
AN INTEGRATED COURSE IN RURAL TECHNOLOGY

* R.K.Singal,

1. INTRODUCTION :

The usefulness of an education system depends upon its relevance to the social and economic environment. There is hardly any place in our curricula and syllabi of our engineering courses for rural industries, transport, agricultural practice, rural forestry, irrigation needs, building materials, housing and other rural development programmes which touch the lives of 76 percent of our population. These deficiencies and distortions in our engineering education can be rectified by introducing an integrated engineering course in Rural Technology.

The paper proposes the design of a course at degree level in Rural Technology which includes the course contents, methodology of teaching and evaluation so that education can be fully integrated with rural development. The students are expected to be exposed live rural situations and village problems and will be trained to solve them using appropriate technologies and management techniques. The students will earn and receive suitable compensation for the services rendered by them so that their output are of professional standards.

In a country of 5,76,276 villages, Rural Technology graduates will not only transform the lives of rural population but the scheme will be useful and a very powerful source of employment generation for the technically educated manpower.

2. COURSE CONTENTS:

The curriculum of the Under-graduate Programme is so designed that the successful graduates of this course in Rural Technology would be well equipped for

employment or self-employment in rural areas to exploit the rural resources for economic and social development of rural population through technology and management techniques. The course has been designed as an eight semester programme of equal credits spread over four years and covers various disciplines of engineering and management as relevant to rural development. The broad division on credit rating is given below:

Engineering Sciences	: 18 credit units
Construction Engineering	: 37 credit units
Mechanical Engineering	: 42 credit units.
Electrical, electronics and computer engineering	: 45 credit units
Food, agriculture, irrigation and chemical engineering	: 22 credit units
Industry and management	: 32 credit units
Practical Training/projects	: 44 credit units
Total	: 240 credit units.

The course contents are specially designed for the Integrated course for rural development. The detailed Schedule of Courses to be offered for the B.Tech. degree in Rural Technology is enclosed as Annexure-I.

3. TEACHING METHODOLOGY

Variety of class-room techniques and training methods should be used to make learning purposeful and productive. Extensive range of Audio-visual equipment should be used in the lecture sessions. Specially prepared video films of half-an-hour duration for lecture sessions should be

followed by intensive discussions to ensure active participation by the students.

Case Method should be used to inculcate in the student, capability to analyse, select problems and to develop analytical thinking and rational approach to problem solving.

Training methods should also include syndicate discussions and working sessions. The faculty should be drawn from various basic disciplines, having diverse experience in design, industry, business and Government in variety of functional areas and should be able to bring to bear academic concepts to practical problems. Practising engineers and executives should be invited for special lectures complement the full-time faculty. Management games should be played to simulate real-life environment demanding active involvement and participation.

The training and project work should be carried out in selected villages and industrial units for solving live rural problems. The students should be associated with practising engineers and managers engaged in rural projects and they should be paid suitable compensation so that their outputs are of professional standards. The programme should thus be knowledge centered, application oriented and a source of earning for the students.

4. FACILITIES:

The library should have Technical books, Dictionaries, Encyclopedias, Handbooks, Manuals, Workbooks. It should have video based and self-learning modules and TV studio multi-media expertise in the development of special video-based self-learning modules.

The Computer Center should be equipped with hard disk based super mini computer system, PCs with System and Application Software, draftsman package and plotter.

The workshop should have facilities for machine shop, welding, carpentry, casting,

forging, repair technologies and prototype development and testing. The laboratories should be equipped with state-of-art technology pilot plants relevant to rural application.

Special projection rooms and seminar halls should be provided with audio-video systems.

5. TRAINING AND PROJECTS:

Special emphasis should be placed on training and project work to ensure students' participation in rural projects and problem solving. Nearly 20% time has been reserved for training and project work in the form of six slots, one nearly in each semester. The students are expected to be exposed to live rural situations and village problems and should be trained by the practising engineers and executives to solve them by using appropriate technologies and management techniques. The students should learn and earn suitable compensation for the services rendered by them in the execution of actual projects in progress.

6. CONCLUSIONS

It is expected that Rural Technology graduates will play a very important role towards rural development. There is need of large number of such engineers and managers who can be involved in planning and exploiting the local resources available in the 5,76,276 villages in the country for transforming the lives of rural population forming 76 % of our total people in the country. Only through such engineers specially trained for rural development can the Governmental rural development programmes be meaningfully implemented for achieving desired results.

The overall rural development is possible only through large number of rural industries, mechanization of agriculture, food harvesting and preservation, food processing, etc. There is a need for a very large number of Rural Technologists for the planning, execution and control of such projects and programmes.

ANNEXURE -1

SCHEDULE OF COURSES TO BE OFERED FOR B.TECH DEGREE IN RURAL TECHNOLOGY

SEMESTER	CODE NO.	TITLE	CREDITS
I	S-101	Engineering Mathematics	4
	S-102	Engineering Physics	4
	S-103	Engineering Chemistry	4
	C-101	Engineering Drawing	4
	C-102	Surveying	4
	M-101	Manufacturing & Repair Practices	4
	S-110	Engineering Mathematics [P]	2
	S-111	Engineering Physics [P]	2
	S-112	Engineering Chemistry [P]	2
TOTAL			30
II	M-201	Machine Drawing	4
	C-201	Elements of Civil Engg.	3
	E-201	Elements of Electrical Engg.	3
	CH-201	Elements of Chemical Engg.	4
	A-201	Elements of Agriculture Engg.	4
	C-202	Public Health, Sanitation and Domestic Water Supply	4
	M-210	Workshop Practice [P]	4
	C-210	Surveying [P]	4
TOTAL			30
III	M-301	Elements of Mechanical Engg.	4
	EC-301	Elements of Electronic Engg.	4
	Co-301	Elements of Computer Engg.	4
	S-301	Organisation Behaviour and Communication	4
	A-301	Animal Husbandry & Dairy Engineering	4
	C-310	Civil Engg. Laboratory	2
	E-310	Electrical Engg. Laboratory	2
	M-310	Mechanical Engg. Laboratory	2
	T-310	Practical Training	4
TOTAL			30

IV	E-401	Electrical Network & Distribution Systems	4
	C-401	Water Resource Management & Irrigation Schemes	4
	C-402	Village Planning and Road Construction	4
	M-401	Farm Machinery, Agricultural Pumps & Automobile Engg.	4
	Ec-401	Control Engg. & Instruments	4
	Co-401	Database Management Systems & Software Engg.	4
	Co-410	Computer Programming [P]	2
	Ec-410	Electronics Engg. Laboratory	2
	Ch-410	Chemical Engg. Laboratory	2
TOTAL			30
V	M-501	Engineering Materials	4
	M-502	Food Processing, Cottage & Rural Industries	4
	M-503	Mechanised Agriculture	4
	C-501	Architecture, Structural Design & Materials for Low cost housing	4
	C-502	Environmental Engg.	4
	S-501	Engineering & Managerial Economics	4
	T-510	Winter Project	6
TOTAL			30
VI	M-601	Maintenance Engg. & Management	4
	M-602	Food Preservation, Cold Storage and Refrigeration	4
	E-601	Repair & Maintenance of Electrical Equipment & Systems	4
	Ec-601	Telecommunications	4
	Co-601	Computer Applications in Rural Systems	4
	T-610	Summer Project	10
TOTAL			30

VII	I-701	Rural Facilities Planning	4
	I-702	Entrepreneurship	4
	I-703	Systems Approach to Problem Solving & Decision Making	4
	M-701	Rural Energy Sources and Power Supply Systems	4
	I-704	Human Factor Engg.	4
	T-710	Minor Project	10
			<u>TOTAL</u> 30

VIII	M-801	Rural Energy Technologies & Rural Development Programmes	4
	I-801	Project Engg. & Management	4
	I-802	Rural Resource Management	4
	I-803	Management of Small Scale Industries	4
	T-810	Final Project	14
			<u>TOTAL</u> 30

