09 / 42:43

C-DEEP
UT-Ranchi



Introduction
Applications
Quiz 1
Electromagnetic spectrum

03:41 / 17

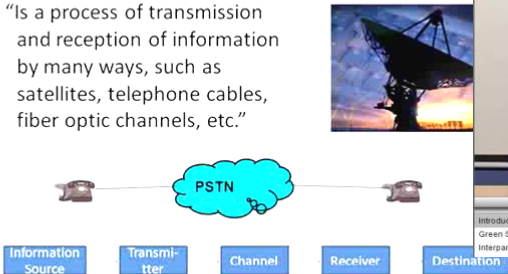
Application of EM Waves

- Transmission lines and HF circuits
- Antennas
- Satellite communication
- Fiber optic communication
- Cellular and wireless communications
- Radars
- Radio Astronomy
- EMI / EMC

RGUKT

Communication

"Is a process of transmission and reception of information by many ways, such as satellites, telephone cables, fiber optic channels, etc."



Prof. R. V. Raja Kumar

06:54 / 40:24

COMPRESSIBILITY

- Compressibility, in general, increases with increasing apparent density. A rather large amount of densification occurs at relatively low compaction pressure.
- Another term, which is very important for tooling design, is the compression ratio. It is the ratio of the volume of loose powder to the volume of the compact made from it.
- A low compression ratio is desirable because of following reasons:
 - Size of the die cavity and tooling can be reduced
 - Breakage and wear of tooling is reduced
 - Press motion can be reduced
 - A faster die fill and thus a higher production rate can be achieved.

RGUKT



Video Courses of E1 for ECE @ RGUKT



S No.	Subject	Videos Available for the subject	
		Video 1	Video 2
1	Mathematics - I	Prof. Satyanarayana, RGUKT	
2	Mathematics - II	Dr. K. Srinivasa Rao, RGUKT	
3	English	Dr. Sumita Roy,,OU, RGUKT	
4	Physics	Prof. Nageswara Rao, RGUKT	Prof. Ranade, IITB
5	Chemistry	LatProf. Mohan Rao, RGKT	Prof. Leelavathi, OU
6	Electrical Technology	Prof. Bhattacharya, IITKGP	Mr. Prashanth, RGUKT
7	Programming and Data Structures	Dr. P.P.Chakraborty, IITKGP	
8	Engineering Drawing	Dr. BVR Guptha for RGUKT	Mr. Ajith Nayak, RGUKT
9	Introduction to Manufacturing Process	Mr. Naga Prasad, RGUKT	
10	Engineering Mechanics	Dr. Suresh Akella	Mr. Satyadev, RGUKT



Video Courses for E1, Sem3 of ECE



S No.	Subject	Videos Available for the subject		
		Video 1	Video 2	Video 3
1	Database Management Systems	Dr. Somayajulu, Dr. Subrahmanyam, NIT Warangal	Dr. S. Srinath, IIIT Bangalore	Prof. D. Janaki Ram, IITM
2	Managerial Economics	Dr. Nakula Reddy, OU		
3	Softskills			



E2 Video Courses of ECE



S No.	Subject	Videos Available for the subject
1	Introduction to Electronics	Prof. R.V. Raja Kumar, IITKGP
2	Network Theory	Dr. N.C. Jagan, OU for RGUKT
3	Semiconductor Devices	Prof. S. Karmalkar, IITM
4	Matrix Algebra	Dr. K. Srinivasa Rao, RGUKT

S No.	Subject	Videos Available for the subject	
		Video 1	Video 2
1	Analog Electronic Circuits	Prof. K. Radha Krishna Rao, IITM	
2	Signals and Systems	Prof. V. V. Rao , IITM & Prof R V Rajakumar (RGUKT)	
3	Electromagnetic Engineering	Prof. R.K. Shevgaonkar, IITB	
4	Design of Algorithms	Dr, Prahlad, IIITH (RGUKT)	Prof. Ranade, IITB
5	Probability and Stochastic Process	Prof. Satyanarayana, RGUKT	



Video Courses for E2, Sem3 of ECE



S No.	Subject	Videos Available for the subject
1	Internet Technology	Prof. Indranil Chkraborty, IITKGP
2	Business Communication	Prof. Anjali Gera Roy, IITKGP
3	General Studies	Prof. Nageswar, Dr. Sreedhar, OU
4	Foundations of Management	Dr. Sudhakar, RGUKT
5	Professional Development	Dr. Aruna, RGUKT
6	Introduction to Human Behavior in Organization	Dr. K Chakravarhi, IITKGP



E3 Video Courses of ECE



S No.	Subject	Videos Available for the subject		
		Video 1	Video 2	Video 3
1	Analog Communications	Prof. Surendra Prasad, IITD		
2	Digital Electronic Circuits	Prof. S. Srinivasan, IITM		
3	RF & Microwave Engg	Prof. K. R. Sharma, IITK		
4	Control Systems Engg	Prof. Mohan, IITKgp	Prof. M. Gopal, IITD	Prof. S.D. Agashe, IITB

S no	Subject	Videos Available for the subject	
		Video 1	Video 2
1	Digital Communications	Prof R V R Kumar & S Chakrabarty, IITKGP	Prof. Bikash Kumar, IITB
2	VLSI Design	Dr. Nandita Dasgupta, IITM	
3	Micro Controllers and Embadded Systems	S Chattopadhyay, IITKgp	
4	Digital Signal Processing	Prof. S.C. Dutta Roy, IITD	



Video Courses for E4, Sem1 of ECE



S No.	Subject	Videos Available for the subject
1	Mobile Communications	Prof. R.V. Raja Kumar, IITKGP
2	Digital Image Processing	Prof. P.K. Biswas, IITKGP
3	Optical Communications	Prof. R.K. Shevgaonkar, IITB
4	Computer Networks	Prof. Sujoy Ghosh, IITKGP
5	Network Security	Debdeep Mukhopadhyay, IITKGP
6	Analog IC Design	Nagendra KrishnaPura, IITM
7	Data Mining	



Video Courses for E4, Sem2 of ECE




S No.	Subject	Videos Available for the subject
1	Digital VLSI Circuits	Prof. S. Srinivasan, IITM
2	RF Integrated Circuits	Dr. Shouribrata Chatterjee, IITD
3	Pattern Recognition	Prof. P.S. Sastry, IISC Bangalore
4	Digital Voice and Picture Coding	Prof. R.V. Raja Kumar, IITKGP
5	Satellite Communication	
6	Information Theory and Coding	Prof. S.N.Merchant, IITB
7	Detection and Estimation Theory	



A View of the Typical Content Server





Rajiv Gandhi University of Knowledge Technologies

Catering to the Educational Needs of Gifted Rural Youth of AP

Engg2

- Orientation
- Semester1
 - Orientation
 - Value_Education
 - ECE
 - CSE
 - Chemical
 - Civil
 - MME
 - ME
- Minor
- Semester2
 - Orientation
 - Value_Education
 - ECE**
 - CSE
 - Chemical
 - Civil
 - MME
 - ME
- Minor
- Semester3
 - English-Library
 - Language_Lab

Analog Electronic Circuits | Signals & Systems | Electromagnetic Engg | PSP | DOA | Analog Circuits Lab | Devices Lab | Human values-2

Unit: EC2201 - Analog Electronic Circuits (29 Items)

1	Common Emitter Amplifiers
2	Transistor Biasing Using Single Supply
3	Varieties of MOSFETS and JFETS
4	Characteristics of MOSFET
5	Cascading Amplifiers
6	Cascading (Direct Coupling)
7	The Differential Amplifiers
8	BJT Differential Amplifiers
9	MOSFET Differential Amplifiers
10	Cascading Differential Amplifiers
11	Current Source and Current Sink
12	Feedback Theory
13	Negative Feedback - I
14	Negative Feedback - II
15	Y - Feedback
16	h and g Negative Feedback
17	g Feedback with MOSFET
18	Operational Amplifier in Negative Feedback Structures - I
19	Operational Amplifier in Negative Feedback Structures - II
20	Positive Feedback (Regenerative)

Sidebar
Announcements



The Challenges Faced in Founding RGUKT



- Mammoth scale → intake of 6000/3000 students per year.
- ICT based education → Generating e-content in large scale,
- Creating infrastructure, Labs, curricula, regulations and academic culture,
- Raising faculty of high caliber amidst scarcity.
- ICT based education for fine arts and content generation.



Video Lecture Demos into Class Rooms





Benchmarking

- The I batch is in 4th year Engg
- 24,000 students, 450 ICT enabled classrooms
- Bright faculty → IITs, IISc, UoH, other universities
- The students are bright, lively and young technocrats
- Benchmarking → Curricula, regulations, academic practices and the other best practices of IIT Kharagpur and IIT system itself





Acid Tests and the Way Forward



- Employability and placement of 6000 students of the first batch.
- Performance in benchmark tests → GATE, IES, CAT,...
- Sustaining faculty excellence and development.
- Consolidation.
- Continued financial support.
- Possible replication in other states.

Thank You