

**Program Name** : Civil Engineering Program Group  
**Program Code** : CE/CR/CS  
**Semester** : Fifth  
**Course Title** : Rural Development (Elective)  
**Course Code** : 22505

## 1. RATIONALE

Rural development is the process of improving the quality of life and economic well being of people living in rural areas. Rural industrialization in the form of Cottage and Agro-based industries is vital for rural development. The content of this subject includes watershed management, cottage and agro-based industries, rural infrastructure development and study of various government schemes, etc. This will help the student to apply scientific knowledge in the process of sustainable development of villages through optimum utilization of both natural/man-made resources. This course has been designed so that the diploma civil engineer is able to use his knowledge for development of rural areas to make the villages a better place to live in.

## 2. COMPETENCY

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- Apply the principles of planning in rural development.

## 3. COURSE OUTCOMES (COs)

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following *industry oriented* COs associated with the above mentioned competency:

- Undertake surveys to decide the status of socio-economic significance.
- Identify the need of watershed management in rural areas.
- Suggest relevant government schemes for construction of roads, housing and energy conservation.
- Suggest the relevant cottage and agro based industries for the rural areas.
- Select the relevant schemes of Central/State Government for the rural areas.
- Apply the principles of rural development in rural areas.

## 4. TEACHING AND EXAMINATION SCHEME

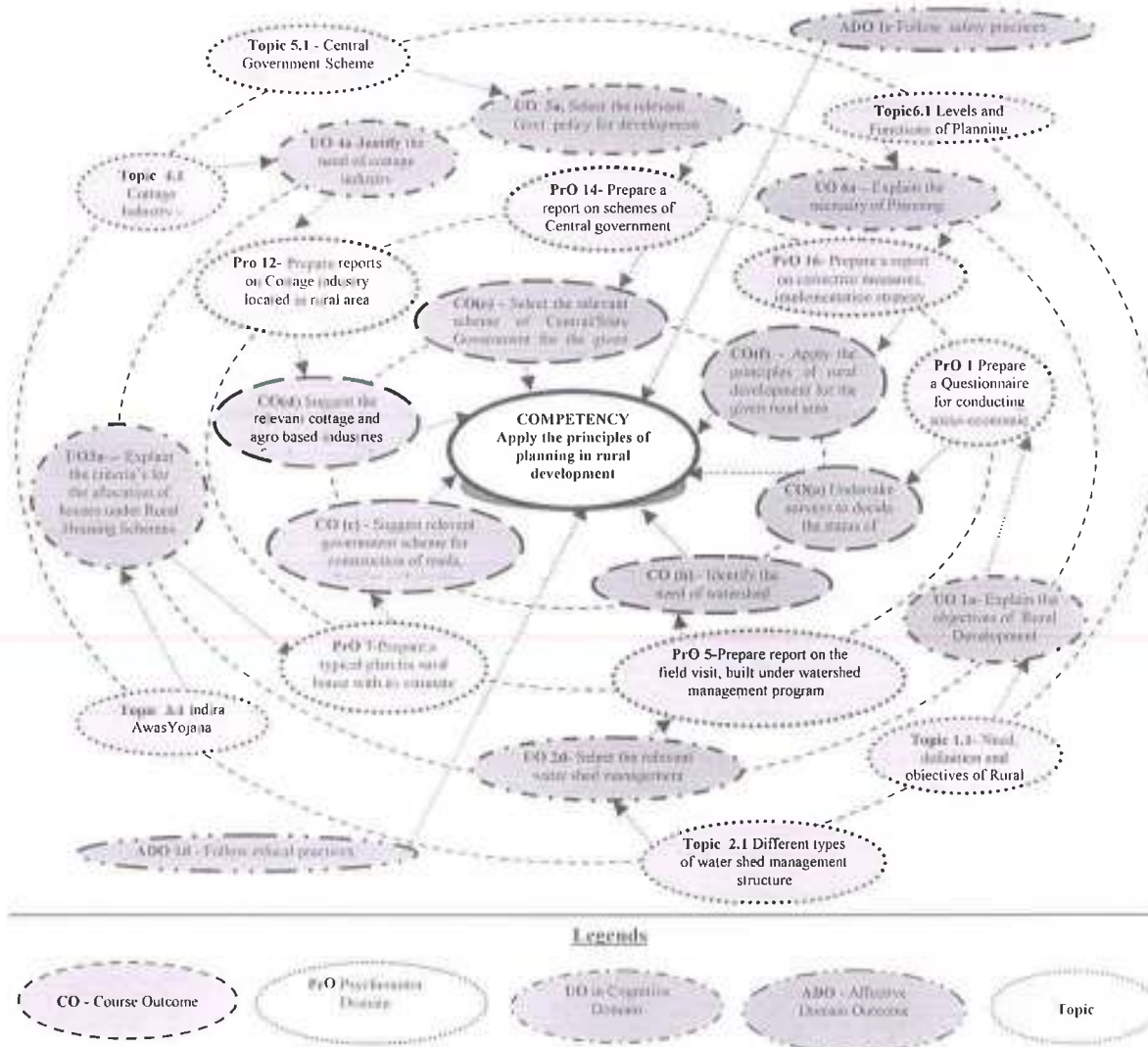
Teaching Scheme			Credit (L+T+P)	Examination Scheme												
L	T	P		Theory						Practical						
				Paper Hrs.	ESE		PA		Total		ESE		PA		Total	
					Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
3	-	2	5	3	70	28	30*	00	100	40	25@	10	25	10	50	20

(\*): Under the theory PA; Out of 30 marks, 10 marks of theory PA are for micro-project assessment to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessment of the UOs required for the attainment of the COs



## 5. COURSE MAP (with sample COs, PrOs, UOs, ADOs and topics)

This course map illustrates an overview of the flow and linkages of the topics at various levels of outcomes (details in subsequent sections) to be attained by the student by the end of the course, in all domains of learning in terms of the industry/employer identified competency depicted at the centre of this map.



### Figure 1 - Course Map

## 6. SUGGESTED PRACTICALS/ EXERCISES

The practicals in this section are PrOs (i.e. sub-components of the COs) to be developed and assessed in the student for the attainment of the competency.

S.No	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
1	Prepare a Questionnaire for conducting socio-economic survey	1	
2	Undertake Socio-economic survey of a small nearby village-Part I		

S.No	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
3	Undertake Socio-economic survey of a small nearby village-Part-II	I	02*
4	Analyze the data and prepare a report based on socio-economic survey which includes the list of available natural resources.	I	02*
5	Prepare the report on youth and woman empowerment on the basis of socio-economic survey and suggest a suitable solution with regard to education, training and employment.	I	02
6	Prepare the report on the field visit to the any one structure (K. T. weir, Gabian Structure, Cement Plug,) built under watershed management program.	II	02*
7	Prepare the report on the field visit to the any one structure (Contour Bunding, Farm pond, Underground Bandhara) built under watershed management program.	II	02*
8	Prepare the report on the field visit to the nearby Drip/Sprinkler /Lift Irrigation System with neat labeled sketch/layout along with the details of calculations for capacity, head, discharge and power for pump and pressure calculations for pipe.	II	02*
9	Prepare the typical plan for rural housing for, considering low cost housing/local material for construction.	III	02*
10	Prepare the estimate for the rural house having typical plan as mentioned in above practical no 7	III	02*
11	Suggest a typical cross section for the proposed new village road with justification and detailed note on its construction procedure with required specifications recommended by IRC.	III	02
12	Prepare the report of your recommendations of various schemes of State government regarding village development required to be implemented on the basis of socio-economic survey.	III	02*
13	Prepare the report, including your comments, on construction and working of Gobar gas/ Biogas plant with subsidies available, if any after undertaking the visit to the plant.	III	02
14	Prepare the report, including your comments, on construction and working of solar power panel with subsidies available, if any after undertaking the visit to the site.	III	02
15	Prepare a report on Cottage industry located in nearby rural area (Report should consist of raw material required, process, equipments required and area required) with layout and location plan for it.(on the basis of suitability and scope of that particular village)	IV	02*
16	Prepare a report on schemes of Central Government regarding village development, that are required to be implemented on the basis of socio-economic survey	V	02*
	<b>Total</b>		<b>32</b>

### Note

i. A suggestive list of **PrOs** is given in the above table. More such **PrOs** can be added to attain the COs and competency. A judicious mix of minimum 12 or more practical need to be



performed, out of which, the practicals marked as '\*' are compulsory, so that the student reaches the 'Precision Level' of Dave's 'Psychomotor Domain Taxonomy' as generally required by the industry.

- ii. The 'Process' and 'Product' related skills associated with each PrO of the laboratory/workshop/field work is to be assessed according to a suggested sample given below:

S. No.	Performance Indicators	Weightage in %
a.	Collection and Analysis of data	40
b.	Preparation of report /drawing	30
c.	Interpretation of result and conclusion	10
d.	Answer sample questions	10
e.	Submission of report in time	10
<b>Total</b>		<b>100</b>

The above PrOs also comprise of the following social skills/attitudes which are Affective Domain Outcomes (ADOs) that are best developed through the laboratory/field based experiences:

- Follow safety practices.
- Practice good housekeeping.
- Demonstrate working as a leader/a team member.
- Follow ethical practices.

The ADOs are not specific to any one PrO, but are embedded in many PrOs. Hence, the acquisition of the ADOs takes place gradually in the student when s/he undertakes a series of practical experiences over a period of time. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

- 'Valuing Level' in 1<sup>st</sup> year
- 'Organising Level' in 2<sup>nd</sup> year and
- 'Characterising Level' in 3<sup>rd</sup> year.

## 7. MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

The major equipment with broad specification mentioned here will usher in uniformity in conduct of experiments, as well as aid to procure equipment by authorities concerned.

S. No.	Equipment Name with Broad Specifications	PrO. S. No.
1	NIL	

## 8. UNDERPINNING THEORY COMPONENTS

The following topics/subtopics should be taught and assessed in order to develop UOs in cognitive domain for achieving the COs to attain the identified competency. More UOs could be added.

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
<b>Unit – I</b> <b>Overview of Rural</b>	1a. Suggest Modifications and improvements required for the development of the given rural	1.1 Rural Development :Need, definition, objectives • Rural development as a





Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
<b>Development :</b>	<p>area.</p> <p>1b. Describe the social, economic and political significance of rural development for the given area.</p> <p>1c. Describe the role of CAPART (Council for advancement of people's action and rural technology) in the development of the given type of rural area.</p> <p>1d. Describe the procedure for Socio-Economic survey for the given village.</p> <p>1e. Explain the Role of Civil Engineer in the development of given rural area.</p>	<p>phenomenon</p> <ul style="list-style-type: none"> <li>Rural development as a strategy</li> </ul> <p>1.2 Significance Of Rural Development</p> <ul style="list-style-type: none"> <li>Social significance- Rural problems, social change, resource utilization, infrastructure etc.</li> <li>Economic significance-- National income, employment, food and fodder, industrial development, internal trade and transport, capital formation, etc.</li> <li>political significance- Political stability,</li> </ul> <p>1.3 Rural Development Environment</p> <ul style="list-style-type: none"> <li>Panchayat raj institution</li> <li>CAPART (Council for advancement of people's action and rural technology)- Organizational set up, purposes, objectives, activities.</li> </ul> <p>1.4 Socio-Economic survey</p> <p>1.5 Role of Civil Engineer in Rural Development.</p>
<b>Unit– II Water Resource Management and Sanitation</b>	<p>2a. Select the relevant Water shed management structure in the given site condition.</p> <p>2b. Describe the procedure of the construction of farm Pond in the given site condition.</p> <p>2c. Explain the advantages and Disadvantages of Water shed management Structure for the given site condition.</p> <p>2d. Calculate the rain water harvesting potential for the given area.</p> <p>2e. Use the relevant method of Rainwater Harvesting suiting to the given site condition.</p> <p>2f. Draw the Layout of given type of irrigation system(s) showing its component parts for the given site condition.</p> <p>2g. Select the Irrigation System relevant to the given site condition.</p>	<p>2.1 Water shed management Structure (K. T. weir, Gabian Structure, Cement Plug, Contour Bunding, Farm pond, Underground Bandhara.): Uses ,Importance, Advantages and Disadvantages</p> <p>2.2 Rain Water Harvesting and Recharging of sources</p> <p>2.3 Irrigation System- purpose and Type</p> <p>2.4 Layout and component parts of Drip Irrigation, Sprinkler Irrigation and lift Irrigation</p> <p>2.5 Design parameter for laying Drip, Sprinkler and Lift Irrigation System</p> <p>2.6 Rural Water Supply – Sources. Low cost technique of treatment, Protection of Bore hole.</p> <p>2.7 Rural Sanitation- Low cost W.C., Readymade Toilet, Soak Pit techniques for constructing W.C.</p>



Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
		requiring less quantity of water.
<b>Unit III- Rural Roads, Housing and Energy</b>	3a Explain the criteria's for the allocation of house under Rural Housing Schemes for the given location. 3b Describe the credit-cum-Subsidy scheme for rural housing for the given locality. 3c Apply the principles of Rural Housing in Habitat Development in the given rural area. 3d Summarize the salient features of Pradhan Mantri Gram Sadak Yojna of Govt.of India. 3e Set up Rural Building Center for the given purpose in the given situation. 3f Calculate the minimum amount of energy, required to cater the need for domestic cooking, heating and lighting in the given rural area. 3g Identify the sources of renewable energy for the given site conditions.	3.1 Indira Awas Yojana – Salient features, beneficiary people, Conversion of Unserviceable Houses into Pucca/Semi-Pucca houses. 3.2 Credit-cum- Subsidy scheme of rural housing- Salient features, share of Central and State Government, 3.3 Rural Building Centers-Purpose, technology transfer, skill development, training, eco-friendly materials 3.4 Pradhan Mantri Gram Sadak Yojna(PMGSY)- Key elements, concept of rural road connectivity. 3.5 Low Cost Housing- Principles, purposes, use of Local Material for construction 3.6 Rural Roads- Type, Specifications, Construction Techniques and Road Drainage 3.7 Bio mass – Types of fuel such as Firewood, agricultural residues, dung cakes 3.8 Renewable energy and Integrated Rural Energy Programme – Objectives, key elements, implementation, financial provisions, sources of renewable energy 3.9 Working of Gobar gas and Biogas plant. National project on biogas development-technology, performance and implementation, financial assistance, involvement of Panchayat and local bodies.
<b>Unit-IV Rural Industry and Finance</b>	4a. Justify the need of cottage industry for the rural people in the given rural area. 4b. Classify the cottage industry on the basis of given criteria for the given rural area. 4c. Classify the agro based industry	4.1 Cottage Industry- Brick Manufacturing. Concrete hollow Block, Artificial Sandstone crushing plant 4.2 Agro based Industry- Dairy, Animal Husbandry, Horticulture, Sericulture, and

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
	<p>based on the given criteria.</p> <p>4d. Suggest the criteria with justification for setting the agro based industry for the given rural area.</p> <p>4e. Identify the sources of funds for the development of the given rural area.</p>	<p>Fishery</p> <p>4.3 sources of funds for rural development</p> <ul style="list-style-type: none"> <li>• Domestic (institutional and non –institutional)</li> <li>• foreign institutional and non – institutional)</li> </ul>
<b>Unit –V Government Policies Pertaining to Rural Development</b>	<p>5a. Select the relevant Government policy for the development of the given rural area.</p> <p>5b. Compare the different Government schemes of Rural development available for the given area.</p> <p>5c. Explain the salient feature of National Rural Employment Guarantee Act,2005 for the development of given rural area.</p> <p>5d. Describe the procedure mentioned in Prime Minister Rural Development Fellows Scheme for the given rural area.</p> <p>5e. Execute the Deen Dayal Upadhyaya Grameen Kaushalya Yojana for the development of the given rural area.</p>	<p>5.1 Central &amp; State Government Schemes</p> <p>5.1..1 Prime Minister Rural</p> <p>5.1..2 Development Fellows Scheme</p> <p>5.1..3 National Rural Employment</p> <p>5.1..4 Guarantee Act, 2005, NREGA</p> <p>5.1..5 Swarnjayanti Gram Swarozgar Yojana (SGSY).</p> <p>5.1..6 The Sampoorna Grameen Rozgar Yojna.</p> <p>5.1..7 Deen Dayal Upadhyaya</p> <p>5.1..8 Grameen Kaushalya Yojana.</p>
<b>Unit – VI Planning for Rural Development</b>	<p>6a. Justify the necessity of planning for the development of the given rural area.</p> <p>6b. Execute the relevant plan at the specified level of the given rural area.</p> <p>6c. Describe the functions of planning at micro, meso and macro levels for the given rural area..</p> <p>6d. Describe the process of micro level planning w.r.t.agriculture.</p> <p>6e. Describe the methodology used for executing the block and district level planning for the given rural area.</p> <p>6f. Identify the components of an ideal development project for the given rural area.</p>	<p>6.1 Plan and planning for rural development.</p> <p>6.2 Levels and Functions of Planning.</p> <p>6.3.1 Micro-level Planning</p> <p>6.3.2 meso-level Planning</p> <p>6.3.3 macro-level Planning</p> <p>6.3 Decentralization policy of Planning.</p> <p>6.4 Block and District Level Planning.</p>



**Note:** To attain the COs and competency, above listed UOs need to be undertaken to achieve the 'Application Level' of Bloom's 'Cognitive Domain Taxonomy'.

## 9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Overview of Rural Development	04	02	04	-	06
2	Water Resource Management and Sanitation	10	02	04	10	16
3	Rural Roads, Housing and Energy	12	02	08	10	20
4	Rural Industry and Finance	08	02	04	04	10
5	Government Policies Pertaining to Rural Development	06	02	-	06	08
6	Planning for Rural Development	08	-	04	06	10
<b>Total</b>		<b>48</b>	<b>10</b>	<b>24</b>	<b>36</b>	<b>70</b>

**Legends:** R=Remember, U=Understand, A=Apply and above (Bloom's Revised taxonomy)

**Note:** This specification table provides general guidelines to assist student for their learning and to teachers to teach and assess students with respect to attainment of UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may vary from above table.

## 10. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related **co-curricular** activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews:

- Prepare journals based on practical performed in laboratory.
- Give seminar on relevant topic.
- Undertake micro-projects.

## 11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various learning outcomes in this course:

- Massive open online courses (**MOOCs**) may be used to teach various topics/sub topics.
- 'L' in item No. 4 does not mean only the traditional lecture method, but different types of teaching methods and media that are to be employed to develop the outcomes.
- About **15-20% of the topics/sub-topics** which is relatively simpler or descriptive in nature is to be given to the students for **self-directed learning** and assess the development of the COs through classroom presentations (see implementation guideline for details).
- With respect to item No.10, teachers need to ensure to create opportunities and provisions for **co-curricular activities**.
- Guide student(s) in undertaking micro-projects.
- Demonstrate students thoroughly before they start doing the practice
- Encourage students to refer different websites to have deeper understanding of the subject.





- h. Observe continuously and monitor the performance of students in class and Lab.

## 12. SUGGESTED MICRO-PROJECTS

**Only one micro-project** is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based. However, in the fifth and sixth semesters, it should be preferably be **individually** undertaken to build up the skill and confidence in every student to become problem solver so that s/he contributes to the projects of the industry. In special situations where groups have to be formed for micro-projects, the number of students in the group should **not exceed three**.

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The total duration of the micro-project should not be less than **16 (sixteen) student engagement hours** during the course. The student ought to submit micro-project by the end of the semester to develop the industry oriented COs.

A suggestive list of micro-projects are given here. Similar micro-projects could be added by the concerned faculty:

- Prepare a report on implementation of Prime Minister Rural Development Fellows Scheme for the nearby Village after undertaking the visit to that village.
- Collect the detailed information on Pradhan Mantri Gram Sadak Yojana (PMGSY) that has been executed successfully for the given rural area and present the same in the form of the report.
- Summarize the salient features of the National Rural Employment Guarantee Act, 2005 (NREGA) that has been executed successfully for the given rural area and present the same in the form of the report.
- Prepare the report on the executed scheme under the banner of “Swarnjayanti Gram Swarozgar Yojana (SGSY)” to assist the poor families living below the poverty line in the given rural areas for taking up self employment.
- Prepare the report on the executed scheme under the banner of, “The Sampoorna Grameen Rozgar Yojna” to provide additional wage employment in the given rural areas with its impact on food security, improvement in nutritional levels.
- Analyze the E-Book released by the Ministry of Rural Development downloaded through internet with special reference to its initiatives and achievements.
- Collect the information of, “Deen Dayal Upadhyaya Grameen Kaushalya Yojana” and prepare a report on it with reference to the nearby village or rural settlement.
- Visit to - Ralegan Siddhi, Hiware Bazar, Chitrakut, Vanrai and prepare a report on it.

## 13. SUGGESTED LEARNING RESOURCES :

S. No.	Title of Book	Author	Publication
1	Rural Development in India: Past, Present and Future : a Challenge in the Crisis	Desai,Vasant	Himalaya Publishing House, Delhi ISBN 8183181929 ISBN 9788183181921
2	Rural Development Strategy	Rastogi , A.K.	Wide Vision, Jaipur ISBN -81-8068-000-2
3	Rural Development Principles, Policies and Management	Singh, Katar	Sage Publications India Pvt Ltd ISBN- 978-81-7829-926-2 (2013)
4	Dynamics Of Rural Development	Gaur, Keshav	Mittal Publications, 1992, Delhi



S. No.	Title of Book	Author	Publication
		Dev	ISBN:81-7099-396-2 ISBN-13:978-8170993964
5	Document Published by Ministry of Rural development	Govt. of India	Ministry of Rural development,

**14. SOFTWARE/LEARNING WEBSITES**

- <http://rural.nic.in/>
- <http://www.panchayat.gov.in/>
- <https://www.india.gov.in/topics/rural>

