ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
CBCS Pattern (From 2019-2020 onwards)
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

SEMESTER I				
Part	**Sub. Code**	**Title of the Paper**	**Hours**	**Credits**
I	22UTAL11/ 22UHNL11/ 22UFNL11	Tamil/Hindi/French	6	4
II	22UENA11/ 22UENB11	English through Prose & Short Story – Stream – A English through Prose & Short Story – Stream - B	5	4
III	22URDC11	Core-1 Fundamentals of Life Sciences	5	4
	22URDC21	Core-2 Basics of Farm Animal Management	5	4
	22URDP11	IRD Practical	2	2
	22URDA11	Allied-1 Introduction to Rural Society	5	4
IV	22UFCE11	FC – Personality Development	1	1
	22UCSH12	Communication Skill	1	-
	22UBRC11	Bridge Course	-	1
V	22UNCC/NSS/ PHY.EDU./ YRC/ ROT/ACF/NCB12	Extension Activities NCC/NSS/Phy.Edn./YRC/ ROTARACT/AICUF/Nature Club	-	-
		Total	**30**	**24**
SEMESTER II				
I	22UTAL22/ 22UHNL22/ 22UFNL22	Tamil / Hindi /French	6	4
II	22UENA22/ 22UENB22	English through Prose & Short Story – Stream A English through Prose & Short Story – Stream B	5	4
III	22URDC32	Core-3 Dynamics of Rural Development	5	4
	22URDC42	Core-4 Introduction to Agriculture	5	3
	22URDP22	IRD Practical	2	2
	22URDA22	Allied-2 Energy Science	5	4
IV	22UFCH22	FC – Social Responsibility and Global Citizenship	1	1
	22UCSH12	Communication Skill	1	1
V	22UNCC/NSS/ PHY.EDU./YRC/ ROT/ACF/NCB12	Extension Activities NCC/NSS/Phy.Edn./YRC/ ROTARACT/AICUF/Nature Club	-	1
		Total	**30**	**24**
SEMESTER III				
III	22URCA53/ 22URCH53/ 22URCS53	Core-5 Agronomy of Field Crops/ Dairy Husbandry/ Participatory Rural Appraisal	4	3
	22URCA63/ 22URCH63/ 22URCS63	Core-6 Agronomy of Horticultural Crops/ Milk and Milk Products/Gender, Society and Development	4	3
	22URCA73/ 22URCH73/ 22URCS73	Core-7 Agricultural Entomology / Farm Management Practice-I /Human Behaviour in Rural Society	4	3

	22URAP33/ 22URHP33/ 22URSP33	IRD Practical	5	4
IV	22URDA33	Allied-3 Community Based Disaster Management	6	4
	22URDN13	NME-1 Contemporary Social Problems in India (for Science students)	3	2
	22USBZ13	SBE-1- Fundamentals of Computer, Internet and Office Automation	1	1
	22USBY13	SBE-1- Fundamentals of Computer, Internet and Office Automation – Practical	2	1
	22UFCE34	Environmental Studies	1	1
V	22UNCC/NSS/ PED/YRC/ROT/ ACF/NCB12	Extension Activities NCC / NSS / Phy.Edn. / YRC / ROTARACT / AICUF / Nature Club	-	-
	22UARE14	ARISE	-	-
		Total	**30**	**22**
SEMESTER IV				
III	22URCA84/ 22URCH84/ 22URCS84	Core-8 Plant Pathology/ Poultry Husbandry/ Rural Economics	4	3
	22URCA94/ 22URCH94/ 22URCS94	Core-9 Organic Farming/ Pig Farming / Science and Technology for Rural Development	4	3
	22URCA04/ 22URCH04/ 22URCS04	Core-10 Agricultural Bio-Technology / Farm Management Practice-II / Youth Empowerment and Policies	4	3
	22URAP44/ 22URHP44/ 22URSP44	IRD Practical	5	4
	22URDA44	Allied-4 Communication and Extension	6	4
IV	22URDN24	NME-2 Food Preservation	3	2
	22USBE34	SBE-1- Web Design	1	1
	22USBP34	SBE-1- Web Design – Practical	2	1
	22UFCH44	FC-Religious Literacy and Peace Ethics	1	1
V	22UNSS/NCC/ PED/YRC/ROT/ ACF/NCB12	Extension Activities NSS / NCC / Phy.Edn. / YRC / ROTARACT / AICUF / Nature Club	-	1
	22UARE14	ARISE	-	1
		Total	**30**	**24**
SEMESTER V				
III	22URDD15	Core-11 Social Welfare Administration	6	5
	22URDD25	Core-12 Community Based Organisation	4	3
	22URDD35	Core-13 Rural Social Problems	4	3
	22URDD45	Core-14 Social Research Methodology	**6**	**5**
	22URDP55	IRD Practical	**5**	**5**
	22URDE15	Core Elective-1 Commercial Agriculture	3	3

IV	22USSI16	Soft Skills	2	
		Total	**30**	**24**
SEMESTER VI				
III	22URDD56	Core-15 Development of the Marginalised	6	5
	22URDD66	Core-16 Corporate Social Responsibility for Rural Development	5	4
	22URDD76	Core-17 Rural Community Health	4	3
	22URDD86	Core-18 Rural Industries and Management	**5**	**4**
	22URDP66	IRD Practical – 15 day internship programme	**5**	**5**
	22URDE26	Core Elective-2 Animal Products Marketing	3	3
IV	22USSI16	Soft Skills	2	2
		Total	**30**	**26**

SEMESTER	**I**	**II**	**III**	**IV**	**V**	**VI**	**TOTAL**
CREDITS	**24**	**24**	**22**	**24**	**25**	**25**	**144**

Part – I		08
Part – II		08
Part – III		
	Core	87
	Allied	16
	Core Electives	06
	Total	108
Part – IV		
	Non-Major Electives	04
	Skill based Electives	04
	Value Education	04
	Total	12
Part – V		02
	Bridge Course	01
	Arise	01
	Communication Skill	01
	Soft Skill	02

SELF LEARNING COURSES			
Semester	**Sub. Code**	**Paper**	**Credit**
III	22URDSL3	Human Rights	3
IV	22URDSL4	Aquaculture	3
V	22URDSL5	Mushroom Production	3
VI	22URDSL6	Milk Products	3

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR – 625 514

Programme Specific Outcome of the Department of Rural Development Science

PSO1: To understand the nature and basic concepts of Biological Sciences, Agriculture, Animal Husbandry and Social Sciences.

PSO2: To integrate various aspects of Biological Sciences, Agriculture, Animal Husbandry and Social Sciences.

PSO3: To develop the specific skills of Biological Sciences, Agriculture, Animal Husbandry and Social Sciences through practical, field exposure and training.

PSO4: To analyse the usefulness of these subjects in becoming "Rural Development Personnel" and Entrepreneur.

PSO5: To apply the knowledge and skills acquired in Biological Sciences, Agriculture, Animal Husbandry and Social Sciences in training the farmers.

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I B.Sc., RDS	Part	: III Core-1
Semester	: I	Hours	: 75
Sub. Code	: 22URDC11	Credits	: 04

FUNDAMENTALS OF LIFE SCIENCES

(Outcome based syllabus under CBCS structure for the students admitted from the academic year 2022-2023)

Course Educational Objectives

- Learning the definition of Biomolecules their structure, types, sources, importance and function in living organisms
- Study the cell structure, differences of Plant and Animal cells basic concept of Genetics, Mendelian principle and hereditary units structure and functions
- Understanding the system physiology in plants and animals, pathway and organelles involved in System physiological process
- Educate of Microorganism their size, shape, structure and organelles, Importance's of microorganism
- Describe the flow of nutrients in bio-geo chemical cycles, interaction of atmosphere with solid earth, ocean and biota

Unit - I Biomolecules **(25 hours)**

Carbohydrates –Monosaccharide, Disaccharide, Polysaccharide; Proteins – Types, Importance of proteins; Lipids -Types, Importance of Lipids; Vitamins – Types of water and fat soluble vitamins – sources and Importance.

Unit – II Cell Biology **(20 hours)**

Cell - Structure and functions of plant and animal cells - Inheritance of Characters – Mendelian principles, Chromosomes, Heriditary material – DNA and RNA – structure and functions.

Unit – III System Physiology **(15 hours)**

Photosynthesis, Respiration in plants and animals, Digestion in animals, Excretion in animals, Reproduction in plants and animals.

Unit – IV Microbiology **(5 hours)**

Whittaker's Five Kingdom Classification- Monera, Protista, Fungi, Plantae and Animalia, Microorganisms – Bacteria and Viruses – Importance.

Unit – V Bioresources **(10 hours)**

Biogeo chemical cycles - Definition - Carbon Cycle, Nitrogen cycle, Phosphorus Cycle and Hydrological Cycle.

References

Arora, M.P., **Microbiology**, Himalaya Publishing House, Mumbai, 2005.

Ambika Sanmugam, **Fundamentals of Biochemistry**, Wolters Kluwer, India, 2005.

Ananthakrishnan, **Bioresources Ecology**; Oxford University, Mumbai, 1981.

De Robertis , E.D. P. and De Robertis, E.M.F., **Essentials of Cell and Molecular Biology**, Holt Saundars International, 1981.

Gardner, E.J., **Principles of Genetics**, Wiley Eastern, New Delhi.

Nagabushnam, R., Kodaarkar, M.S. and Sarojini, R., **Text book of Animal Physiology**, Oxford University Prress, New Delhi, 1987.

Paday, S.N. and Sinha, B. K., **Plant Physiology**, Vikas Publishing House Pvt. Ltd, 1988.

Powar, C.B., **Cell Biology**, Himalaya Book Publishing, New Delhi, 1989.

Teaching and learning methods

- Class Lecture
- Digital Presentation
- Practical demonstration
- Learning through exposure

Course outcome

S.No	Course outcome	Knowledge level (Bloom's Taxonomy)
CO1	Learning Biomolecules definition structure sources and their functions	**K1**
CO2	Familiarity the cell, Differences between Plant and animal cells. Concepts of Genetics and hereditary units	**K2**
CO3	Understanding the Physiology of plant and animal system and organelles involved in the physiological process	**K2**
CO4	Study the microorganism and their structure, reproduction ad importance	**K2**
CO5	Describe the flow of nutrients of biogeo chemical cycle and Interaction of atmosphere, solid earth, ocean and biota	**K1**

K1=knowledge; K2=Understanding K3=Application; K4=Analysis; K5=Synthesis&Evaluation

Mapping course outcome with:

- Programme objective
- Programme specific objective

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**Sum of COs with POs & PSOs**
CO1	**3**	**2**	3	3	2	2				**1**			**1**	17
CO2	**3**	**3**	2			2			**3**	**2**	**1**			16
CO3	**3**	**3**	3	2	2		2	1		**3**	**2**			21
CO4	**3**	**1**	3	2	3			2	**3**		**3**			20
CO5	**1**	**3**	3	3	2	2			**3**	**3**	**3**			23
Grand Total of COs with POs & PSOs														97
Mean Value of COs with POs & PSOs = =														2.36

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.36**
Observation	**COs of Fundamentals of Life Sciences are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I B.Sc., RDS	Part	: Core-2
Semester	: II	Hours	: 75
Sub. Code	: 22URDC21	Credits	: 04

BASICS OF FARM ANIMAL MANAGEMENT

(Outcome based syllabus under CBSC structure for the students admitted from the academic Year 2022-2023 onwards)

Course Educational Objectives

- Impart knowledge about history of domestication and classification of livestock
- Study the technical terms and definition in farm animal management
- Study and understand the structure and functions of vital systems found in the animal body.
- Impart basic knowledge required for the management of farm animals (Cattle, Sheep, Goat and Pig)
- Study about the different types of farming system and methods.

Unit – I Domestication and Classification (10 Hours)

History of domestication of livestock – growth of livestock industry in India – Vedic period, medival period and modern era, . Importance and role of livestock in India– challenges and opportunities –livestock resources and resources management - zoological classification of cattle, sheep, goat and pig-ICT in animal husbandry.

Unit – II Terminology and definition (10 Hours)

Definition of common terms applied to cattle, buffaloes, sheep, goat and pig - Factors of economic importance – age at maturity, age at first breeding, age at first calving/lambing/kidding/farrowing, calving/lambing/kidding/farrowing interval, breeding seasons.

Unit – III Digestive, Circulatory and Respiratory systems (20 Hours)

Digestive systems of ruminants and non-ruminants – structure and functions - Circulatory system – heart –structure and functions - arteries and veins -functions. Respiratory system-lungs – structure and functions.

Unit – IV Reproductive, Mammary, Endocrine and Excretory systems (20 Hours)

Reproductive System – structure and functions - oestrus cycle and different stages of estrus cycle, symptoms of oestrum, Structure and functions of mammary gland- Endocrine system in ruminants and non-ruminants – structure and functions of endocrine glands – pituitary, adrenal and pineal gland- Excretory system – kidney – structure and functions.

Unit – V. Farming Systems and methods (10 Hours)

Need and advantages-types of farming system-integrated- mixed-intensive, semi intensive and precision farming- cooperative farming and contract farming.

Book for study

Banerjee, G.C., Text Book of Animal Husbandry, Mohan Primlani Publishers, New Delhi, 2006.

Books for Reference

ICAR, Hand book of Animal Husbandry, ICAR Publications, New Delhi, 2017.

Bogart, R., Scientific Farm Animal Production, Surjeet Publisher, New Delhi, 2002.

Gopalakrishnan, C.A., Livestock and Poultry enterprises for Rural Development, Mohan Primlani Publishers, New Delhi, 1980.

Mukherjee, D.D. and Banerjee G.C., Genetic & Breeding of Farm Animals, New Delhi, 1990.
Shastry, N.S.R., Farm Animal Management Vikas Publications, New Delhi, 1978.
Shri Uma Shankar., Under Secretary, ICAR Hand Book of Animal Husbandry, Vani Educational Books, New Delhi, 1985.

Teaching and learning methods

- Class room lecture with models and specimens
- Digital presentation
- Student's seminar presentation
- Learning through field practical

Course outcome

S.No.	Course outcome	Knowledge level (Bloom's Taxonomy)
CO1	Learning domestication and classification of livestock	**K1**
CO2	Familiarize various terminologies used in animal husbandry	**K2**
CO3	Understand the various vital systems found in the animal body	**K3**
CO4	Analyze the differences among systems of ruminants and non-ruminants	**K4**
CO5	Asses the importance of various feed and fodder used for livestock	**K4**

K1 = Knowledge, **K2** = Understanding, **K3**= Application, **K4**= Analysis and **K5** = Synthesis

Mapping CO with PSO and PO

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	3	2	1	3	2	2	1	1	1			21
CO2	3	1	1	2	1	3	3	3	2	2				21
CO3	3	3	2	1	2	3	2	1		1	1			19
CO4	3	2	3		1	2	3	1		2	2			19
CO5	2	2	2	2	1	2	1		2	1				17
Grand Total of COs with POs & PSOs														97
Mean Value of COs with POs & PSOs = =														2.02

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.02**
Observation	**COs of basics of farm animal management are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I B.Sc., RDS	Part	: III Core Lab-1
Semester	: I	Hours	: 30
Sub. Code	: 22URDP11	Credits	: 02

INTEGRATED RURAL DEVELOPMENT PRACTICAL

(Outcome based syllabus under CBCS structure for the students admitted from the academic year 2022-2023)

- **Animal Husbandry**

Course Educational Objective

- To impart the practical knowledge about the basic systems of cattle and Pig

Ex.No. Title

- External Parts of the Cattle and Pig
- Digestive System of Cattle and Pig
- Reproductive System of Bull
- Female Reproductive System of Cattle and Pig
- Structure of Mammary Gland of a Cow

- **Biological Sciences**

Course Educational Objective:

- To create the familiarity in the analysis of organic compounds present in a given solution.
- Identify and compare the external and internal characteristics of vascular bundles of Monocot and Dicot plants

Ex.No. Title

- Qualitative Tests for proteins.
- Qualitative Tests for Lipids.
- Qualitative Tests for Carbohydrates.
- .Cross sectioning the Monocot ad Dicot Plants.
- Structure of DNA and RNA.

- **Social Science**
- 5 days Village Exposure Programme to have live in experience

Course outcome

S.No.	Course outcome	Knowledge level (Bloom's Taxonomy)
CO1	Educate about the external parts of cattle and pig	**K1**
CO2	Understand the basic systems of cattle and pig with their functions	**K2**
CO3	Analyse the basic nutrients (carbohydrate, fat and protein) found in the plant and animal body	**K3**
CO4	Differentiate monocot & dicot and DNA & RNA	**K3**
CO5	Observe the various socio-economic structures of a village	**K1**

K1 = Knowledge, **K2** = Understanding, **K3**= Application, **K4**= Analysis and **K5** = Synthesis

Mapping CO with PSO and PO

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3		2		3	2	2		3	3		2		20
CO2	3		2	3	3	2	2		3	3		3		24
CO3	2	2		3	2	3	3		3	3		3		24
CO4	3			3	2	3	3			3				17
CO5	2	2	2	3		3	3	3	3	3		3	3	30
Grand Total of COs with POs & PSOs														115
Mean Value of COs with POs & PSOs = =														**2.67**

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.67**
Observation	**COs of IRD – I Practical are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I B.Sc. RDS	Part	: III Allied-1
Semester	: I	Hours	: 75
Sub. Code	: 22URDA11	Credits	: 04

INTRODUCTION TO RURAL SOCIETY

(From the academic year 2022-2023 onwards under the new CBCS pattern)

Course Educational Objectives

- To impart knowledge about the rural society, its structures, characteristic and Functions
- To Identify the family, marriage and Kinship and its functions and significant in the society
- To understand the economic systems in the Rural society
- To integrate the relationship among the rural social factors
- To become aware of the social Processes'.

Unit I: Basic Concepts **(10 Hours**)

Society, Community, Association, Institution and culture: Meaning – Definition – Characteristics.

Unit II: Social Institutions **(15 Hours)**

Family, Marriage Kinship and Religion: Meaning – Characteristics – Types – Functions- Recent trends.

Unit III: Rural Economic Institutions **(20 Hours)**

Economy and Economic System – Jaimani System – Decline of Jaimani system – Meaning of work occupation and property – Division of land holdings – Position of rural labourers – Problem of landlessness -Bhoodan Movement – Changing trends.

Unit IV: Social Stratification **(15 Hours)**

Social differentiation – Hierarchy – Inequality – Forms of Stratification: Caste, Class and Gender – Social Mobility: Meaning – Types.

Unit V Social processes and Social Change: **(15 Hours)**

Social processes: Cooperation, competition, conflict, Accommodation, Assimilation Social Control and Social change: Concept: Change, Evolution and Progress, Factors of social change, Models of social change, Concept of Cultural lag

Book for Study

Bhusan, Vidya and Sachdeva. 1997. An Introduction to Sociology. KitabMahal, Allahabad.
Chitambar, J.B. 2007.Introductory Rural Sociology. Wiley Eastern Ltd, New Delhi.
Sharma. K. L. 2010. Perspectives on social Stratification. Rawat Publication, Jaipur.
Srinivas.M.N. 1995. Social Change in Modern India: Orient Blackswan, New Delhi.

Book for Reference

Desai.A.R. 2007.Rural Sociology in India. Popular Prakshan Publishers, Mumbai.
Doshi, S.L. 1999. Rural Sociology. Rawat Publications, Jaipur.
Srinivas Orient Longmen . M.N 1977,.2nd edition Social Change in Modern Indian
Moore, W.E 1985 Social Change, 3rd edition Prentice- hall of India New Delhi.
Kuppuswamy B 2006 Social Change in India 3 rd Edition Konark Publishers Pvt, Limited

Teaching and Learning Methods

- Lecture, Use of ICT ,Group Discussion, Case Study , Rural Camps
- Exposure Visits Field work

Course Outcome

SL.NO	Course Outcome	Knowledge Level
CO1	Recall the various Concepts, Terms and Definitions related to rural society	K1
CO2	Understand the relationship between various rural social institutions	K2
CO3	Assess the Rural Economic systems	K3
CO4	Integrate among various social factors.	K4
CO5	Analyzing the complexity of social Processes	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

- Programme objective
- Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	2	2	2	2	3	2	2	2				22
CO2	2	3	2	2	2	3	3	2	2	2				23
CO3	2	2	3	2	2	3	2	3	2	2				23
CO4	2	3	2			2	3	2						14
CO5	3	2	2			2	1							10
Grand Total of COs with POs & PSOs														92
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ wit\ \ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ wit\ \ POs\ \&\ PSOs} = \frac{92}{41}$														2.24

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.24**
Observation	**COs of INTRODUCTION TO RURAL SOCIETY are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I B.Sc. RDS	Part	: III Core-3
Semester	: II	Hours	: 75
Sub. Code	: 22URDC32	Credits	: 04

Core: DYNAMICS OF RURAL DEVELOPMENT

(Outcome based syllabus under CBSC structure for the students admitted from the academic Year 2022-2023 onwards)

Course Educational Objectives

The course enables students to

- Learn the basic concept and principles of rural development
- Distinguish between the rural development experiments and approaches
- Examine the rural development administration and role of various Stakeholders
- Acquire specific knowledge on Panchayatraj Institutions (PRIs)
- Enhance skills on critical review of rural development Programmes

Unit I Concept of Rural Development (10 Hours)

Introduction to Rural Development: Concept – Meaning – Objectives – Principles – Scope and importance.

Unit II History of Rural Development (20 Hours)

Evolution of the concept – Rural development experiments in Pre and Post-independence: Rural Reconstruction programme by Mahatma Gandhi, The Sriniketan Experiment, The Martandam experiment, The Gurgaon experiment, The Baroda experiment, The Firka development scheme, The Etawah Pilot project, The Nilokheri experiment, The Bhoodan movement, Community development programme and National extension service – Approaches to rural development.

Unit III Administrative Structure (15 Hours)

Planning Commission– National Development Council – NITIAayog - State Planning Commission – Directorate of Rural Development – District Rural Development Agency- NIRD-SIRD.

Unit IV Planning and Implementation (15 Hours)

Panchayat Raj Institution (PRI) – Structure and Functions – Village level – Gram Sabha – Block Level – District Level – Changing trends.

Unit V Introduction to Central and State Government Schemes for Rural Development (15 Hours)

Central government programmes: National Rural Livelihood Mission, National Rurban Mission, PMAY, DDUGKY, PMGSY, MGNREGA, SAGY, NSAP, Annapurna Scheme, and Swachh Bharat Mission – State government programmes: Pudu Vazhvu Project, THAI, SSS, RIS, SEDP, SWMS, CMSPGHS-Role of NGOs in Rural Development– Recent trends and challenges.

Books for Study

- Aslam, M. & Singh, R.P., Evolution of Panchayati Raj and the Constitution (73rd Amendment) Act, 1992, IGNOU Project Material, New Delhi, 2001.
- Singh Katar, Rural Development – Principles, Policies and Management, Sage Publications. New Delhi, 2009.
- Sundaram, Satya,I.: Rural Development, Himalaya Publishing house, 2013.
- Vasant Desai, Rural Development in India, Himalaya Publishing House, Mumbai, 2012.
- Vijay. C.M., Rural Development Administration in India. Jaipur: Prateeksha, 1989.

- Willam, A. T & Christopher, A. J, Rural Development and Recent Approaches, Rawat Publication, Mumbai, 2013.

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- Desai, I.A. and Chaudhri, B.L., History of Rural Development in Modern India, Vol. II, Impex India, New Delhi, 1977.
- Dubhashi, P.R., Rural Development Administration in India, Mumbai, 2000.
- Rajneesh and Shalini, Rural Development through Democratic Decentralization, Deep & Deep Publications Pvt. Ltd., New Delhi, 2002.
- Sachinanda and Purnendu, Fifty Years of Rural Development in India, Firma KLM Pvt Ltd., Kolkata, 2001.

Web Sources:

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https://rural.nic.in/en/departments/departments-of-mord/department-rural-development
https://tnrd.gov.in/schemes_centrally.html
https://tnrd.gov.in/schemes_states.html
https://tnrd.gov.in/schemes_external.html

Teaching and Learning Methods

- ICT based class Lecture
- Group Discussion
- Brainstorming
- Role plays
- Study assignment

Course Outcome

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Acquaint with basic concept of Rural development	**K1**
CO 2	Versed in various approaches and experiments in rural development	**K2**
CO 3	Proficient in the role of various Stakeholders in rural development	**K3**
CO 4	Expert in analyze the functions of Panchayat Institutions (PRIs)	**K4**
CO 5	Synthesizing on critical review of rural development Programmes	**K5**

K1 = Knowledge, **K2** = Understanding, **K3**= Application, **K4**= Analysis and **K5** = Synthesis

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2		1					3	2	1	2	1
CO2	3	2	3	2	2	2	1	1	3	3	2	1	3
CO3	2	1	2	2	2	1		1	2	2	2		1
CO4	3	2	2	2	2		2	2	3	2	3	2	2
CO5	2	2	3	3	2	2	2	2	1	2	3	2	3

Strong – 3; Medium-2; Low – 1

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I B.Sc. RDS	Part	: Core-4
Semester	: II	Hours	: 75
Sub.Code	: 22URDC42	Credits	: 3

INTRODUCTION TO AGRICULTURE

(Outcome based syllabus under CBCS structure for the students admitted from the academic year 2022-2023)

Course Educational objectives:

- Elucidate the formation of soils, its types and it components.
- Description of seed with its structure, types and production strategy
- Elaborate the methods of formation of water, irrigation types and its conservation
- Identification of nutrient management system and types of fertilizers
- Depiction of plant pests their classification and methods of control.

Unit 1: Soil **(15 Hrs.)**

Soil – definition – composition of the Soil – Types of Soil – Physical Structure – Soil Texture – Porosity – Soil Organisms – Organic matter – Soil Fertility – Soil erosion and conservation

Unit 2: Seed **(10 Hrs.)**

Definition of Seed – Seed structure – Monocot – Dicot – Germination – Quality of Good Seed – Seed Production (Rice & Cumbu) – High Yield Varieties (F1), GMO - Classes of Seeds.

Unit 3: Water **(15 Hrs.)**

Importance of Water – Sources of water – Types of Water – Hygroscopic – Capillary and non-capillary water – Irrigation – Methods of irrigation – Surface, Sub Surface Overhead – Micro irrigation. Fundamental Practices of water conservation.

Unit 4: Nutrients **(20 Hrs.)**

Plant nutrient – Macronutrient – Secondary major Nutrients – Trace Elements – Sources of Plant Nutrients Organic Sources: Bulky organic Manures – Farm Yard Manure – Green Manure – Green Leaf Manure – Concentrated Cakes – Compost – Bone Meal. Inorganic sources Manure – Fertilizers – straight: Nitrogenous – Phosphatic and Potassic – Bio sources: Bio – Fertilizers.

Unit 5: Pests **(15 Hrs.)**

Classification of Pests: Chemicals used to control them – 'Insecticide' – Weedicide – Fungicide – and their classification based on chemical nature and Mode of action. Biocontrol agents.

Books for study

Sankaran.S. and Subbiah Mudaliar, V.T., Principles of Agronomy, The Bangalore Printing & Publishing Company Limited, Mysore Road, Bangalore, 1997.

ICAR Hand Book of Agriculture, Directorate of Information and Publication of Agriculture, New Delhi, 2006.

Bala Subramanian.P and Palaniappan,S.P. Principles and Practices of Agronomy, Agrobios (India) Jodhpur, 2004.

Books for Reference

Brown, R.G. Dictionary of Agriculture IV Y Publishing House, New Delhi.2007.

Sahay, V.N., Fundamentals of Soil, Kalyani Publishers, New Delhi.2006.

Yawalkar, K.S.Agarwal, J.P. and Bokde. Manures and Fertilizers, Agri Horticultural Publishing House, Nagpur.2002.

Teaching and Learning methods

- Class room lecture
- LCD presentation
- Practical Demonstration
- Visual Identification of seeds, manures and fertilisers

Course Outcome

S.No	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO_1	Define and recognize the types of soil	K_1
CO_2	Identify and distinguish seeds & its types	K_2
CO_3	Explain the sources of water & methods of irrigation	K_3
CO_4	Justify nutrient sources with examples	K_4
CO_5	Summarize the plant pests with its methods of control	K_5

Mapping course outcome with:

- Programme objective
- Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	3	2	3	2	1			2	3	2		23
CO2	3	2	3	2	3	2	1			2	3	1		22
CO3	3	2	3	2	3	2	1			2	3	2		23
CO4	3	2	3	2	3	2	1			2	3	1		22
CO5	3	2	3	2	3	2	1			2	3	2		23
Grand Total of COs with POs & PSOs														113
Mean Value of COs with POs & PSOs = =														2.26

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.26**
Observation	**COs of INTRODUCTION TO AGRICULTURE are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: B.Sc., RDS	Part	: III Core Lab-2
Semester	: II	Hours	: 30
Sub. Code	: 22URDP22	Credits	: 02

INTEGRATED RURAL DEVELOPMENT PRACTICALS
(Outcome based syllabus under CBCS structure for the students admitted from the academic year 2022-2023)

- **Agriculture**

Objective:

1.To have practical knowledge on basic components of Agriculture

Ex.No. Title

- Method of collection of soil sample.
- Preparation of soil sample for laboratory analysis.
- A study on structure of a plant.
- A study on seed structure.
- Identification of Manures and Fertilizers.

- **Energy Science**

Objective

- Create awareness about alternative energy resources
- Study about developing efficiency of alternative energy resources contribute to the sustainable Energy system and Energy Security

Ex.No. Title

- Observation of Biomass energy sources.
- Identification of Energy Modules.
- Solar Energy system.
- Wind Energy system.
- Visit to Solar PV- Wind Hybrid energy system.
- Pattern of energy consumption domestic

- **Social Sciences**

- To impart knowledge on PRIs and its various stakeholders

Ex.No. Title

- Visit to Block Development Office
- Attend to Gram Sabha Meeting
- Hands on exposure to students in implementing Government funded rural development programmes like MGNREGA, PMAY, CMSPGH, THAI, etc
- Observation visit to SIRD, RSETI, NGOs working in rural development etc

Course Outcome

S.No	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO_1	Practical knowledge on soil and energy sources	K_1
CO_2	Understand the structures of plant, seed and energy modules particularly solar and wind energy system	K_1
CO_3	Educated with manures & fertilizers and hybrid energy system	K_2
CO_4	Exposed to the functions of Block Development Office	K_2
CO_5	Understand the work of NGO in Rural Development	K_1

Mapping CO with PSO and PO

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	2		2	2	3	3	3					3		18
CO2	3		3	2	3	3	3		2	2	2			23
CO3	3		3	3	3	3	3			2	2			22
CO4	2	2		3		3	3		3	3	2	3		24
CO5	2	2	3	3					3	3	3	2		21
Grand Total of COs with POs & PSOs														
Mean Value of COs with POs & PSOs =														**2.63**

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.63**
Observation	**COs of IRD - II Practical are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I B.Sc., RDS	Part	: III Allied-2
Semester	: II	Hours	: 75
Sub. Code	: 22URDA22	Credits	: 04

ENERGY SCIENCE

(Outcome based syllabus under CBCS structure for the students admitted from the academic year 2022-2023)

Course Educational Objectives

- Study the basic SI units, laws of thermodynamics, Definition, forms and types of energy
- Understanding the concepts of conventional source and demand of energy
- Analyse the fundamental scientific technological principles of alternate sources and to produce application oriented energy Hybrid system
- Study the Biomass, Biomass conversion technology and energy plant
- Educate and to create awareness of energy conservation

Unit I: Energy (15 Hours)

Energy – Definition, Units of Measurements – Calorie, Joules, Laws of thermodynamics – I & II Laws; forms and types of energy – Conventional and Non-Conventional, Renewable and Non-Renewable, Commercial and Non-Commercial.

Unit II: Conventional Sources of Energy (15 Hours)

Conventional Sources of Energy: Fossil Fuels – Coal, Oil and Natural Gas and Hydro Energy, Geothermal Energy, and Nuclear Energy.

Unit III: Non-Conventional / Alternate Sources of Energy – Solar Energy & Wind Energy (15 Hours)

Solar Energy – Solar Energy Conversion Methods, Problems and Prospects and Applications and Wind Energy – Wind Power System, Problems and Prospects and Applications, Hybrid Energy Systems.

Unit IV: Non-Conventional / Alternate Sources of Energy – Bio Energy (15 Hours)

Biomass – Sources, Types, Charactistics, Biomass conversion Technologies – Physical and Biochemical – Biogas Technology; Biomass Gasifier System, and Energy Plantations.

Unit V: Energy Conservation and Management (15 Hours)

Energy Conservation – Principles, need, education, approach, Co-generation, Energy Storage, Waste Recycling for Energy Generation and Clean and Energy Efficient Technologies.

Books for Study

Garg, H.P. and Prakash, J., Revised First Edition. Solar Energy Fundamentals and Applications, Tata McGraw – Hill, New Delhi, 2000.

Kothandaraman, H. and Geetha Swaminathan, Principles of Environmental Chemistry, B.I.Publishers, Chennai, 1999.

Kothari, D.P., Singal, K.C. and Rakesh Ranjan, Renewable Energy Sources and Energy Technologies, Prentice – Hall of India Private Ltd., New Delhi, 2008.

Mukherjee, D., and Chakrabarti,S., Fundamentals of Renewable Energy Systems, New Age Internation Publishers, New Delhi, 2007.

Narayanan, P., Essentials of Biophysics, New Age International Publishers, New Delhi, 2000.

Reddy, B.S., and Balachandra, P., Energy, Environment and Development, A Technologies Perspective, Narosa Publishing House, New Delhi, 2006.

Books for Reference

Agarwal, M.P., Solar Energy, S. Chand & Company Ltd., New Delhi, 1985.
Ananthakrishnan, T.N., Bioresources Ecology, Oxford & IBH Publications, New Delhi, 1990.
Desai, A.V., Non-Conventional Energy, New Age International (P) Ltd. Publishers, New Delhi, 1990.

Teaching and learning methods

- Class Lecture
- Digital Presentation
- Practical model demonstration
- Field visit and observation of energy system
- Learning through exposure

Course outcome

S. No	Course outcome	Knowledge level (Bloom's Taxonomy)
CO1	Learning laws of thermodynamics, Definition, forms and types of energy	**K1**
CO2	Understanding the concepts of conventional source and demand of energy	**K2**
CO3	Analyse the scientific technological principles of alternate sources to produce application oriented energy system	**K1**
CO4	Study the Biomass conversion technology and energy plant switch over to green sustainable energy system	**K1**
CO5	Educate and to create awareness of energy conservation to reduce environment pollution as well as conserving the energy security	**K1**

K1 = Knowledge; K2 = Understanding; K3 = Application; K4 = Analysis; K5 = Synthesis & Evaluation

Mapping course outcome with:

- Programme objective
- Programme specific objective

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	**3**	**2**	2	2	2	3			**2**	**2**			**3**	21
CO2	**2**	**3**	2		3	2			**3**	**2**				17
CO3	**3**	**1**	3	2	2		2	3		**3**	**2**			21

CO4	**2**	**3**	2	2	3			2	**3**		**2**			19
CO5	**1**	**3**	2	3	2	3			**2**	**3**		**2**		21
Grand Total of COs with POs & PSOs														99
Mean Value of COs with POs & PSOs = =														2.35

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.35**
Observation	**COs of Fundamentals of Energy Sciences are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc RDS (AG)	Part	: III Core -5
Semester	: III	Hours	: 60
Sub. Code	: 22URCA53	Credits	: 3

AGRONOMY OF FIELD CROPS

OBJECTIVES

1. To impart the students knowledge and skills in packages of practices of Paddy.
2. To inculcate the skills in packages of practices of Sorghum and Cumbu both theoretically and practically.
3. To acquaint the packages of practices of Red gram and Black gram, in field conditions.
4. To familiarize the methods of cultivation of Groundnut and Gingelly.
5. To study the packages of practices of Sugarcane and Cotton.

Unit – I Cultural Management of Cereals **15 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation – Sowing – Integrated Nutrient Management –Irrigation Management – Integrated Pest and Integrated Weed Management – Yield – duration – post harvest technology for **Cereal**– RICE. SRI system

Unit – II Cultural Management of Millets **10 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation – Sowing – Integrated Nutrient Management –Irrigation Management – Integrated Pest and Integrated Weed Management – Yield – duration – post harvest technology for **Millets**– SORGHUM, CUMBU.

Unit – III Cultural Management of Pulses **15 Hrs**

Variety – Soil – Climate Season – Seed treatment - land preparation - Sowing – Integrated Nutrient Management – Irrigation Management- Integrated Pest and Integrated Weed Management – yield – duration – post harvest technology for **Pulses** – REDGRAM, BLACKGRAM.

Unit – IV Cultural Management of Oil Seeds **10 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation – Sowing – Integrated Nutrient Management – Irrigation management – Integrated Pest and Integrated Weed Management – yield – duration – post harvest technology for **Oilseeds** – GROUNDNUT, GINGELLY.

Unit – V Cultural Management of commercial crops **10 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation - Sowing – Integrated Nutrient Management – Irrigation management – Integrated Pest and Integrated Weed Management – yield – duration – post harvest technology for **Commercial crops** – SUGARCANE, COTTON.

Books for study

- Joint Director of Agriculture, 2003, Agricultural Technical Bulletin, Department of Agriculture, Madurai

Books for Reference

- Balasubramanian,P, Palaniappan, S.P. 2004. Principles and Practices of Agronomy, Agrobioss (India), Jodhpur.
- Ahlawat, I.P.S., Om Prakash and G.S. Saini. 1998. Scientific Crop Production in India. Rama publishing House, Meerut.
- Chidda Singh. 1997. Modern techniques of raising field crops. Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi.

- Singh.S.S. 1997.Crop management under irrigated and rainfed conditions. Kalyani Publishers, New Delhi.

e-references

- www.crida.org
- www.cgiar.org
- www.tnau.ac.in/agriportal

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Enabling the cultivation methodology of paddy.	K1
CO2	Skills in package of practices of Sorghum and Cumbu	K2
CO3	Knowledge on cultivation practices of Redgram and Blackgram	K3
CO4	Identification of methods of cultivation of Groundnut and Gingelly	K3
CO5	Trained in cultivation of Sugarcane and cotton	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

(i) Programme objective

(ii) Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	3	2	3	2	1			2	3	2		23
CO2	3	2	3	2	3	2	1			2	3	1		22
CO3	3	2	3	2	1	2	1			2	3	2		21
CO4	3	2	3	2	3	2	1			2	3	1		22
CO5	3	2	3	2	3	2	1			2	2	2		22
Grand Total of COs with POs & PSOs														109
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{109}{50}$														2.18

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.18**
Observation	**COs of AGRONOMY OF FIELD CROPS are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core -5
Semester	: III	Hours	: 60
Sub.Code	: 22URCH53	Credits	: 03

DAIRY HUSBANDRY

Objectives

1. To study about the importance and features of the native and exotic breeds of cattle and buffaloes.
2. To impart knowledge and skills on housing and management of dairy cattle and buffaloes.
3. To know about scientific method of feed computation and feeding practices.
4. To acquire knowledge and skill about breeding of cattle and buffaloes.
5. To study about the various types of cattle diseases and their prevention.

UNIT –I. Cattle Breeds and Classification (10 Hours)

Status of dairy industry in India- importance of cattle and buffaloes in rural economy - Classification and characteristics of cattle and buffalo breeds – native and exotic breeds- milch, dual purpose and draught types - judging of dairy animals.

UNIT –II. Housing and Management (10 Hours)

Plan and layout of a dairy farm different structure - loose housing system, single and double row system – Automation in livestock farming. Care and Management of calf, heifer, cow, pregnant and lactating, and dry cattle. Disposal of waste and sewage – treatment and recycling methods. Hygiene and sanitation maintenance in a livestock farm.

UNIT- III. Cattle Nutrition (15 Hours)

Proximate principles - types of food, energy– gross energy, digestible energy, metabolizable energy, net energy, total digestible nutrients, starch equivalent- Protein and energy sources of vegetable and animal origin - unconventional feeds- role of additives in animal feeding- Nutrient requirements of calf, heifer, pregnant and lactating and dry animals. Indian feeding standards - balanced ration- desirable characters of a ration - computation of cattle ration (Thumb rule method)–preparation, hand mixing and storage concentrate feed mixtures and factors affecting the digestibility of ration. Conservation of livestock feed through silage and hay making.

UNIT -IV Breeding and Insemination of Cattle (10 Hours)

Structure - male and female genitalia of cattle – age at maturity- Oestrum symptoms of oestrum- various methods of detection of heat in farm animals- hormonal regulation of heat period –breeding techniques and methods. Artificial insemination - frozen semen- timing of insemination- types of frozen semen straws- evaluation of semen –- factors affecting the survival of spermatozoa – insemination technique- embryo transfer technology - Pregnancy diagnosis –factors affecting fertility in artificial insemination.

UNIT -V Disease Management (15 Hours)

Etiology, symptoms, treatment, prevention and control of some major diseases of cattle- **Viral diseases** – Rinderpest, Foot and mouth disease, Rabies, Cow pox, Ephemeral fever. **Bacterial** diseases - Hemorrhagic Septicemia, Tuberculosis, Diphtheria, Anthrax, Black Quarter, Brucellosis, Mastitis. **Parasitic diseases**- problems and control measures of ticks and mites– Ascariasis- Babesiosis, Theileriasis, Coccidiosis. **Metabolic Disorders** - milk fever, ketosis and

acidosis. Various types of first aid measures, deworming, deticking and vaccination schedule for cattle and buffaloes.

Book for study

- Banerjee, G. CS., A Text book of Animal Husbandry, Oxford & IBH publishing company, New Delhi, 2013.

Books for Reference

- Bogart, R, Scientific Farm Animal Production, Surjeet Publisher, New Delhi, 2002.
- Gopalakrishnan, C.A.,Livestock and Poultry enterprises for Rural Development, Mohan Primlani Publishers, New Delhi, 1980.
- ICAR, Hand book of Animal Husbandry-ICAR Publication, New Delhi, 2017.
- Jagdish Prasad, Principles and Practices of Dairy Farm, Kalyani Publications, New Delhi, 2012.
- Mukherjee, D.D. and Banerjee G.C., Genetic and Breeding of Farm Animals, New Delhi, 1990.
- Shastry, N.S.R., Farm Animal Management, Vikas Publications, New Delhi, 1978.
- Surendra K.Ranjhan, Nutrition and Feeding Practices, Vikas Publication-6th Edition, New Delhi, 2015.

Teaching Learning Methods

- PPT presentation
- Seminar
- Field visit
- Assignments
- Demonstration and Field practical.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Identification and judging of native and cross breeds of cattle	K1
CO2	Enables selection of good dairy animals	K2
CO3	Organization of own scientific dairy enterprise.	K3
CO4	Train the villagers in scientific management of dairy animals.	K3
CO5	Create employment opportunities for others	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs
(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	**Sum of COs with POs & PSOs**
CO1	3	3	3	3	3				3	3	3	3	3	30
CO2	3	3	2	2	2				3	3	2	2	2	24
CO3	3	2	2	1	2				2	2	3	2	2	21
CO4	2	2	2	3	2				2	2	1	2		18
CO5	1	1	1		3				1	2	1	2		12
Grand Total of COs with POs & PSOs														105
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{105}{48}$														2.15

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	**Medium**	Strong
Mean Value of COs with POs & PSOs			**2.15**
Observation	**COs of DAIRY HUSBANDRY are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (SS)	Part	: III Core-6
Semester	: III	Hours	: 60
Sub. Code	: 22URCS53	Credits	: 03

PARTICIPATORY RURAL APPRAISAL
(2018-19 onwards)

Objectives:

1. To enable them to understand the PRA techniques in formulating a project proposal
2. To provide them with an overview of approaches, methods and techniques
3. To impart skills in participatory project planning.
4. To acquaint the participants with concepts and methods of the participatory rapid appraisal
5. To make the students familiar with preparing Venn diagram and writing reports with proper evaluation on participatory mapping

UNIT: I Participatory Rural Appraisal (PRA)- Basic Concept (10 Hours)

Meaning- Definition- Concept of PRA- Evolution and Importance

UNIT: II PRA Principles and Features (10 Hours)

Principles of PRA- Features of PRA- Pillars of PRA – Difference between RPA (Rapid Rural Appraisal) and PRA- PLA(participatory Learning and Action)- PRA steps

UNIT III: Strategies of PRA (10 Hours)

Information collection- Community meetings – Conscientization - Formation of plans and Programmes (through P.R.A)-Capacity building-Collaboration and Co-ordination-Networking-Information collection and Community meetings

UNIT IV: Methods of PRA - I (15 Hours)

Semi structured interview-Time line- Matrix ranking-Resource flow diagram-Wealth ranking-Livelihood analysis-Mobility mapping

UNIT V: Methods of PRA - II (PRACTICAL) (15 Hours)

Participatory Mapping – Transect walk - Seasonal calendar – Venn diagram - Mobility mapping-Community action plan- Analysis and preparing the report writing, experiences and evaluation,

Books for Study

Mukherjee Amitava, 'Participatory Rural Appraisal', Concept Publications, New Delhi, 2004.

Narayanasamy,N., 'Participatory Rural Appraisal: Principles, Methods and Applications', Sage Publication, New Delhi, 2004.

Books for Reference

Chambers, R., 'The Origins and Practice of Participatory Rural Appraisal', World Development, Vol. 22, No. 7, pp. 953-969, 1994.

Chambers, R., 'Participatory Rural Appraisal (PRA): Analysis of *Experience'*, World Development, Vol. 22, No. 9, pp. 1253-1268, 1994.

Journals & Magazines

The SAGE Encyclopedia of Action Research

Kurukshetra Monthly Magazine

Yojana Monthly Magazine

Teaching Learning Methods

- Group Discussion
- PowerPoint Presentation
- Field study

- Seminar
- Exhibition
- Minor Project

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Apply PRA concepts and techniques in the community development	K1
CO2	Differentiate the basic principles of PRA from that of other methods used in social Sciences.	K2
CO3	Matching various models and organization in their local settings	K3
CO4	Apply the PRA tools, methods and techniques in the field of farming system, health, Agriculture and livelihoods etc.	K3
CO5	Competency to advise and train the farmers to promote the rural development activity.	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of Course outcomes with Pos and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**)

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**Sum of COs with POs & PSOs**
CO1	2	2		3	1		3		2		1	2		16
CO2	2	2		1			1		2	2	1			11
CO3			2	2	2						2	2		10
CO4			1	3	2	2				1	2	2		13
CO5				2	2			2			2	2		10
Grand Total of COs with POs & PSOs														71
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{71}{32}$														2.2

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.2**
Observation	**COs of PARTICIPATORY RURAL APPRAISAL are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc RDS (AG)	Part	: III Core -6
Semester	: III	Hours	: 60
Sub. Code	: 22URCA63	Credits	: 3

AGRONOMY OF HORTICULTURAL CROPS

OBJECTIVES

1.To enable the students the cultivation of Mango and Sapota.
2.To impart methods of growing Brinjal and Tomato
3.To enhance the skills in packages of practices of Jasmine and Rose
4.To train the students in cultivation of Coconut and Coffee
5.To inculcate the practical knowledge of Turmeric and Ginger cultivation.

Unit – I Cultural Management of Fruits **15 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation – Sowing – Integrated Nutrient Management –Irrigation Management – Integrated Pest and Integrated Weed Management – Yield – duration – post harvest technology for **Fruits**– MANGO, SAPOTA

Unit – II Cultural Management of Vegetables **15 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation – Sowing – Integrated Nutrient Management –Irrigation Management – Integrated Pest and Integrated Weed Management – Yield – duration – post harvest technology for **Vegetables**– BRINJAL, TOMATO

Unit – III Cultural Management of Flowers **10 Hrs**

Variety – Soil – Climate Season – Seed treatment - land preparation - Sowing – Integrated Nutrient Management – Irrigation Management- Integrated Pest and Integrated Weed Management – yield – duration – post harvest technology for **Flowers** – JASMINE, ROSE

Unit – IV Cultural Management of Plantation crops **10 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation – Sowing – Integrated Nutrient Management – Irrigation management – Integrated Pest and Integrated Weed Management – yield – duration – post harvest technology for **Plantation crops**– COCONUT, COFFEE

Unit – V Cultural Management of Spices **10 Hrs**

Variety – Soil – Climate Season – Seed treatment – land preparation - Sowing – Integrated Nutrient Management – Irrigation management – Integrated Pest and Integrated Weed Management – yield – duration – post harvest technology for **Spices**– TURMERIC, GINGER

Book for Study

Kumar, N. 2014. Introduction to Horticulture.Oxford & IBH Publishing co. Pvt. Ltd.

Books for Reference

Chadha, K.L and Pareek, O.P. 1996. (Eds.). Advances in Horticulture. Vols. IIIV. Malhotra Publ. House

Kumar, N. 2014. Introduction to Spices, Plantation, Medicinal and Aromatic crops, IBH Publishing Co. Pvt. Ltd., New Delhi.

Alice Kurian and Peter, K.V. 2007. Horticulture science series Vol. 08, New India Publishing Agency, New Delhi.

Veeeraragavathatham, D and et al.,2004. Scientific fruit culture, Sun Associates, Coimbatore.

E-References

http://www.jhortscib.com

http://journal.ashspublications.org
http://www.actahort.org/

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Identification of Mango and Sapota methodology	K1
CO2	Training in cultivation of Brinjal and Tomato	K2
CO3	Practical methods of growing Jasmine and Rose	K3
CO4	Field level practices of Coconut and Coffee cultivation	K3
CO5	Knowledge on cultivation perspective of Turmeric and Ginger.	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with PSO and PO :

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	3	2	2	2	1			2	3	2		22
CO2	3	2	3	2	3	2	1			2	3	1		22
CO3	3	2	3	2	1	2	1			2	2	2		20
CO4	3	2	3	2	3	2	1			2	3	1		22
CO5	3	2	3	2	3	2	1			2	1	2		21
Grand Total of COs with POs & PSOs														106
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{106}{50}$														2.12

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.12**
Observation	**COs of AGRONOMY OF HORTICULTURAL CROPS are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core -6
Semester	: III	Hours	: 60
Sub.Code	: 22URCH63	Credits	: 03

MILK AND MILK PRODUCTS

Objectives:

1. To understand the status of dairy industry in India and abroad.
2. To acquire basic knowledge about milk secretion and milk microbiology.
3. To impart skills on milk processing.
4. To understand the Physio and Chemical properties of milk
5. To acquire skill on dairy products manufacturing process

UNIT I Dairy Industry **10 Hrs**

Milk production status in India and Tamil Nadu with reference to global context -per capita availability of milk –food value of milk and milk products - role of milk and milk products in human diet.

UNIT II Physio and Chemical Properties of Milk **15 Hrs**

Structure and physiology of mammary gland- mechanism of milk secretion. Composition of milk- physio-chemical properties- pH, acidity, color, freezing point and surface tension of milk – components of milk- fat, proteins, lipids, lactose, minerals and vitamins – factors influencing the composition of milk.

UNIT III Microbiology of Milk **10 Hrs**

Common microorganisms present in milk and milk products- PFA standards-spoilage of milk- desirable and undesirable fermentation of milk- milk and public health- detection of mastitis milk- clean milk production.

UNIT IV Milk Processing **10 Hrs**

Milk collection, transportation and grading of milk- standardization of milk. Pasteurization and homogenization of milk- packaging of milk. Cleaning and sanitation – cleaning and sterilizing agents- CIP system of cleaning – sterilization of equipment.

UNIT V Milk Products **15 Hrs**

a) Definition and method of manufactures - fat rich dairy products- cream, butter, ghee b) Concentrated and dried milk products- milk khoa, condensed milk, sweetened condensed milk, milk powder c) Frozen dairy product- Ice cream d) Cheddar cheese and other fermented products - common starter cultures used in dairy industry and their characteristics. Manufacture of dahi, yoghurt, shrikhand – indigenous milk products – utilization of dairy by products.

Book for study

- Sukumar De., Outlines of Dairy Technology, Oxford University Press, New Delhi, 2015.

Books for Reference

- Indian Dairy Products – Rangappa (KS) and Acharya (KT)- Asia Publishing House.
- Lincoln M. Lampert., Modern Dairy Products, 2nd Edition, S. Chand and Company (Pvt) Ltd., New Delhi, 1987.

- Milk and Milk products – Clarence and Eckles.
- R. K. Robinson. Modern Dairy Technology – Advances in Milk Processing Ed.2 Vol2., 1993.
- The Technology of milk processing- Ananthakrishnan, C.P., Khan, A.Q. and Padmanabhan, P.N. Srilakshmi Publication.
- Varnam A.H. Sutherland J.P. 1994. Milk and Milk Products Technology Chemistry and Microbiology.
- Walstra, Pieter and Jenness, Robert. Dairy Chemistry and Physics, 1993.
- Yadav, J.S.1993. A Comprehensive Dairy Microbiology.

Teaching Learning Methods

- PPT presentation
- Seminar
- Field visit
- Assignments
- Demonstration
- Field practical.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Understand the status of dairy industry in India and abroad.	K1
CO2	Acquired basic knowledge about milk secretion and milk microbiology.	K2
CO3	Imparted skills on milk processing	K3
CO4	Comprehend the Physio and Chemical properties of milk	K3
CO5	Developed skill on dairy products manufacturing	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	**Sum of COs with POs & PSOs**
CO1	3	3	3	2	3				2	3	3	2	3	27
CO2	2	3	1	2	3				2	3	3	2	3	24
CO3	3	3	2	3	2				2	2	3	2	3	25
CO4	2	2	2	3	2				2	3	3	2		19
CO5				2	2				3	2	3	2		14
Grand Total of COs with POs & PSOs														109
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{109}{45}$														2.42

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.42**
Observation	**COs of MILK AND MILK PRODUCTS are Strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (SS)	Part	: III Core-6
Semester	: III	Hours	: 60
Sub. Code	: 22URCS63	Credits	: 03

GENDER, SOCIETY AND DEVELOPMENT

Objectives

1. To develop conceptual understanding on gender
2. To provide perspectives on the interrelationship between gender relations and society
3. To sensitize the students on the constitutional and legal provisions for the protection of women
4. To impart the knowledge of the important role of women in the development process
5. To strengthen the gender relations among the students through issue-based analysis

UNIT-I: Gender – Basic Concepts (10 Hours)

Meaning of Gender – Difference between sex and gender – Concept of gender inequality – Forms of gender inequality – Gender auditing – Gender budgeting – Concept of women development.

UNIT-II: Social Shaping of Gender Relations (10 Hours)

Gender and division of labour – Socialization and gender roles – Patriarchy and gender relations – Masculinity and gender relations.

UNIT-III: Policies and Legislation (15 Hours)

Policies and legislation for women's development: The Convention on Elimination of All Forms of Discrimination Against Women (1993), Constitutional Provisions – Articles 14, 15 (1), 15 (3), 16, 39 (a), 39 (d), and 42, 73rd and 74th Constitutional Amendment, 1993, Specific laws - The Dowry Prohibition Act, 1961, the Medical Termination of Pregnancy Act, 1971, the Equal Remuneration Act, 1976, Protection of Women from Domestic Violence Act, 2005, and the Hindu Succession (Amendment) Act, 2005.

UNIT-IV: Social Movements and Women's Organizations (10 Hours)

The anti-price rise movement - Chipko movement – Anti-dowry movement – Self Empowered Women's Association (SEWA) – National Commission for Women – Andhra Pradesh Mahila Abhivruddhi Society (APMAS) – Mysore Rural Development Society (MRDS) - Kudumbashree Programme in Kerala.

UNIT-V: Issues of Gender and Development (15 Hours)

Gender exclusion in politics – Gender and human rights issues – Gender disparity in education - Gender stereotyping in workplace – Gender based violence - Globalization and its impact on gender relations.

Book for Study

Ryle, Robin, 'Questioning Gender: A Sociological Exploration', Sage Publications, New Delhi, 2017.

Books for Reference

Giddens, Anthony and Philip W. Sutton, 'Sociology', Wiley Academic, New Jersey, 2017.
Haralambos and Horborn, 'Sociology: Themes and Perspectives', HarperCollins, Noida, 2008.
Laxmikanth, M., 'Indian Polity', Tata McGraw-Hill, New Delhi, 2019.

Shah, Ghanshyam, 'Social Movements in India: A Review of literature', SAGE Publications India Pvt Ltd, New Delhi, 2004.

Journals & Magazines

Frontline Fortnightly Magazine
Journal of *Gender and Society*
Kurukshetra Monthly Magazine
Yojana Monthly Magazine

Web Sources

www.apmas.org
www.kudumbashree.org
www.ncw.nic.in
www.sewa.org

Teaching and Learning Methods

- Group Discussion
- Film Analysis
- Assignment
- Field Exposure
- Case Study
- Discussion on Newspaper Reports
- PowerPoint Presentation
- Group Presentation

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	The students can apply their conceptual knowledge in understanding the process of gender inequality in the society.	K1
CO2	They can differentiate the gender roles between men and women in the families, communities and societies.	K2
CO3	They will formulate the model policies for women's development	K3
CO4	They will develop an organizing skill to conduct a workshop or a training programme on women's issues	K3
CO5	They are very capable to suggest various measures to solve the gender issues	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of Course Outcomes with POs and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2	2	2			1		3	1	2	2		18
CO2	2	3	2				2		2	2	2	2		17

CO3	2	2	2	3					2	2	2	1		16
CO4	2	2	2	2	3	2			2	2	2	3		22
CO5	2	1	2		2		3	3	2	1	3	3		20
Grand Total of COs with POs & PSOs														93
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{93}{47}$														2.25

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.25**
Observation	**COs of GENDER, SOCIETY AND DEVELOPMENT are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc RDS (AG)	Part	: III Core -7
Semester	: III	Hours	: 60
Sub.Code	: 22URCA73	Credits	: 3

AGRICULTURAL ENTOMOLOGY

OBJECTIVES

1. To teach the students with the basic knowledge on the life history of insects.
2. To equip the students in practical skills to identify the pests of paddy, Sorghum and Cumbu with their control measures.
3. To train the students to identify the pests of pulses and oil seeds .
4. To enable the students learn practical knowledge and skills to identify the pests of cash crops and vegetables
5. To impart the students the practical knowledge and skills to identify the pests of fruits and plantation crops.

Unit – I Introduction to Pests (10 Hours)

General Life History of major groups of insects – Nature and Damage caused by insects. Classification of pest control- Cultural- Physical- Chemical and Biological control methods

Unit – II Pests of Cereals and Millets (15 hours)

Symptoms of Damage caused and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control – Integrated Pest Management (IPM) CEREALS: RICE – Stem borer, BPH MILLETS: SORGHUM – Shoot fly,Stem Borer, CUMBU – Shoot fly, Pink borer.

Unit – III Pest of Pulses and Oil seeds (10 Hours)

Symptoms of damage caused and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control – Integrated Pest Management (IPM) for PULSES: RED GRAM – Gram Pod borer, Spotted pod borer, BLACK GRAM – Gram Pod borer, Spotted pod borer- OIL SEEDS – GROUNDNUT – Red hairy caterpillar, Leaf Miner, GINGELLY- Leaf webber, Gall fly

Unit – IV Pests of Commercial crops and vegetables (15 hours)

Symptoms of damage caused and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control Integrated Pest Management (IPM) forSUGARCANE-Shoot borers, White fly. COTTON- Boll worms, Stem weevil. VEGETABLES- BRINJAL- Stem borer, Fruit borer.TOMATO –Fruit borer, Leaf miner

Unit – V Pests of Fruits & Plantation crops (10 Hours)

Symptoms of damage caused and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control – Integrated Pest Management (IPM) for FRUITS- MANGO-Stem borer, Mango nut weevil. SAPOTA-Bud worm, Fruit fly. Plantation crops- COCONUT-Rhinoceros beetle, Red palm weevil. COFFEE- Stem borer, Berry borer.Scientific names and biological cycle of individual insect or microorganisms are not taught. Stress is given for the pest and disease mentioned above only.

Books for study

David- B.V: 1988 Elements of economic entomology, Popular Book Dept., Chennai.

Books of Reference

Chattopadhyay, 1991 Principles and procedures of Plant Protection Oxford IBH New Delhi.
Gunathilagaraj, 1988 Crop protection guide Tamilnadu Agriculture University New Delhi
Nigam Prem Mohan, 1991 plant protection – Insects control, Emkay publication New Delhi.
Popushoi S., 1986 Biological and chemical methods of plant protection IBH.New Delhi.

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Skill to identify the crop pests scientifically.	K1
CO2	Knowledge to assess the damage caused by pests of cereals and millets	K2
CO3	Practical skills in control of pests in pulses and oil seeds	K3
CO4	Training to predict the damage caused by pests in cash crops and vegetables	K3
CO5	Hands on training in pests of fruits and plantation crops	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

(i) Programme objective

(ii) Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	3	3	2	3	2	1			2	3	2		24
CO2	3	2	3	2	3	2	1			2	3	2		23
CO3	3	2	3	2	1	2	1			2	3	2		22
CO4	3	2	3	2	3	2	2			2	3	1		22
CO5	3	2	3	2	3	2	1			2	2	2		22
Grand Total of COs with POs & PSOs														112
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{112}{50}$														2.24

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.24**
Observation	**COs of AGRICULTURAL ENTOMOLOGY are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core -7
Semester	: III	Hours	: 60
Sub.Code	: 22URCH73	Credits	: 03

FARM MANAGEMENT PRACTICE –I
(CATTLE, SHEEP AND GOAT)

Objectives

1. To provide concise practical knowledge on common management techniques and practices in livestock farms.
2. To get practice in approaching and handling of farm animals and recording of physiological parameters.
3. To prepare housing layout plans for rearing cattle, sheep and goat.
4. To get practice in routine operations carried out in livestock farms.
5. To provide skills on various methods of administration of medicines and first aid measures followed in the livestock farms.

UNIT- I Managemental Practices **15 Hrs**

Familiarizing the various body parts of cattle, sheep and goat. Identification of breeds of dairy cattle, sheep and goat, Approaching, handling, casting and restraining of farm animals, routine management practices like grooming, washing, dipping and exercising. Practice on recording of physiological parameters like temperature, pulse, respiration rate, rumen motility, Hands on practice on administration of medicines, Common vices of animals, their prevention and care.

UNIT-II Identification and Dentition **10 Hrs**

Identification methods – natural and artificial methods - Practice on application of ear tag, methods of determination of body weight of animals. Determination of age of animal by dentition- Types of teeth and Dental formula. Hands on training on dehorning and Castration.

UNIT-III Artificial Insemination **10 Hrs**

Preparation of cattle for insemination - analysis of motility of spermatozoa - training on handling of cryocan and loading of AI gun, practice on insemination and pregnancy diagnosis.

UNIT- IV Housing, Milking and Sanitation Practices **15 Hrs**

Space requirement - Floor, feeding and water for dairy cattle, sheep and goat. Housing systems for dairy cattle, sheep and goat – intensive, semi-intensive and conventional barn system. Draw the floor diagram, elevation and cross section of dairy, sheep and goat farm. Hands on training on milking of cow- Hand milking and machine milking. Common farm management practices including disinfection, isolation, quarantine of sick animals, and disposal of carcass, - methods and purpose.

UNIT –V Health and First aid Measures **10 Hrs**

Practice on various methods of fly control, deticking, deworming, vaccination schedule, and medicines used for cattle, sheep and goat, first aid measures and general health programme of cattle sheep and goat, record maintenance of dairy, sheep and goat farm, Preparation of project reports.

Book for Study

ICAR, Hand book of Animal Husbandry-ICAR Publication, New Delhi, 2017.

Books for Reference

Bogart, R, Scientific Farm Animal Production, Surjeet Publisher, New Delhi, 2002.

Gopalakrishnan, C.A., Livestock and Poultry enterprises for Rural Development, Mohan Primlani Publishers, New Delhi, 1980.

Jagdish Prasad, Principles and Practices of Dairy Farm, Kalyani Publications, New Delhi, 2012.

Surendra K.Ranjhan, Nutrition and Feeding practices Vikas Publication-6th Edition, New Delhi, 2015.

Teaching Learning Methods

- PPT presentation,
- Seminar
- Field visit
- Assignments
- Demonstration
- Field practical.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Gained practical knowledge on common managemental techniques and practices in livestock farms.	K1
CO2	Practiced in approaching and handling of farm animals and recording of physiological parameters.	K2
CO3	Prepared housing layout plans for rearing cattle, sheep and goat.	K3
CO4	Practiced in routine operations carried out in livestock farms.	K3
CO5	Enhanced skills on various methods of administration of medicines and first aid measures followed in the livestock farms.	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	3	3	3	3				2	3	3	2	3	27
CO2	3	3	3	2	2				2	3	2	3	3	23
CO3	1	2	2	2	2				2	2	3	2	2	20
CO4	2	2	2	1	3				3	3	2	2	2	22
CO5	2	2	2	3	2				2	2	2			109
Grand Total of COs with POs & PSOs														48
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{109}{48}$														2.27

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.27**
Observation	**COs of FARM MANAGEMENT PRACTICE –I are Strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (SS)	Part	: III Core-7
Semester	: III	Hours	: 60
Sub. Code	: 22URCS73	Credits	: 03

HUMAN BEHAVIOUR IN RURAL SOCIETY

Objectives:

1. To impart the principles and laws that governs human behaviour to students.
2. To offer the students a better knowledge and skills of self and others.
3. To enable the students to predict and control the behaviour of rural society as well as their own.
4. To make the students to understand the social process of interactions and Maladjusted behaviours in the society.
5. To help the students to build better interpersonal relationship and understand the barriers in the society.

Unit I: Psychology as the study of Human behaviour (10 Hours)

Psychology: Definition-Meaning-nature-objectives-scope-importance of psychology in Rural Development.

Unit II: Self-Concept (15 Hours)

Self-Concept: Meaning-body image-ideal self- self- esteem-social self- self-acceptance- self – confidence – self – direction.

Unit III: Basics of Individual behaviour (10 Hours)

Basis of individual behaviour – values – attitudes – motivation – personality – emotion – perception – intelligence – learning.

Unit IV: Process of Social Interaction & Maladjusted behaviour in community (10 Hours)

Process of social interaction: Co-operation – accommodation – adjustment – compromise – competition.

Maladjusted behaviour: Alcoholism, – deviance, – anti –social behaviour, – rebellion - suicide – causes – consequences – rehabilitation.

Unit V: Interpersonal relationship (15 Hours)

Interpersonal relationship – Meaning, types, factors and relevance of interpersonal relationship in Rural Development – Barriers: prejudice, stereotypes, myths, superstitions, economic disparity and power positions.

Books for Study

Kuppusamy., 2004, Social Psychology, Allied Publishers. New Delhi.
William. Mc Dougall., 1999, A Text book of Psychology: Discovery Pub. House, New Delhi.

Books for References:

Rachana Sharma., 2005, Abnormal Psychology, Atlantic Pub. New Delhi.
Ramnath Sharma & SS Chandra., 2003, General Psychology, Atlantic Pub. New Delhi,
Vidya Bhusan & Sachdeva, An Introduction to Sociology, Kitab Mahal, Allagabad
Elizabeth B, Hurlock., 2004, Developmental Psychology, McGraw Hill Publication.

Teaching and Learning Methods

- Class Lecture
- Digital Presentation
- Group Discussion
- Case Study

- Conducting personality test
- Field Visit

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Gain knowledge about the Concepts, Terms and Definitions	K1
CO2	Understand the various the Self concepts and theories	K2
CO3	To analyze basic of individual behaviors in the society	K3
CO4	Understand the various social interactions and maladjusted behaviors	K3
CO5	To acquire skills and designing capacity building programmes for social transformation	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of Course Outcomes with POs and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	2	3	3	3				2	3	3	2	1	24
CO2	3	2	3	3	2				2	1	2	2	2	22
CO3	1	3	2	2	2				3	3	2	2	2	22
CO4	3	2	1	2	1				2	3	2	3		19
CO5	2	1	2	3	3					3	2	3	2	21
Grand Total of COs with POs & PSOs														108
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{108}{48}$														2.2

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.2**
Observation	**COs of HUMAN BEHAVIOUR IN RURAL SOCIETY are Strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc	Part	: III Core Lab-3
Semester	: III	Hours	: 75
Sub.Code	: 22URAP33	Credits	: 4

IRD PRACTICAL- Agriculture
(2018-19 onwards)

Course Educational Objectives:

1. To impart practical training in methods of land preparation
2. To get the technical knowledge on intercultural operations
3. To acquire practical skill on agronomy of cereals.
4. To inculcate methods of cultivation of fruits and vegetables.
5. To impart skills on preparation of bioinoculants

E.No.	Title of the Exercise
1.	Preparation of land- types of ploughing
2.	Formation of Irrigation channels-beds- ridges & furrows- raised bed.
3.	Sowing – selection of seeds- types of seed treatment- Pesticides
4.	Biofertilisers- Biopesticides- seed hardening- sowing methods
5.	Intercultural operations- weeding- fertiliser application
6.	Nutrient spray- earthing up
7.	Irrigation methods- surface- micro irrigation
8.	Cultivation methods- selected crops- Paddy- Sorghum
9.	Cultivation methods -Red gram-Groundnut- Sugarcane.
10.	Cost of cultivation- Paddy- Sorghum
11.	Cost of cultivation- Sugarcane
12.	Cultivation methods- selected crops- Brinjal-Tomato
13.	Cultivation methods- Bhendi- Coconut- Mango
14.	Selection of land- Planting methods- seed- sowing methods- seed treatment methods
15.	Application – fertilizer- biopesticides- nutrient sprays- root feeding methods- specific nutrients for crops
16.	Visit to the Agricultural College, Madurai.

Teaching Learning Methods

- Demonstration
- Hands-on training
- ICT
- Seminar
- Field visit
- Assignments
- Field practical visit.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Hands on training in land preparation methods	K3
CO2	Imparting technical knowledge on intercultural operations	K1
CO3	Acquiring practical skill on agronomy of cereals.	K2
CO4	Inculcating methods of cultivation of fruits and vegetables.	K2
CO5	Skills on preparation of bioinoculants	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

(i) Programme objective

(ii) Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	3	3	2	3	2	1			2	3	2		24
CO2	3	2	3	2	3	2	1			2	3	2		23
CO3	3	2	3	2	1	2	1			2	3	2		22
CO4	3	2	3	2	3	2	2			2	3	1		22
CO5	3	2	3	2	3	2	1			2	2	2		22
Grand Total of COs with POs & PSOs														112
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{112}{50}$														2.24

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.24**
Observation	**COs of IRD practical - Agriculture are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core Lab -3
Semester	: III	Hours	: 75
Sub.Code	: 22URHP33	Credits	: 04

IRD PRACTICALS – Animal Husbandry
(2018-19 onwards)

Course Educational Objectives :

1. To impart practical knowledge on various physicochemical aspects of milk.
2. To give Hands-on practice on various laboratory test to assess the quality of milk.
3. To study about the various function and activities of dairy companies.
4. To impart practical knowledge on the identification of various fodders with their nutritive values.
5. To acquire basic knowledge on various sterilization techniques of laboratory equipments.

E.No.	Title of the Exercise
1.	Collection and sampling of milk samples.
2.	Estimation of pH and titratable acidity of Milk
3.	Estimation of fat percentage of milk by Gerber's Method
4.	Estimation of SNF and total solid percentage of milk
5.	Methylene Blue Reduction Test and Organoleptic test of Milk Sample
6.	Detection of Adulteration in Milk
7.	Identification of microbes in milk by Gram's staining method.
8.	Sterilization of various laboratory equipments.
9.	Demonstration of preparation of different types of culture media.
10.	Enrichment of paddy straw
11.	Identification of various fodder crops and its nutritional values.
12.	Visit to modern dairy farm/ Plants

Teaching Learning Methods

- Demonstration
- Hands-on training
- ICT
- Seminar
- Field visit
- Assignments
- Field practical

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Gained practical knowledge on various physicochemical aspects of milk.	K2
CO2	Hands-on practice on various laboratory test to assess the quality of milk.	K3

CO3	Gained knowledge on various function and activities of dairy companies.	K2
CO4	Practical knowledge on the identification of various fodders and their nutritive values.	K2
CO5	Acquired basic knowledge on various sterilization techniques of laboratory equipments.	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3	3	2	2				3	3	2	1	1	20
CO2	2	2	3	3	3				1	2	1	2	2	18
CO3	2	2	2	3	3				3	3	3	2	1	24
CO4	2	2	2	2	2				2	3	2	2	1	20
CO5	3	3	3	3	2				2	2	2	2	2	24
Grand Total of COs with POs & PSOs														106
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{106}{50}$														2.12

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.12**
Observation	**COs of IRD practical - Agriculture are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (SS)	Part	: III Core Lab - 3
Semester	: III	Hours	: 75
Sub.Code	: 22URSP33	Credits	: 04

IRD PRACTICALS – Social Sciences
(2018-19 onwards)

Course Educational Objectives :

1. To impart practical knowledge in functioning of various social institutions
2. To provide necessary knowledge about starting of social work organization
3. To be acquainted with various polices and progamme of Government
4. To understand the various problems involved in the running of social work institutions
5. To develop skills related to running of social work programmes.

E.No.	Title of the Exercise
1.	Observation visit to Gandhigram Rural Institute(GRI), Dindigul
2.	Conducting participatory research in villages
3.	Visiting to Community Based Organization working in Rural development
4.	Visiting NGOs headed by Women
5.	Exposure visit to Women Movement
6.	Observation visit to Self Help Group(SHGs)
7.	Knowing oneself through SWOT Analysis
8.	Observation visit to rehabilitation centers
9.	Observation visit to Counseling centers
10	Social Analysis Training
11	Media Education Training
12	Visit to Legal Training Centre

Teaching and Learning Methods

- Field Visit
- Discussion with Experts
- Case Study
- Hands on Training
- Report Writing

Course Outcome

S.No	COURSE OUTCOME	Knowledge level (Bloom's Taxonomy)
CO1	Analyze the social structures and its components and issues	**K3**
CO2	Conduct training programmes for children, youth and Women's groups	**K3**
CO3	Train and provide technical support to farmers and NGOs	**K3**
CO4	Plan and start social Welfare organizations	**K4**
CO5	Become a rural development professionals and activist	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3	3	2	2				3	3	1	2	1	20
CO2	2	2	3	3	3				1	2	1	2	2	18
CO3	3	2	3	3	3				3	3	3	3	1	27
CO4	2	2	3	2	2				2	3	2	2	1	21
CO5	3	3	3	3	2				2	2	3	2	2	25
Grand Total of COs with POs & PSOs														109
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{109}{50}$														2.18

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs and PSOs			**2.16**
Observation	**COs of Integrated Social Science Practical are strongly correlated with POs and PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	:	II B.Sc. RDS	Part	:	III Allied-3
Semester	:	III	Hours	:	75
Sub. Code	:	22URDA33	Credits	:	04

COMMUNITY BASED DISASTER MANAGEMENT

Objectives

The course enables the pupil to

1. Familiarize the concepts of Disaster Management.
2. Know and explain different types of disasters
3. Learn how to assess disaster risk
4. Explain the concept of village disaster management plan and formulation of disaster management teams
5. Highlights the disaster profile in India

UNIT I

Basic Concepts **10 Hours**

Concepts and Definitions: Disaster, Hazard, Vulnerability, Resilience, Risk, Capacity, Disaster management, disaster risk management.

UNIT II

Classification of Disasters **15 Hours**

NATURAL DISASTER- Geological Disasters: Earthquakes, Landslides, Tsunami, Mining **Hydro-Meteorological Disasters:** Floods, Cyclones, Lightning, Thunder-Storms, Hail storms, Droughts, Avalanches. **Biological Disasters**: Epidemics, Pest attacks **Technological Disasters:** Chemical, Industrial, and Radiological, Nuclear **MANMADE DISASTERS -** Building collapse, rural and urban fire, nuclear, chemicals and biological disasters, forest fire.

UNIT III

Disaster Risk Management **20 Hours**

Village Disaster management Plan (VDMP): Concept – need – components- process of developing VDMP. **Disaster Management Committee and Disaster Management Teams** : constitution, types - Warning Team , Evacuation and Response team, First aid team, Sanitation team , Shelter management team, Relief Management team, Carcass disposal team, Counseling team, Damage Assessment team, Reconstruction and Rehabilitation Team- roles and responsibilities

UNIT IV

Assessing Disaster Risk **15 Hours**

Situational Analysis of Village- Hazard Analysis, Vulnerability Analysis, capacity/Resource Analysis, Risk Analysis

UINT V

Disaster Management in India **15 Hours**

Disaster Profile of India – Mega Disasters of India (2001 Gujarat Earthquake, 2004 Indian Ocean Tsunami, 2017-2018 Vartha & Gaja cyclone in Tamilnadu) Disaster Management Act – Institutional and Financial Mechanism, National Policy on Disaster Management; Role of PRI and Non-Governmental Agencies on Disaster management.

Books for Reference

Coppola, D. P. (2007). Introduction to International Disaster Management, Elsevier Science (B/H), London.

Gupta Anil K, & Sreeja S. Nair. (2011). Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi.

Imelda Abarquez and Zubair Murshed . (2004). Community Based Disaster Risk Management: Field Practitioners Handbook, Asian Disaster Preparedness Centre, Bangkok.

Kapur, Anu & others. (2005). Disasters in India Studies of grim reality, Jaipur, Rawat Publishers.

KapurAnu 2010: Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi.

Srivastava H.N. & G.D. Gupta. (2006).Management of Natural Disasters in developing countries, New Delhi, Daya Publishers.

e - Resources

http://nidm.gov.in
http://cwc.gov.in
http://ekdrm.net
http://www.emdat.be
http://www.nws.noaa.gov

Teaching and learning methods

- ICT based class Lecture
- Group Discussion
- Brainstorming
- Role plays
- Study assignment

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Reproduce basic concept of Disaster Management	K2
CO2	Illustrate various types of disasters	K2
CO3	Discover the role of various Stakeholders in Disaster management	K4
CO4	Expert in prepare the Village Disaster Management Plan (VDMP)	K3
CO5	Synthesizing on critical review of Disaster Profile in India	K5

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping Course Outcome with PSO and PO:
(Programme Outcomes – **POs**, Programme Specific Outcomes – **PSOs**)

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	Sum of COs with POs & PSOs
CO1	2	2	3	2		2		3	3	2		2		21
CO2	1	2	2	3			2	2	2	1	3	2		20
CO3	3	2	3	2	3		3	3	3		2			24
CO4	2		2				3	2	2	2				13
CO5	3	3	2		3	2	2	3	1		3			22
Grand total of COs with POs& PSOs														100
Mean value of COs with POs & PSOs = 100/43														2.30

Strong – 3; Medium-2; Low – 1

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	0.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean values of COs with POs and PSOs			2.30
Observation	**COs of Community based Disaster Management are strongly correlated with PSOs and POs.**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPRTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II BSc.,	Part	: Non Major Elective-1
Semester	: III	Hours	: 45
Subject Code	: 22URDN13	Credits	: 02

CONTEMPORARY SOCIAL PROBLEMS IN INDIA

Course Educational Objectives:

1. To sensitize the students about the prevailing problems in India.
2. To make them to understand the various dimensions of these problems.
3. To make them to visualize the causes of social problems.
4. Apply the three main social theories to various social problems in society.
5. To help them evolve appropriate remedial measures.

UNIT I Social Problems: Meaning and Concept and Population Explosion (5 Hours)
Social Problems, nature and types of Social Problems, Social Problems and Disorganization. Population Explosion, Causes, Effects, Population Policy.

UNIT II Problems of Women and Children (10 Hours)
Violence against Women: Nature, Types, Female infanticide and Foeticide concept, causes, types, preventive measures; Child Abuse and Child Labour; Types of Child abuse; causes of child abuse; Effects of abuse on Children; The problems of child labour.

Unit III Juvenile Delinquency and Child Labour (10 Hours)
Deviance among Children: Concept of Juvenile delinquency; children in conflict with law and children in need of care and protection; Causes and Types of deviance among Juveniles; Preventive measures; Juvenile justice system of child labour.

Unit IV Corruption Rural Poverty and Unemployment (10 Hours)
Meaning, Forms and Causes, Anti-corruption movements in India. Poverty and Unemployment: Types, Causes, Consequence, Remedies; Rural Poverty; nature types and Effective Measures and Poverty Alleviation programmes in India.

Unit V Problems of youth and weaker sections (10 Hours)
Alcoholism and Drug Addiction; Causes, Treatment of Alcoholics, Drug addiction, Causes, Preventing drug abuse and combating drug addicts. Problems of Weaker Sections: Scheduled Caste, Scheduled Tribe, and Backward Castes Possible solution.

Books for Study

Ahuja Ram, 1999, Social Problems in India, Rawat Publication: New Delhi.
Ahuja, Ram, 2000, Social Problems in India, New Delhi: Rawat Publications.
Bateilee, Andre, 1992, Backward Classes in Contemporary India, New Delhi: Beteille, Andre, 1974, Social Inequality, New Delhi:
Desai, Neera & Usha Thakkar, 2007, Women in Indian Society, New Delhi: National Book Trust
Dube, Leela 1991, Women and Kinship, Comparative Perspectives on Gender in South and Southeast Asia, New Delhi: Sage Publication.

Books for Reference

Ahuja Ram, 1999, Social Problems in India, Rawat Publication: New Delhi.

Dandanean Steven P., 2001. Taking it Big: Developing Sociological Consciousness in Postmodern Times. New Delhi. London. Pine Edge Press.
Gupta M. and Chen Martha Alter. 1996. Health, Poverty and Development in India. New Delhi. Sage Publications.
Ram, 2009, Social Problems in India, Jaipur: Rewath Publications.

Teaching and learning methods

- ICT based class Lecture
- Group Discussion
- Brainstorming
- Role plays
- Study assignment

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Identify and describe various theoretical perspectives on social problems.	K1
CO2	Document, analyze, and debate ongoing social problem processes and issues using a sociological framework.	K2
CO3	Investigate and analyze one current social problem in-depth, or investigate and analyze one agency involved in the handling of a social problem.	K3
CO4	Examine actions from the perspective of social responsibility.	K3
CO5	Become conscientious and respect others, commitment to social justice, personal integrity, and service.	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 1	PO 2	PO 3	PO 4	PO 5	Sum of COs with POs & PSOs
CO1	3	3	3	3			2		2			2		18
CO2	2	2	2	2		3	2		1		2			16
CO3	2	3	2	2		2			3				3	17
CO4	2	1	2	1							2			08
CO5	2	1	3	1		3						3		13
Grand Total of COs with POs & PSOs														72
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{72}{33}$														2.18

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.18**
Observation	**COs of CONTEMPORARY SOCIAL PROBLEMS IN INDIA are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: U.G. (Aided)	Part	: Self Learning Course
Semester	: III	Hours	: --
Sub.Code	: 22URDSL3	Credits	: 3

HUMAN RIGHTS

(For Students admitted from the Academic Year 2008-2009 onwards under the New CBCS Pattern)

Course Educational Objectives

1. To sensitize the students about the prevailing human rights problem in India
2. To impart the knowledge on human rights;
3. To provide the various dimensions of human rights' issues.
4. Familiarize himself on various human rights agencies in India
5. To help them evolve appropriate remedial measures

Unit – I Introduction to Human Rights:
Human Rights – Universality of Human Rights – The Universal Declaration of Human Rights.

Unit – II UN and Human Rights:
UN Commission on Human Rights – UN Major Human Rights Instruments – Convention on the elimination of Discrimination against Women – Convention on the Rights of the Child.

Unit – III Human Rights in India:
The origin of Human Rights in India – Constitutional Provisions & Laws relating to Human Rights in India - Rights of minorities and Dalits in India – Human Rights Violations in India.

Unit – IV National and State Human Rights Institutions:
The National Human Rights Commission of India – State Human Rights Commission and attached bodies.

Unit – V NGOs in Human Rights:
Role of NGO's, in the protection and redressal of issues, on Human Rights.
NGOs at the National, and State Level working on issues of Human Rights – their role and functions.

Books for Study:

Ravindran, D.J.,(2000). Human Rights Praxis: A Resource book for Study, Action and Reflection Human Rights Study Material, Institute of Human Rights Education, New Delhi.

Balam Singh, (2007). Human Rights, Cyber Tech Publisher, New Delhi.

Books for reference

Ashish Kumar das and Prasant Kumar Mohanty (2007). Human Rights in India: Sarup and Sons. New Delhi.

Baradat Sergio and Swaronjali Ghosh. (2009). Teaching of human rights: Dominant publishers and distributors, New Delhi.

Bani Borgohain. (2007). Human Rights Social Justice and Political Challenge. Kaniska publishers and distributors New Delhi.

Bhavani Prasad Panda.(2007). Human rights Development and environment law: academic excellence, Delhi.

Meena, P.K (2008).Human Rights theory and practice: Murali Lal and sons, New Delhi.

Rao, M.S.A.(1978).Social Movements in India – Social Movements and Social Transformation in India Vol.1 & 2: Manohar Publications, New Delhi.

Roy A.N.(2005).Human Rights Achievements and challenges: Vista International Publishing house, Delhi.

Velan, G.(2008).Human Rights and Development Issues; The associated publishers, Ambala cant.

Vishwanathan,V.N (2006). Human Rights – Twenty First Century Challenges: Kalpaz publications, New Delhi.

Teaching Learning Methods

- ICT usage
- Creative assignments
- Individual cum Group Presentation
- Newspaper Reading and Analysis
- Peer Learning
- Field Exposure and Training
- Group Discussion
- Group Projects
- Short films and other educational videos

Course Outcome: At the end of the course, the students will:

SL.No	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Identify and describe various theoretical perspectives on human rights issues	**K1**
CO 2	Competency to advise and train them to be social activist to fight against human rights issues	**K2**
CO 3	Investigate and analyze one agency involved in the handling of a human right issues	**K4**
CO 4	Differentiate role of National human rights commission and state human rights commission	**K4**
CO 5	Become conscientious and respect others, commitment to social justice	**K5**

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping Course Outcome with PSO and PO:

(Programme Outcomes – **POs**, Programme Specific Outcomes – **PSOs**)

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	Sum of COs with POs & PSOs
CO1	3	3	1	2	2	3	2	3	3	3		3		28
CO2	2	2	3	2	2	2	2	3	3	2		1		24
CO3	2	2	2	3	2	2	2	2	3	2				22
CO4	2	1	2	2	2	1	2	2	2	2				18
CO5	2	1	2	1	2	1	1	3	2					15

Grand total of COs with POs & PSOs	107
Mean Value of COs with POs & PSOs= $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{107}{51}$	2.09

S Strong – 3; Medium-2; Low – 1

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	0.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean values of COs with POs and PSOs			2.09
Observation	**COs of Community based organization are moderately correlated with PSOs and POs.**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc RDS (AG)	Part	: III Core-8
Semester	: IV	Hours	: 60
Sub.Code	: 22URCA84	Credits	: 3

PLANT PATHOLOGY

OBJECTIVES

1. To teach the students with the basic knowledge on the life history of microorganisms.
2. To equip the students in practical skills to identify the diseases of paddy, Sorghum and Cumbu with their control measures.
3. To train the students to identify the diseases of pulses and oil seeds .
4. To enable the students learn practical knowledge and skills to identify the diseases of cash crops and vegetables
5. To impart the students the practical knowledge and skills to identify the diseases of fruits and plantation crops.

Unit – I Introduction to Diseases (10 Hours)

Introduction to microorganisms- Bacteria, Fungi, Actinomycetes, Viruses. Morphology and types of symptoms caused by plant pathogens. Methods of control-Cultural- Physical- Chemical and Biological control methods

Unit – II Diseases of Cereals and Millets (15 hours)

Symptoms caused by pathogens and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control – Integrated Disease Management(IDM) for CEREALS: RICE – Blast, Brown spot. MILLETS: SORGHUM –Smuts, RustCUMBU – Ergot, Downy mildew.

Unit – III Diseases of Pulses and Oil seeds (10 Hours)

Symptoms caused by pathogens and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control – Integrated Disease Management (IDM) for PULSES: RED GRAM –Fusarium wilt, Dry root rot.BLACK GRAM – Leaf spot, Powdery mildew. OIL SEEDS – GROUNDNUT- Leaf spot, Rust. GINGELLY- Leaf spot, Phyllody.

Unit – IV Diseases of Commercial crops and vegetables (15 hours)

Symptoms caused by pathogens and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control – Integrated Disease Management(IDM)for SUGARCANE- Red rot, Rust. COTTON- Fusarium wilt, Boll rot. VEGETABLES- BRINJAL- Bacterial wilt, Cercospora leaf spot.TOMATO –Damping off, Fusarium wilt.

Unit – V Diseases of Fruits & Plantation crops (10 Hours)

Symptoms caused by pathogens and Ecofriendly Measures (Cultural – Mechanical – Legal – Biological) and Chemical Control – Integrated Disease Management(IDM) for FRUITS- MANGO- Anthracnose, Powdery mildew.SAPOTA- Leaf spot, Sooty mold. Plantation crops- COCONUT- Tanjore wilt, Bud rot. COFFEE- Rust, Brown leaf spot. Scientific names and biological cycle of individual insect or microorganisms are not taught. Stress is given for the pest and disease mentioned above only.

Book for Study

Agrios, G.N. 2005. Plant Pathology – (5th Edition). Academic Press, New York.

Books for Reference

Alexopoulos,C.J., Mims,C.W. and Blackwell, M.2010 Introductory Mycology. John Wiley and Sons Ltd., N.York.

Alice D, and Jeyalakshmi C 2014. Plant Pathology. A.E Publications ,Coimbatore

Dube, H.C.2009. A textbook of Fungi, Bacteria and Viruses, Vikas Publishing House P. Ltd, New Delhi.

Mehrotra, R.S. and Aneja, K.R. 1990. An Introduction to Mycology, Wiley E.Ltd. New Delhi.

Singh, R.S.1982. Plant Pathogens – The Fungi. Oxford and IBH Publishing Co., New Delhi.

Vidyasekaran, P. 1993. Principles of Plant Pathology –.CBS Publishers & Distributors, New Delhi.

eReferences

www.mycobank.org

www.mycology.net

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Skill to identify the crop diseases scientifically.	K1
CO2	Knowledge to assess the damage caused by diseases of cereals and millets	K2
CO3	ractical skills in control of diseases in pulses and oil seeds	K3
CO4	Training to predict the damage caused by diseases in cash crops and vegetables	K3
CO5	Hands on training in diseases of fruits and plantation crops	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

(i) Programme objective

(ii) Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	3	2	3	2	1			2	3	2		23
CO2	3	2	3	1	3	2	1			2	3	1		21
CO3	3	2	3	2	1	2	1			2	3	2		21
CO4	3	2	3	2	3	2	1			2	2	1		21
CO5	3	2	3	2	3	2	1			2	2	2		22

Grand Total of COs with POs & PSOs	107
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{107}{50}$	2.14

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.14**
Observation	**COs of PLANT PATHOLOGY are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core -8
Semester	: IV	Hours	: 60
Sub.Code	: 22URCH84	Credits	: 03

POULTRY HUSBANDRY

Objectives:

1. To understand the poultry industry in India and abroad.
2. To acquire the basic knowledge on housing management poultry
3. To study about the breeds and breeding management poultry
4. To impart knowledge about the feeding management poultry
5. To study about the disease management of poultry.

UNIT I Industry **10 Hrs**

Development of poultry industry in India. Past and present scenario of poultry industry – Role of government and private agencies in poultry development. Breeds of chicken, quail and turkey - egg, meat and dual types - Commercial strains of layers and broilers. Improved varieties of country chicken - qualities and advantages.

UNIT II Housing Management **15 Hrs**

Selection of site and location for poultry farm-systems of rearing- free range system, semi intensive, and intensive rearing – deep litter, cage and slat system - advantages and disadvantages. Types of poultry houses – open sided – deep litter, slat system, wire floor, cage houses and raised platform cage houses, Cages – types of cages, floor, feeder and water space requirement for layer and broiler different age groups under different rearing conditions. Litter – materials- litter management, litter-borne diseases and control. Light management during growing and laying period. Environmentally controlled houses, bio security measures in a poultry farm.

UNIT III Breeding Management **15 Hrs**

Common breeding programs practiced in poultry industry- Selection of breeder flock- layer and broiler, Methods of mating – flock, pen, pair and artificial insemination.–Pre-laying and laying management of breeder flocks– breeder male and female management. Pre-peak, peak and post-peak laying period. Egg – structure and formation of egg. Incubation-natural and artificial-requirements- incubation management, preparation of shed to receive chicks-brooding: Types of brooders and feed and water space requirement – behavior of chicks in brooding.

UNIT IV Feeding Management **10 Hrs**

Feed materials for poultry-energy and protein sources- use of additives – enzymes, probiotics, prebiotics and antibiotics, herbs, performance enhancers - utilization of unconventional feedstuffs. Nutrient requirements of layer, broiler and breeders of different age groups, Systems of feeding – ad libitum, restricted and controlled—feeding of layers, broilers, turkeys, quails and country chicken. Culling in poultry. Marketing channels – integration in commercial rearing.

UNIT V Disease Management **10 Hrs**

Etiology, symptoms, diagnosis, treatment, prevention and control of some major diseases– **Viral diseases** — Ranikhet Disease, Infectious Bursal Disease, Infectious Bronchitis, Marek's Disease, Fowl Pox, Egg drop syndrome, Bird Flu. **Bacterial diseases** -Colibacillosis, Chronic Respiratory Disease, Mycoplasmosis**,** Salmonellosis, Fowl typhoid, Fowl cholera, Pullorum disease, Infectious coryza. **Parasitic diseases** – Ecto and Endo parasites, protozoan infection –

Coccidiosis. Fungal disease – Aspergillosis, Mycotoxicosis – types – Aflatoxin. Management during unfavorable weather condition.

Book for Study

Banerjee.G.C, Poultry, 3rd edition, Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi, 2004.

Books for Reference

Bell D. Donald and Weaver D. William Jr., Commercial Chicken Meat and Egg Production, 5th Edition, Springer India Pvt. Ltd., Noida., 2007.

Ensmiger,M. E., Poultry Science, 3rd Edition. International Book Distribution Co., Lucknow, India, 2015.

Hurd M. Louis., Modern Poultry Farming, 1st Edition. International Book Distributing Company, Lucknow, 2003.

Jull A. Morley., Successful Poultry Management, 2nd Edition, Biotech Books, New Delhi, 2007.

Singh, R. A., Poultry Production, 3rd Edition, Kalyani Publishers, New Delhi, 2011.

Sreenivasaiah, P.V., Scientific Poultry Production: A Unique Encyclopaedia, 3rd Revised and Enlarged Edition, IBDC Publishers, International Book Distributing Co., 2006.

Sharma, R.N., Poultry Management, 1stedition, Vista International Publishing House, New Delhi, 2008.

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration
- Field practical.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Understand the poultry industry in India and abroad.	K1
CO2	Acquired the basic knowledge on housing management poultry	K2
CO3	Learned about the breeds and breeding management poultry	K3
CO4	Gained knowledge about the feeding management poultry	K3
CO5	Educated about the disease management of poultry.	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs
(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 1	PO 2	PO 3	PO 4	PO 5	Sum of COs with POs & PSOs
CO1	2	3	3	3	3				2	2	3	3	3	26
CO2	2	2	2	2	2				3		2	3	3	21
CO3	3	2	2	1	2				3	2	3	2		20
CO4	1	2	2	2	3				2	2	2	2	2	20
CO5	3	3	3	3	3				2	2	2	2	2	25
Grand Total of COs with POs & PSOs														109
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{109}{48}$														2.27

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.2**
Observation	**COs of POULTRY HUSBANDRY are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: B.Sc. RDS	Part	: III Core-8
Semester	: IV	Hours	: 60
Sub. Code	: 22URCS84	Credits	: 03

RURAL ECONOMICS

Objectives

1. To help the students to understand the concepts of rural economics.
2. To make them to know the importance of rural economics in rural development.
3. To make the students to aware of the agricultural prices.
4. To impart the knowledge of agriculture products and agriculture marketing
5. To help the students to gain knowledge about the cooperative farming.

UNIT-1 Introduction to Rural Economy **10 hours**

Introduction–Structure,-features of Indian Rural Economy-Characteristics of underdeveloped economy -Distribution of income and wealth- Causes of inequalities Income and Consequences. Family Expenditure Factors affecting expenditure and its necessity. Budget its objectives, steps for preparing family budget.

UNIT-II Importance of Agriculture **15 hours**

Agriculture –Importance of Agriculture and Animal Husbandry –Green- Revolution-factors responsible for green revolution.–causes for Low productivity- remedies. Agriculture price policy in India.

UNIT-III Agricultural Labour and Indebtedness **10 hours**

Agriculture labour-Growth, Causes economic conditions of landless labour - small and marginal farmers. Rural indebtedness-Causes of Rural indebtedness -Measures to improve their status.

UNIT –IV Agricultural Prices and Marketing **15 hours**

Agricultural Market, characteristics of Agricultural produce, functions and defects in marketing agricultural produce-Regulated markets – farmers market- co-operative marketing-Measures taken by the government.

UNIT-V Co-Operating Farming **10 hours**

Meaning and types of cooperative farming, case for and against cooperative farming cooperatives in agriculture development. Cooperative Dairying, Structure of Dairy cooperatives, functioning of village milk - cooperative society- cooperative movement.

Books for Study

Dhingra, Rural Economics –Sultan Chand& Sons, New Delhi, 2007.

Mishra and Puri Indian Economy Himalaya Publishing House, Mumbai, 2007.

Patel (et.al) Rural Economics Himalaya Publishing House, Mumbai, 2007.

S.S.M. Desai : Fundamentals of Rural Economics, Himalaya Publishing House, Mumbai.

Books for Reference

Agarwal A. N, Indian Economy Problems of development and planning, Wiley Eastern India Ltd (2007)

Dhingra, Rural Economics-Sultan Chand &sons, New Delhi (2007)

Datt & Sundram, Indian Economy, S. Chand publishers (2011)

Dingra I.C Rural Banking in India, S. Chand & Co. Limited. New Delhi.

Mishra S. K & V. K Puri Indian Economy Himalaya Publishing House, Mumbai (2008)

Ramaraj, B. Indian Economy Prospects and problems, Vishal Publications Chennai-34 (1997)

Teaching and Learning Methods

- Class Lecture,
- Digital Presentation
- Group Discussion
- Assignment
- Brain storming
- Exposure Visits
- Field work

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Understand the structure of rural economy.	K1
CO2	Know the various aspects of green Revolution in rural economy	K2
CO3	Understand the structure of the agricultural labour in rural economy.	K3
CO4	Demonstrate an awareness of various agricultural market structures and the marketing of agricultural products.	K3
CO5	Familiarize about the structure of cooperative farming	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of Course outcomes with Pos and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 1	PO 2	PO 3	PO 4	PO 5	Sum of COs with POs & PSOs
CO1	2	2		2					2			2		10
CO2		2			3				1		2	2		10
CO3		3	3		2				3				3	14
CO4		2			2				2	2	2			10
CO5	2		3		2					2		2		11
Grand Total of COs with POs & PSOs														55
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{55}{25}$														2.2

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.2**
Observation	**COs of RURAL ECONOMICS are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	:	II B.Sc RDS (AG)	Part	: III Core -9
Semester	:	IV	Hours	: 60
Sub.Code	:	22URCA94	Credits	: 3

ORGANIC FARMING

OBJECTIVES

1. To provide students with a basic knowledge on principles and concepts of Organic agriculture.
2. To impart knowledge of types of manures used in organic farming.
3. To empower the technical knowledge on types of composting.
4. To inculcate the knowledge on types of biocontrol agents.
5. To impart the methods of integrated farming systems.

Unit – I: Organic Agriculture **10 Hrs**

Organic farming: Concept – definition – Principles – needs – Characteristics –objectives – options difference between organic and conventional farming- Impact of Green revolution- Certification of Organic Products.

Unit – II: Organic Resources **10 Hrs**

In-situ manuring –meaning – in-situ manuring by animals- Green manure- benefits- Ex-situ manure- types- FYM- Green leaf manure- oilcakes and meals- Biological resources – definition- types and advantages.

Unit – III: Composting of Organic wastes **15 Hrs**

Composting- definition- Principles- role of micro-organisms in decomposting- process- humus- methods of composting- Bangalore- Coimbatore- Indore methods- Enriched FYM- Weedcomposting- coir-waste composting- Vermicomposting.

Unit – IV: Organic Pest Management **15 Hrs**

Pest management- definition- Biocontrol Agents –Botanics for pest control- neem for pest control – Bioweedicides- Biopesticides- NPV, GV, *Trichoderma- Trichogramma-* Cultural control -Indigenous Technical Knowledge system – *Panchacavya, Navakavya, Amirthakkarisal.*

Unit – V:Integrated Farming System: **10 Hrs**

Integrated Farming System (IFS)- definition-Principles-advantages- IFM under lowland-gardenland and dryland.

Book for study

Palaniappan S.P. 2003 Organic farming Theory and Practice.

Books for Reference

Arul Sharma K.2004, Hand book of the Organic Farming, Agribios, Jodhpur.
Thampar P.K.1995, Organic Agriculture. Peekay Tree Crops Development foundation
Dahama 1997 Organic farming for Sustainable Agriculture Agribios, Jodhpur.

E:References:

www.ifoam.org
www.apeda.org
www.cowindia.org

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Gain basics and principles of organic farming	K1
CO2	Awareness on the types of green manure.	K2
CO3	Basic steps in preparation of composts by different methods	K3
CO4	Knowledge on various biocontrol agents	K3
CO5	Awareness on the types of Integrated Farming System.	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

(i) Programme objective

(ii) Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	3	2	3	2	1			2	3	2		23
CO2	3	2	3	2	3	2	1			2	3	1		22
CO3	3	2	3	2	1	2	1			2	3	2		21
CO4	3	2	3	2	3	2	1			2	3	1		23
CO5	3	2	3	2	3	2	1			2	2	2		22
Grand Total of COs with POs & PSOs														111
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{111}{50}$														2.22

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.22**
Observation	**COs of ORGANIC FARMING are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core -9
Semester	: IV	Hours	: 60
Sub.Code	: 22URCH94	Credits	: 03

PIG FARMING

Objectives

1. To know about the status of pig farming in India and abroad.
2. To study the principles of reproduction and breeding of pigs.
3. To give scientific and practical exposure in pig rearing systems.
4. To quire knowledge about pig nutrition, pig diseases and its prevention
5. To impart practical knowledge on first aid treatments in pig's disease management.

UNIT-I Breeds and Selection (10 Hours)

Scope and Status of pig industry in India and Tamil Nadu- merits of rearing pigs -classification and characteristic of pig breeds– exotic and indigenous breeds. Characteristics of good sow and boar.

UNIT-II Housing and Management (10 Hours)

Housing of Pig- types of Pig house - housing requirements - layout of piggery farm- construction of a pig house. Care and management of piglets and sow during pregnancy- weaning of piglets. Waste disposal methods in piggery farm – disinfection and fly control measures.

UNIT-III Pig Nutrition (15 Hours)

Feed materials for pigs – concentrates and roughages - growth stimulating substances- nutrient requirements of pigs- guidelines in formation of swine rations - commercially prepared swine rations - creep, starter and fattening rations- feeding methods and methods to avoid feed wastage. Importance of iron supplementation in piglets

UNIT-IV Reproduction and Breeding (10 Hours)

Structure of male and female genitalia- Age at maturity - oestrus cycle- symptoms and hormonal changes – breeding techniques - age at first furrowing – symptoms of furrowing- furrowing interval- Care and management of pregnant sows.

UNIT-V Diseases and Prevention (15 Hours)

Etiology, symptoms, treatment, prevention and control of some major diseases of pigs- Viral diseases- Swine fever, **Porcine parvovirus,** Bacterial diseases- **Exudative dermatitis (greasy pig), Swine dysentery,** Colibacillosis, Mastitis (*E. coli*), Parasitic diseases- Coccidiosis, Deficiency diseases- Piglet anemia, hypoglycemia. First aid measures, deworming and vaccination schedule.

Book for study

Banerjee, G. C., A Text book of Animal Husbandry, Oxford & IBH Publishing Company, New Delhi, 2013.

Books for Reference

Chandra Shekher Sahukar., Piggery India year book 2000, Scientific Publisher and Distributors, New Delhi, 2000.

ICAR, Hand book of Animal Husbandry-ICAR Publication, New Delhi, 2017.

Sastry, N.S.R. and Thomas, C.K., Livestock Production and Management, Kalyani Publishers, Ludhiana, India, 2015.

Sharda, D.P., Swine Production, Indian Council of Agricultural Research, New Delhi, 1982.
Surendra K.Ranjhan., Nutrition and Feeding Practices, Vikas Publication-6th Edition, New Delhi, 2015.

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration
- Field practical.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Understand and analyze the need of pig farming in India.	K1
CO2	Organization and management of pigs under scientific method of rearing.	K3
CO3	Developed as a pig entrepreneur	K3
CO4	Make their own employment opportunities and also employment to others.	K3
CO5	Improve per capita availability of pig meat in India and open the avenues to export pig meat and pork products.	K4

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2	3	2	2				3	2	2	2	3	24
CO2	2	2	2	2	2				2	2	2	2	2	20
CO3	2	2	2	3	2				2	2	3	1	2	21
CO4	2	2	2	2	2				2	2	2	1	1	18
CO5	2	1	2	2	2				1	1	1	1	1	14
Grand Total of COs with POs & PSOs														119
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{119}{50}$														2.38

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.38**
Observation	**COs of PIG FARMING strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (SS)	Part	: III Core-9
Semester	: IV	Hours	: 60
Sub. Code	: 22URCS94	Credits	: 03

SCIENCE AND TECHNOLOGY FOR RURAL DEVELOPMENT

Objectives:

1. To introduce the basic concepts of science, technology and development
2. To describe the vital role of science and technology in different fields of rural development
3. To explain the social issues of technology and its challenges for rural development
4. To incorporate various modern technologies to bring changes in the society
5. To familiarize the students on various challenges of modern technologies towards Digital, gender and climatic conditions

UNIT-I: Basic Concepts (10 Hours)

Science: Meaning and definition –Technology: Meaning and definition – The interrelationship between science and technology – Common features of science and technology – Concept of rural development.

UNIT-II: Technology-Based Initiatives in Agriculture Sector (15 Hours)

Sustainable agriculture: Definition, concept, principles of agricultural sustainability, and renewable energy for sustainable agriculture – Biotechnology revolution and food security – E-agriculture - National Agricultural Market or eNAM.

UNIT-III: Institutional Frame Work for Application of Science & Technology (15 Hours)

Science and Technology System in India: Central Government Science and Technology Department – Central Socio-economic and other Ministries - State Government Science and Technology Department – Science and Technology in Non-Government Organizations – In-House research and Development in Private Industries.

Schemes operational under the SEED (Science for Equity, Empowerment & Development) Programme: Long Term Core Support, Technological Advancement for Rural Areas (TARA), Technological Intervention for Addressing Societal Needs (TIASN), Scheme for Young Scientists and Technologists, Science and Technology for Women, Tribal Sub-Plan and Scheduled Caste Sub-Plan (SCSP).

UNIT-IV: Technology and Social Change (10 Hours)

Technological change and its influence on caste, class and gender relations – Green revolution and the emergence of backward castes in Northern India – Modernization and new middle class – Technology and inclusive development: A Case study on rural women and marginalized communities.

UNIT V: Technological Challenges for Rural Development (10 Hours)

Automation and dehumanization - Digital divide – Gender-selective abortion - Climate refugees.

Book for Study

Singh, Kartar, 'Rural Development: Principles, Policies & Management', Sage Publication, New Delhi, 2009.

Books for Reference

Duncombe. R. (ed.)., 'Digital Technologies for Agricultural and Rural Development in the Global South', The Centre for Agriculture and Bioscience International, Wallingford, 2009.

Reddy, Mahadeva E., D. Uma Devi, and P. Adinarayana Reddy, 'Science and Technology for Rural Development', The Associated Publishers, New Delhi, 2009.
Saravanan, R., C. Kathiresan, and T. Indra Devi, 'Information and Communication Technology for Agriculture and Rural Development', New India Publishing Agency, New Delhi, 2011.
Wickremasinghe, Seetha I., Ma. Josefina P. Abilay, and Jayasarma Gunaratne (eds.)., 'Science and Technology for Rural Development', Daya Publishing House, New Delhi, 2012.

Journals and Magazines

Kurukshetra Monthly Magazine
Y*ojana* Monthly Magazine

Teaching Learning Methods

- Group Discussion
- PowerPoint Presentation
- Field exposure
- Exhibition
- Minor Project

Course Outcome:

At the end of the course, the students will be able to:

SL.NO	Course Outcome	Knowledge Level
CO1	Interrelate the concepts of science and technology and development	K1
CO2	Identify the alternative energy technologies in agriculture sector	K2
CO3	Design an ICT model for rural people	K3
CO4	Associate the technology with the changes in caste, class and gender relations	K3
CO5	Propose some effective measures to the issues of technology	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of Course outcomes with Pos and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	2							3	2				9
CO2	1			2		2			1		2			8
CO3			2	2	2						2	1		9
CO4				2		2	3				2	2		11
CO5						2	2	3			2	2		11
Grand Total of COs with POs & PSOs														48
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{48}{24}$														2.0

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**2.0**	
Observation	**COs of SCIENCE AND TECHNOLOGY FOR RURAL DEVELOPMENT are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc RDS (AG)	Part	: III Core -10
Semester	: IV	Hours	: 60
Sub.Code	: 22URCA04	Credits	: 3

AGRICULTURAL BIOTECHNOLOGY

OBJECTIVES:

1. To acquaint the fundamental concepts of plant tissue culture.
2. To impart the methods of tissue culture.
3. To develop experimental skills in applied plant tissue culture.
4. To teach the concepts of soil microbiology.
5. To empower the knowledge of types of biofertilisers and their preparation.

Unit I Basics of Plant Tissue Culture **10 Hrs**

Plant tissue culture: Concepts, history and scope - Media and Culture Conditions - Sterilization techniques- Regeneration methods - morphogenesis, organogenesis and embryogenesis

Unit II Methods of Tissue culture **10 Hrs**

Culture types - callus culture and cell suspension culture; shoot tip and meristem tip culture; anther and pollen culture; ovule and embryo culture. Micropropagation–banana.

Unit III Applied Plant Tissue Culture **10 Hrs**

Applications of organ culture - Meristem tip culture (virus free plants) and another culture (doubled haploids)- Protoplast isolation and fusion- somaclonal variation- synthetic seeds - secondary metabolite production.

Unit IV Soil Microbiology **15 Hrs**

Soil microbiology, definitions- discovery,distribution and importance of soil microorganisms in soil fertility - factors affecting theactivities of soil microorganisms; Rhizosphere microorganisms and importance.

Unit V Biofertilisers **15 Hrs**

Biological nitrogen fixation - symbiotic and non-symbiotic microorganisms.Silicate and zincsolubilising bacteria - types and importance of biofertilizers in agriculture; massproduction and quality control of biofertilizers.

Book for study

Prescott, Harley and Klein, 2013. Microbiology, 9 thedition, McGraw Hill Publishing

Books for Reference

Michael J. Pelczar,JR., E.C.S. Chan, Noel R.Krieg, 2005. Microbiology
Chawla. H S. 2009. Introduction to Plant Biotechnology (3/e).CRC Press, London. 730
.George, E.F, Hall M. A. and Geert-Jan De Klerk. 2009. Plant Propagation by Tissue culture, 3rd Edition, Springer, Netherlands.

eReference

http://microbelibrary.com
http://www.rapidmicrobiology.com
http://www.microbes.info
http://aem.asm.org

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration

Course Outcome:

At the end of the course, the students

SL.NO	Course Outcome	Knowledge Level
CO1	Gain knowledge on basic concepts of plant tissue culture.	K1
CO2	Possess knowledge on methods of plant tissue culture	K1
CO3	Know practical methodology of applied plant tissue culture.	K2
CO4	Know Benefical effects of soil microorganisms	K3
CO5	Gain skills on mass production of biofertilisers	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

(i) Programme objective

(ii) Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	2	3	2	3	2	1			2	3	2		23
CO2	3	2	3	2	3	2	1			2	1	1		20
CO3	3	2	3	2	1	2	2			2	3	2		22
CO4	3	2	3	2	3	2	1			2	3	1		22
CO5	3	2	3	2	1	2	1			2	2	2		20
Grand Total of COs with POs & PSOs														107
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{107}{50}$														2.14

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.14**
Observation	**COs of AGRICULTURAL BIOTECHNOLOGY are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core-10
Semester	: IV	Hours	: 60
Sub.Code	: 22URCH04	Credits	: 03

FARM MANAGEMENT PRACTICE –II
(PIG AND POULTRY)

Objectives

1. To impart practical knowledge on various body parts of pig and poultry.
2. To have practice in construction of cattle house and their maintenance.
3. To provide hands on training in all important management practices.
4. To impart practical knowledge on feeding and disease management.
5. To acquire the basic knowledge on Biosecurity of Pig and Poultry

UNIT-I. Breeds and Housing **10 Hrs**

Familiarizing the body parts of pig and poultry and identification of breeds of pig and poultry, Construction of pig sty and poultry sheds of various types - practice on designing and elevations, structure of piggery and poultry shed – drawing of lay out.

UNIT- II .Routine Management Practice **10 Hrs**

Practice on cleaning and grooming of pigs, castration, tail docking, clipping of needle teeth and practice on ear notching and tagging - pig exercising. Practice on incubation in poultry – natural and artificial methods - sexing of chicks- methods and Purpose – brooding of chicks- hands on practice on preparation of poultry shed for receiving of chicks, debeaking and brooding arrangements.

UNIT- III. Dentition, Restraining and Insemination **15 Hrs**

Types of teeth and Dental formula, practice on age determination by dentition in pigs, methods of restraining pig, - Physical and chemical methods- purpose. Handling of poultry - semen collection and artificial insemination in poultry.

UNIT-IV Biosecurity **10 Hrs**

Preparation of bio security measures- Litter management, practice on feeder and waterer types and arrangement – manual and automatic methods, disinfection of piggery and poultry shed, fly control measures, disposal of waste, manure and dead birds and animals.

UNIT- V Health and First Aid Measures **15 Hrs**

Hands on practice on methods of administration of deworming medicines, other medicines and vaccines through various routes. Practical knowledge on common diseases of pig and poultry and general health programme of pig and Poultry- methods and medications used. Record maintenance in pig and poultry farms.

Book for Study

Banerjee, G. C., A Text book of Animal Husbandry, Oxford & IBH Publishing Company, New Delhi, 2013.

References

Bell D. Donald and Weaver D. William Jr., Commercial Chicken Meat and Egg Production, 5th Edition, Springer India Pvt. Ltd., Noida., 2007.

Chandra Shekher Sahukar., Piggery India year book 2000, Scientific Publisher and Distributors, New Delhi, 2000.

Hurd M. Louis., Modern Poultry Farming, 1st Edition, International Book Distributing Company, Lucknow, 2003.
Jull A. Morley., Successful Poultry Management, 2nd Edition, Biotech Books, New Delhi, 2007.
Sharda, D.P., Swine Production, Indian Council of Agricultural Research, New Delhi, 1982.
Singh, R. A., Poultry Production, 3rd Edition, Kalyani Publishers, New Delhi., 2011.

Teaching Learning Methods

- ICT
- Seminar
- Field visit
- Assignments
- Demonstration
- Field practical.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Imparted practical knowledge on various body parts of pig and poultry.	K1
CO2	Practiced in construction of cattle house and their maintenance.	K2
CO3	Trained in all important management practices.	K3
CO4	Imparted practical knowledge on feeding and disease management.	K1
CO5	Acquired the basic knowledge on Biosecurity of Pig and Poultry	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3	3	2	2				3	3	2	1	1	20
CO2	2	2	3	3	3				1	2	1	2	2	18
CO3	2	2	2	3	3				3	3	3	2	1	24
CO4	2	2	2	2	2				2	3	2	2	1	20
CO5	3	3	3	3	2				2	2	2	2	2	24
Grand Total of COs with POs & PSOs														106
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{106}{50}$														2.12

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			
Observation	**COs of FARM MANAGEMENT PRACTICE –II are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc RDS (SS)	Part	: III Core-10
Semester	: IV	Hours	: 60
Sub.Code	: 22URCS04	Credits	: 03

YOUTH EMPOWERMENT AND POLICIES

Objectives

1. To enable the students to understand the concept on youth and present scenario of youth
2. To study the youth in the context of socio-economic milieu and various issues of youth
3. To create awareness on youth participation in the social and political context
4. To impart the knowledge on youth polices and institutions and programmes
5. To build the capacity of the youth for socially committed responsible citizens

UNIT-I Understanding the World of Youth (10 Hours)

Concept of youth - Definition- Types-Needs and Importance- Demographic Profile. Human Development Index Dimensions - Education, Income and Health - Youth in the context of Religion- politics-culture.

Unit-II Development and Problems (10 Hours)

Youth life Cycle - Youth Conflicts – Generation Gap - Unemployment, Alcoholism, Drug & Internet Addiction, Crime, Specific problems of Female Youth .

UNIT-III Participation and Action (10 Hours)

Political and Social participations; Roles and Responsibilities as citizens. Political Engagement; SFI, DYFI, ABVP,NSUI. Democracy Institutions at Grass Roots. Social participation Approaches: Relief-Welfare-Development, Policy.

UNITS –IV Policies and Programmes (15 Hours)

Youth Policy: need and relevance - National Youth Policy: objectives-focus areas - implementation. Youth development Programmes: National Skill Development Commission (NSDC) National Programme for Adolescents Development (NPYAD), Deen Dayal Grameen Kaushalya Yojana. Institutions: Nehru Yuva Kendra Sangathan (NYKS), Rajiv Gandhi National Institute of Youth Development (RGNIYD), United Nations Youth Associations (UNYAs).

UNIT – V Capacity Building (15 Hours)

Concept, Significance of Capacity building. Training Methods: Folk Arts and Street Theatre Training, Exposure Visits, Youth Parliaments, Public Speaking, Debating, Programme Organizing, Formation of Forums and Groups, Use of Social Media for Education and Training.

Books for Study

- Sibereisen K. and Richard M. Lerner, 2007, Approaches to Positive Youth Development,Sage Publications, New Delhi.
- Udaya Mahadevan, Rozario, Gireesan, and Rambabu., 2015, Youth Development: Emerging Perspectives, Shipra Publications, New Delhi.

Books for Reference

Amala Jeyarayan, A. 2014). Empowerment of Marginalized Youth, Abhijeet Publication, New Delhi.

Chowdhry D.P.(1988), Youth Participation and Development, New Delhi . Atma Ram and Sons Publications

Erikson, E.H. 1977, Youth, Change and Challenge, Firma KLM Pvt.Ltd, Calcutta.

G.Palani Thurai and M A Thirunavukarasu, 2010. Youth as Catalysts and Change Makers,Concept Publishing Company, New Delhi.
John, V.V., 1974, Youth and National Goals, Vishwa Youva Kendra, New Delhi.
Kenyon, et.al. 1996, Youth Policy 2000, Formulating and Implementing National YouthPolicies, CYP Publication, Chandigarh.
M.Sarumathi and Kalesh, 2007, Youth Policies and Programmes in South Asia Region,RGNIYD Publication, Sripeumbudur.
Rainer K, Silberesin., (2007), Approaches to Positive Youth Development, SAGE Publication.
Saraswati, 2008, Indian Youth in New Millennium, RGNIYD, Sriperumbudur.
Stephen Hamilton, 2004, The Youth Development Handbook, SAGE Publication, New Delhi.

Web Resources

www.http://www.rgniyd.gov.in
www.http://nyks.nic.in/
www.un.org/development/desa/youth/what-we-do/what-can-you-do/unya.html
www.freechild.org/FPYEWG.pdf

Teaching Learning Methods

- Lectures
- ICT
- Group Discussion
- Visiting Youth Organizations
- Groups presentation

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Gain knowledge about the status of youth in the society	K1
CO2	Understand the challenges and opportunities for young in the new millennium.	K2
CO3	Familiarize the different approaches to youth participation in the society and politics	K3
CO4	Analyze the policies, programmes, techniques and models of youth work	K3
CO5	Acquire the skills and designing capacity building programme of working with youth	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of Course outcomes with Pos and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2	2	3	2				2	3	3	1	2	23
CO2	2	2	2	2	3				2	3	2	2	2	22
CO3	2	3	2	2	2				2	2	3	3	3	24
CO4	2	2	2	3	2				3	3	3	2	3	25
CO5	2	3	2	1	2					2	2	3	2	19

Grand Total of COs with POs & PSOs	113
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{113}{49}$	2.3

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.3**
Observation	**COs of YOUTH EMPOWERMENT AND POLICIES are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class : II B.Sc RDS (AG) Part : III Core Lab-4
Semester : IV Hours : 75
Sub.Code : 22URAP44 Credits : 4

IRD PRACTICAL- Agriculture
(2018-19 onwards)

Course Educational Objectives:

1. To give hands on training in harvesting methods
2. To Impart technical knowledge on intercultural operations
3. To study and acquire practical skill on agronomy of coconut.
4. To Inculcate methods of organic inputs preparation.
5. To impart skills on preparation of media for plant tissue culture

E.No.	Title of the Exercise
1.	Harvesting methods- Time- methods of Harvesting.
2.	Post harvest processing-fruits- vegetables
3.	Cost of cultivation- Vegetables
4.	Cost of cultivation- Coconut
5.	Chemical control- Preparation of pesticides solution-
6.	Application methods- chemicals- pesticides- fungicides.
7.	Cultural control - Trap crops- summer ploughing
8.	Biological control- Methods of preparation of Biopesticides- Microorganisms- plants
9.	Integrated Pest Management- Paddy
10.	Integrated Pest Management- Coconut
11.	Preparation of organic inputs- Panchakavya- Dasakavya
12.	Preparation of Jeevaamirthakarasal- Meenamilam
13.	Identification of Green manures and green leaf manures- examples
14.	Preparation of media- Isolation of microorganisms
15.	Preparation of Plant tissue culture media- methods of PTC

Teaching Learning Methods

- Demonstration
- Hands-on training
- ICT
- Seminar
- Field visit
- Assignments
- Field practical visit.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Hands on training in harvesting methods	K2
CO2	Imparting technical knowledge on intercultural operations	K1
CO3	Acquiring practical skill on agronomy of coconut.	K3
CO4	Inculcating methods of organic inputs preparation.	K3
CO5	Skills on preparation of media for plant tissue culture	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping course outcome with:

(i) Programme objective

(ii) Programme specific objective

Outcome	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	**Sum of COs with POs & PSOs**
CO1	3	3	3	2	3	2	1			2	3	2		24
CO2	3	2	3	2	3	2	1			2	3	2		23
CO3	3	2	3	2	1	2	2			2	3	2		23
CO4	3	2	3	2	3	2	2			2	3	1		22
CO5	3	2	3	2	3	2	2			2	2	2		23
Grand Total of COs with POs & PSOs														114
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{114}{50}$														2.28

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.28**
Observation	**COs of IRD practical - Agriculture are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (AH)	Part	: III Core Lab-4
Semester	: IV	Hours	: 75
Sub.Code	: 22URHP44	Credits	: 04

IRD PRACTICALS – Animal Husbandry
(2018-19 onwards)

Course Educational Objectives :

1. To impart practical knowledge on the various external and internal qualities of a chicken egg.
2. To Know about the various aspects of incubator management and hatching of eggs
3. To give practical training on techniques on hatching, brooding and rearing of chicks.
4. To acquire practical skill on the various slaughtering techniques and cut up parts of the chicken
5. To study about the structure and construction details of various type of poultry farms

E.No.	Title of the Exercise
1.	Determination of egg shape, size and weight
2.	Assessment of eggshell, colour and texture
3.	Determination of egg volume, specific gravity and surface area
4.	Estimation of yolk colour and yolk index
5.	Determination of albumin index
6.	Selection and storage of hatching eggs
7.	Practice artificial incubation.
8.	Preparation of brooder and brooding management.
9.	Computation and preparation of layer and broiler concentrate feed mixture
10.	Demonstration of different types of feeder, waterer, fogger, sprinklers
11.	Slaughtering of broiler and cut up parts of broiler carcass
12.	Slaughter technique and study the parts of the digestive and reproductive tract in the carcass.
13.	Exposure to commercial broiler and layer farms - the different system of housing.

Teaching Learning Methods

- Demonstration
- Hands-on training
- ICT
- Seminar
- Field visit
- Assignments
- Field practical visit.

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Understands the various external and internal qualities of an egg.	K1
CO2	Know the various aspects of incubator management and hatching of eggs	K2
CO3	Trained on techniques on hatching, brooding and rearing of chicks.	K3
CO4	Gained knowledge on various slaughtering techniques and cut up parts of the chicken.	K3
CO5	Familiarize with the structure and functions of various type of poultry farms	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Course Outcomes:

CO1: Understands the various external and internal qualities of an egg.
CO2: Know the various aspects of incubator management and hatching of eggs
CO3: Trained on techniques on hatching, brooding and rearing of chicks.
CO4: Gained knowledge on various slaughtering techniques and cut up parts of the chicken.
CO5: Familiarize with the structure and functions of various type of poultry farms

Mapping of Course outcomes with Pos and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 1	PO 2	PO 3	PO 4	PO 5	Sum of COs with POs & PSOs
CO1	2	2	2	2	3				2			2		10
CO2	1	2	2	2	3				1		2	2		10
CO3	1	3	3	2	2				3				3	14
CO4	1	2	2	2	2				2	2	2			10
CO5	2	1	3	1	2					2		2		11
Grand Total of COs with POs & PSOs														55
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{55}{25}$														2.2

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.20**
Observation	**COs of IRD practical - Agriculture are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS (SS)	Part	: III Core Lab-4
Semester	: IV	Hours	: 75
Sub.Code	: 22URSP44	Credits:	04

IRD PRACTICALS – Social Sciences
(2018-19 onwards)

Course Educational Objectives

1. To describe the vital role of science and technology in different fields of rural development
2. To impart knowledge on agriculture products and agriculture marketing and its various stakeholders
3. To help the students to gain knowledge about the cooperative farming.
4. To familiarize the students on various challenges of modern technologies towards Digital, gender and climatic conditions
5. To impart the knowledge on youth polices and institutions and programmes

E.No.	Title of the Exercise
1.	Preparing a family Budget
2.	Visiting to Agriculture Primary Cooperative Society
3.	Visit to Agriculture Market and Dairy cooperatives
4.	Visit to Bio-gas unit
5.	Visit to Village Resource Centre
6.	Visit to e learning centre / L3F
7.	Observation visit to Nehru Yuva Kendra (NYK)
8.	Visit to Youth Organisations
9.	Visit to NGOS working in Youth development
10.	Visit to NABARD and Regional Rural Banks
11.	Visiting farmer producer company
12.	Visit to Village based Palm Jaggery Units

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	Identify the alternative energy technologies in agriculture sector	K1
CO2	Demonstrate an awareness of various agricultural market structures and the marketing of agricultural products.	K2
CO3	Acquaint with the structure of cooperative farming	K3
CO4	Associate the technology with the changes in rural society.	K3
CO5	Propose some effective measures about the policies, programmes, techniques and models of youth work	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping Course Outcome with PSO and PO:

(Programme Outcomes – **POs**, Programme Specific Outcomes – **PSOs**)

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	Sum of COs with POs & PSOs
CO1	2	1	3	2		2		3	3	2		2		21
CO2	3	2	2	3				2	2		2	2		18
CO3	3	2	3	2	1		2	2	3		2			20
CO4	2		2				3	2	2	2				13
CO5	3	1	2		2	2	2	2	2		3			18
Grand total of COs with POs & PSOs														90
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{90}{41}$														2.19

S Strong – 3; Medium-2; Low – 1

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	0.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean values of COs with POs and PSOs			2.19
Observation	**COs of IRD practical are strongly correlated with PSOs and POs.**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. RDS	Part	: III Allied - 4
Semester	: IV	Hours	: 75
Sub.Code	: 22URDA44	Credits	: 4

COMMUNICATION AND EXTENSION

OBJECTIVES:

To enable the students:

1. To gain basic knowledge on Communication and Communication channels.
2. To understand the concept of extension.
3. To become aware of different extension methods and the role of audio-visual aids.
4. To identify various Common Service Centres to facilitate rural development
5. To comprehend the application of ICT tools in extension and rural development.

UNIT – I COMMUNICATION (15 Hours)

Meaning – Definition – Elements of Communication, Communication Models, Functions of Communication -.Communication Channels: Meaning - Importance –Nature of Communication Channels - Classification of Communication Channels –– Selection of Communication Channels – Problems in Communication – Problems related to Communicator, Message, Channel and Receiver

UNIT- II EXTENSION (15 Hours)

Meaning - Definition- Objectives - Origin, Development and Importance of Extension - Principles and Philosophy of Extension –Extension and Rural Development

UNIT – III EXTENSION METHODS (15 Hours)

Individual – Group and Mass Contact Methods – Steps Involved – Advantages and Disadvantages – Audio- Visual Aids – Role of Audio-visual aids in Rural Development

UNIT –IV COMMON SERVICE CENTRES & RURAL DEVELOPMENT (15 Hours)

E-Governance – Digital India Programme – Telemedicine – Village Knowledge Centre – Village Resource Centre (VRCs) – E-learning and Mobile learning for farmers

UNIT –V ICT, EXTENSION & RURAL DEVELOPMENT (15 Hours)

ICTs – Concept - Definition – ICT Tools: e-learning, Mobile technologies, Information Resources, Sharing and Networking -Application of ICT in Extension and Rural Development - Advantages, Limitations and Opportunities of ICT

Books for study

- Reddy, A. Adivi., 'Extension Education', Sree Lakshmi Press, Bapatta, 1987
- Supe, S.V., 'An Introduction to Extension Education', Oxford & IBH Publishing Co., New Delhi, 1983
- Dahama, O.P, and O.P. Bhatnagar., 'Education and Communications for Development', Oxford and IBH Publishing Co. Pvt Ltd., New Delhi, 1984

Books for Reference

- Manoharan, R.M, Annamalai, S. Somasundaram and K.M. Krishnakumar., 'Extension Methods and Their Principles', Palanippa Printers, Thirunelveli, 1987
- Ray, G.L., 'Extension Communications and Management', Naya Prakash Publications, Calcutta, 1991
- Rudramoorthy, B., 'Extension in Planned Social Change', Allied Publishers Pvt. Ltd., Madras, 1964
- Kumar, K.J., 'Mass Communication in India', Jaico Publishing House, Madras, 2010
- Reddy A. A., 'Extension Education', Sri Lakshmi Press, Bapatta, 2011

Teaching and Learning Methods

1. Class Lecture
2. ICT Presentation
3. Group discussion
4. Assignments and Paper presentations
5. Brain storming sessions
6. Content creation
7. Contents comparative analysis
8. Content review

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	The students will understand the fundamentals of communication and communication process.	K1
CO2	The students will realize the concept of extension and its importance in rural development.	K2
CO3	The students will equip themselves with the knowledge and the skills in Extension methods to work for the development of rural community.	K3
CO4	The students will be aware of various e-service facilities of Government of India	K2
CO5	The students as rural development personnel will be able to make use of modern ICT tools and electronic gadgets for extension and rural development.	K3

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	2	3	2			2		3		2	2	2	20
CO2	2	2	2	3		2		2		2	3	2	2	22
CO3	2	2		3		2			2	2	2		2	17
CO4	3	2	2		2		2		3	2	2	2		20
CO5	2	2	2		3	2	2		2	2	2	2		21
Grand Total of COs with POs & PSOs														100
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{100}{46}$														2.17

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.17**
Observation	**COs of COMMUNICATION AND EXTENSION are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II B.Sc. (other Arts)	Part	: IV NME-1
Semester	: IV	Hours	: 45
Sub. Code	: 22URDN24	Credits:	2

FOOD PRESERVATION

Objectives:

1. To enable the students to understand the chemical composition and its food values.
2. To impart knowledge on method of preparation and preservation of milk
3. To motivate the students to start processing and preservation of meat and fish.
4. To familiarize the students about the processing and preservation techniques of juice, syrups and beverages.
5. To emphasize the importance of Marketing food products and agencies.

Units I **(9 Hours)**

Basic knowledge about the composition of milk, meat, fruits and vegetables-food value of these foods and their product and byproduct. Reason of food spoilage-Microbes, chemicals and temperature.

Units II **(9 Hours)**

Preparation and preservation of indigenous milk and milk products-butter, cheese, ghee, skim milk, fermented milk products- yoghurt.

Units III **(9 Hours)**

Processing and Preservation of Meat and Meat Products-cooking-salting-pickling-curing-smoking-freezing and storage of frozen meat, chicken and fish product–Dehydrated egg powder.

Units IV **(9 Hours)**

Vegetables and Fruit processing – citrus juices, apple juice, grape juice, dehydrated products and fruit based beverages. Concentrates- squash, jams, jellies, pickles.

Units V **(9 Hours)**

Marketing of processed Food Products- Marketing channels, marketing agencies, Marketing regulation and certification.

Books for Study

- Desrosier and Desrosier. J. 1987, Technology of food preservation, CBCS Publishing, New Delhi.
- Srilakshmi, B. (2003), “Food Science”, New Age International Publishers, New Delhi.
- Subalakshmi, G and Udipi, S.A. (2001), “Food processing and preservation”. New Delhi.

Books for Reference

- Madhuarora. 1990; Dictionary of food nutrition and Dietics; BAPCO Publication, Bangalore.
- Swaminathan. M. 1986; Hand Book of Food and Nutrition; RAPCO Publication, Bangalore.
- Mc Williams and Panie. H. 1984; Modern of food preservation; Surjee Publication, New Delhi.
- Kulshreestha.SK.1994; Food preservation , Vikas Publication House; New Delhi.
- Sugukumar De 2018. Outlines of Dairy Technology. Oxford publication. New Delhi.
- Shakuntala Manay N. 2008. Foods facts and principles. NEW AGE publication. New Delhi.
- Porter N. N. and Hotchkass H. J. 2007 Food science. CBS publication & Distributors Pvt. Ltd. New Delhi.

Teaching Learning Method

1. Class lecture
2. Assignments
3. Seminars
4. Quiz
5. Power point presentation
6. ICT
7. Group Discussion

Course Outcome:

SL.NO	Course Outcome	Knowledge Level
CO1	It enable the students to produce by products and value added products with the help of basic information about the chemical composition of milk, fish, fruits and vegetables	K1
CO2	Help the students to understand different food preservation techniques of milk	K2
CO3	Students gain practical knowledge about the processing and preservation of meat and fish.	K2
CO4	Students are motivated to become entrepreneurs of fruits, vegetable and agro based products.	K3
CO5	Become aware of marketing strategies rules and regulation contribute to start own business.	K2

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**Sum of COs with POs & PSOs**
CO1	**3**	**2**	2	2	2		3		**3**		**3**			20
CO2	**3**	**2**	2		2	3			**3**	**3**				18
CO3	**3**	**2**	3	2	2		2	3		**3**				20
CO4	**2**	**3**	2	3	3			2	**3**		**2**			20
CO5	**3**	**3**	2	3					**3**	**3**		**2**		19
Grand Total of COs with POs & PSOs														97
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{97}{38}$														2.5

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.5**
Observation	**COs of FOOD PRESERVATION are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR – 625 514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: UG (Aided)	Part	: Self Learning Course
Semester	: IV	Hours	:
Sub code	: 22URDSL4	Credit	: 3

AQUACULTURE

Objective:

1. To provide an opportunity to the students to study the importance of aquaculture in terms of nutrition, rural employment and income generation.
2. Ensure active student participation in activities connected with basic aquaculture and cultivation practices.
3. The gain knowledge about fish fish culture practices.
4. To import knowledge about fish feeding behaviour, breeding and rearing techniques.
5. The gain knowledge and understand the prevention and control of fish diseases.

Unit I:

Scope and Importance of Aquaculture & Fish Nutrition: Scope and importance of aquaculture – as a counter part to agriculture – as a protein substitute – rural employment. Fish nutrition – feeds, artificial diets, live feed organism.

Unit II:

Construction of fish farms – Principles of site selection, soil characteristics, water quality. **Types of Fish Culture** Monoculture, polyculture, composite fish culture, sewage fed fish culture, ornamental fish culture and freshwater prawn culture. Characteristics of cultivable species, Indian major carps and exotic carps – common carp, silver carp and grass carp.

Unit III:

Brackish Water and Marine Fish Culture: Brackish water fish culture and Shell fish culture – shrimp farming (marine prawn culture) and Pearl Oyster Culture.

Unit IV:

Fish Breeding and Fish Seed Production: Breeding technique – hypophysation, induced spawning of Chinese and Indian major carps, common carp breeding, harvesting of fry and fingerlings – transportation of fish seed.

Unit V:

Fish Diseases: Infectious diseases – bacterial, viral, fungal and protozoan diseases – Prevention and control of fish diseases.

Book for References:

Baradach, J.E., Ryther, J.H. and Mclarny, R.W. 1974. Aquaculture.
Jhingran, V.G. 1997. Fish and Fisheries of India. Hindustan Publishing Co., New Delhi, PP. 727.
Santhanam, R. 1990. Fisheries Science. Daya Publishing House, New Delhi. pp. 174.
Santhanam, R. Sukumaran, N and Natarajan,P. 1990. A Manual of Fresh water Aquaculture, Oxford and IBH, New Delhi.
Schaperclaus, W. 1991.Fish diseases. Oxonian Pvt. Ltd., New Delhi.
Venkataramanujam, K and N. Ramanathan. 1994. Manual of finfish biology. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.

Teaching and Learning methods

- Class Lecture
- Digital Presentation
- Lab Practical and demonstration

- Learning through exposure
- Discussion of scientific articles relevant to the lecture theme

COURSE OUTCOME

On completion of the course, the student should be able to:

	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO1	In the field of aquaculture, candidates can become an aqua-culturist, farm managers, exporters, traders, breeders and modern fishermen's, etc	**K1**
CO2	An aquaculture consultant workplace typically includes office function. The business aquaculture industry incorporates marine and freshwater exercises.	**K4**
CO3	Confident in identifying the characteristics of different brackish and marine fish	**K2**
CO4	Apply modern equipment in laboratories, special computer programs for design of fisheries and aquaculture farms by implementation of innovative ideas for management of farms.	**K3**
CO5	Solve the technological challenges related to management of fisheries and aquaculture farms; organize activities to ensure their entrepreneurship and competitiveness.	**K3**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**Sum of COs with POs & PSOs**
CO1	**2**	**2**	3	3	2	2				**3**			**1**	18
CO2	**2**	**3**	2			3			**3**	**3**	**3**			19
CO3	**3**	**2**	3	2	2		2	1		**3**	**2**			20
CO4	**3**	**1**	3	3	2			2	**2**		**2**			18
CO5	**2**	**3**	2	2	2	2			**2**	**3**	**3**	**1**		22
Grand Total of COs with POs & PSOs														97
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{97}{42}$														2.30

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.30**
Observation	**COs of Fundamentals of Life Sciences are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
CBCS Pattern (From 2019-2020 onwards)
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

SEMESTER III				
Part	**Sub. Code**	**Title of the Paper**	**Hours**	**Credits**
SEMESTER V				
III	19URDD15	Core-11 Social Welfare Administration	6	5
	19URDD25	Core-12 Community Based Organisation	4	3
	19URDD35	Core-13 Rural Social Problems	4	3
	19URDD45	Core-14 Social Research Methodology	**6**	**5**
	19URDP55	IRD Practical	**5**	**5**
	19URDE15	Core Elective-1 Commercial Agriculture	4	3
IV	19USSI16	Soft Skills	1	
		Total	**30**	**24**
SEMESTER VI				
III	19URDD56	Core-15 Development of the Marginalised	6	5
	19URDD66	Core-16 Corporate Social Responsibility for Rural Development	5	4
	19URDD76	Core-17 Rural Community Health	4	3
	19URDD86	Core-18 Rural Industries and Management	**5**	**4**
	19URDP66	IRD Practical – 15 day internship programme	**5**	**5**
	19URDE26	Core Elective-2 Marketing of Animal Products	4	3
IV	19USSI16	Soft Skills	1	2
		Total	**30**	**26**

SEMESTER	**I**	**II**	**III**	**IV**	**V**	**VI**	**TOTAL**
CREDITS	**24**	**24**	**22**	**24**	**24**	**26**	**144**

Part – I	08
Part – II	08
Part – III	
Core	87
Allied	16
Core Electives	06
Total	109
Part – IV	
Non-Major Electives	04
Skill based Electives	04
Value Education	04
Communication Skill	01
Soft Skill	02
Bridge Course	01
Total	16
Part – V	02
Arise	01

SELF LEARNING COURSES			
Semester	**Sub. Code**	**Paper**	**Credit**
III	19URDSL3	Human Rights	3
IV	19URDSL4	Aquaculture	3
V	19URDSL5	Mushroom Production	3
VI	19URDSL6	Milk Products	3

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR – 625 514

Programme Specific Outcome of the Department of Rural Development Science

PSO1: To understand the nature and basic concepts of Biological Sciences, Agriculture, Animal Husbandry and Social Sciences.

PSO2: To integrate various aspects of Biological Sciences, Agriculture, Animal Husbandry and Social Sciences.

PSO3: To develop the specific skills of Biological Sciences, Agriculture, Animal Husbandry and Social Sciences through practical, field exposure and training.

PSO4: To analyse the usefulness of these subjects in becoming "Rural Development Personnel" and Entrepreneur.

PSO5: To apply the knowledge and skills acquired in Biological Sciences, Agriculture, Animal Husbandry and Social Sciences in training the farmers.

ARUL ANANDAR COLLEGE (AUTONOMOUS) KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc. RDS	Part	: Core 11
Semester	: V	Hours	: 90
Sub. Code	: 19URDD15	Credit	: 5

SOCIAL WELFARE ADMINISTRATION

Course Educational Objectives:

1. To impart knowledge about social welfare Administration
2. To provide necessary knowledge about registration and administration of various Welfare organizations.
3. To be acquainted with roles and functions of welfare boards at Central and State level.
4. To understand the basic concept of Social Policy and its formulation
5. To develop skills related to administrative process.

Unit – I: Social Welfare Administration (15 Hours)

Introduction -Meaning, Definition, Nature and Scope. Models of Social Welfare Administration- Familial model, Residual model, Mixed economy model, Model of State control -Principles and Functions of Social Welfare Administration.

Unit – II: Administrative process in Welfare Institutions (20 Hours)

Programme Management -Financial and Office Administration; Budgeting, Accounting, Auditing, Fundraising strategies, Record maintenance, Documentation, Public relations.

Unit –III Registration of Welfare Organisation (20 Hours)

Provisions for various forms of Registration of Welfare Organisation / NGOs: Indian Trust Act 1882/ Society Registration Act 1860/Company Act 1956. Conditions and Procedures required for Registration of NGOs under Registration of Societies Act 1860. Administration of Registered Welfare Agencies: Role and Functions of General body, Role and Responsibilities and Functions of Office bearers.

Unit IV: Social Welfare Boards (15 Hours)

Central Social Welfare Board- State Social Welfare Advisory Board- Objectives - Functions - Programmes and Schemes of the State and Central Social Welfare Boards

Unit V: Social Policy (20 Hours)

Concept and Scope - Process of social policy formulation; Social policy related to Women, Children, Youth, Aged, Destitute, Differently abled and for SCs and STs.

Books for Study

Bhattacharya, Sanjay.,(2006), Social Work Administration, Rawat Publication, Jaipur.

Chowdry, Paul D., (1990), Social Welfare Administration, Atma Ram and Sons, New Delhi.

Dhama, O.P.,(1986), Extension and Rural Welfare, Ram Prasad & Sons, Agra.

Books for reference

Dubey, S.N.,(1972), Social Welfare Policy and Social Welfare Service, Tata Institute of Social Sciences, Bombay.

Goel, S. L.,(2010), Social Welfare Administration: Social Justice and Empowerment. Vol.1& 2, Deep and Deep Publication Pvt. Ltd., New Delhi.

John, Ray.,(1954), Executive Responsibilities, Association Press, New York.

Johri, P.K.,(2007), Social Administration, Anmol Publication, New Delhi.

Mazumdar, Ammu Menon., (1964), Social Welfare in India, Asian Publishing House, Bombay.

Ranjana, Devi.,(2009), Social Welfare: Concepts and Theory, Omega Publications, New Delhi.

Sachedeva, D.R., (2009), Social Welfare Administration, Kitab Mahal, New Delhi.

Skidmore, R.A., (1995), Social Work Administration, Allyn & Bocan, Boston .

Teaching and Learning Methods

- Class Lecture
- Assignment
- Seminars
- Group Discussion
- Case Study
- Use of ICT
- Exposure Visit
- Field Work
- Internship Training

Course outcome

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Identify and understand the various social welfare institutions and models of social welfares	**K1**
CO 2	Plan and organize various social welfare programmes	**K2**
CO 3	Formulate social welfare projects	**K3**
CO 4	Train and provide technical support to social welfare organizations	**K4**
CO 5	Start social welfare institutions to work for marginalized groups	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3							3	3				12
CO2	3	2		3					2	2	3			15
CO3	2	2			2				2	2	2		3	15
CO4	2	2	3		2				2	2	2	2		17
CO5	2	1			2	3			2	1	1	2		14
Grand Total of COs with POs & PSOs														73
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{73}{33}$														2.2

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.2**
Observation	**COs of SOCIAL WELFARE ADMINISTRATION is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc. RDS	Part	: III Core -12
Semester	: V	Hours	: 60
Sub. Code	: 19URDD25	Credit	: 3

COMMUNITY BASED ORGANISATION

(For Students admitted from the Academic Year 2008-2009 onwards under the New CBCS Pattern)

Course Educational Objectives

1. To introduce the basic concepts of civil society organization, its role and principles
2. To provide them with an over view of models and approaches
3. Acquire the specific knowledge on Self Help Groups.
4. Familiarize himself on various agencies in India
5. To equip the students with skills in areas of project proposal, report writing and NGO management

Unit – I: Community Based Organization (10 Hours)

Meaning, Definition, Concept, classification – Broad framework of the state and civil society- Concept, role and functions of civil Society organization – Principles of Community organization.

Unit-II Approaches of community organization: (10 Hours)

Service approach, Developmental approaches, Religious – Cultural approaches, Public movement approach based on understanding of society (ex. Existence model, Co option model, Hierarchical model).

Unit – III: Self Help Groups (10 Hours)

Objectives, Characteristics, Origin and growth of SHGs – Stages: Preformation, Formation, Stabilization, Expansion and Diversification – Achievements and Problems of SHGs – SHGs - Government Organizations- ***Farmers Producers Company***

Unit – IV: *Role of Various Agencies* **(10 Hours)**

Farmers club, youth club, Women's Forum – ***Role of Panchayat Raj – Role of Social Media*** - Micro credit institutions, Co-operatives, rural banking – Political institutions.

Unit – V: NGO Management (20 Hours)

NGO – Meaning, concept, categories of NGOs, - formulation and Registration of NGO – Constitution, byelaws. Memorandum – ***FCRI***

Books for Study:

Kumar, R. and Goel, S.L.(2005). Administration and Management of NGOs: Text and Case studies. New Delhi: Deep & Deep Pub.

Article I. Frances, S. (2009). Microfinance Self Help Groups in India: Living Up to Their Promise. New Delhi: Practical Action Publishing.

Books for reference

Das, P. (2016). Self Help Groups: Problems opportunities and challenges ahead, New Delhi biotech books.

Patil, A. R. (2012). Community Organization and Development: An Indian Perspective. New Delhi: PHI Learning Pvt. Ltd.

Dharmaraj, S. (2006). Panchayat Raj Systems in India. New Delhi: Abhijeet Publications.

Prasad, B.K. (2004). NGO's and Development, New Delhi: Anmol Publication.

Shah, (1993). Voluntarism – Concept and Issue, New Delhi: Vikas Publishing Co.Desai,

Teaching Learning Methods

- ICT usage
- Creative assignments
- Individual cum Group Presentation
- Newspaper Reading and Analysis
- Peer Learning
- Field Exposure and Training
- Group Discussion
- Group Projects
- Short films and other educational videos

Course Outcome: At the end of the course, the students will:

SL.No	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Apply community organization principles, concepts and techniques in the civil society organization and in the community development	**K3**
CO 2	Matching various models and approaches in their local settings	**K2**
CO 3	Competency to advise and train the Self-help Groups to promote the rural development activity	**K4**
CO 4	Interrelat role of panchayat raj, social media, banking and political institution	**K4**
CO 5	Students are motivated to set up an NGOs in future	**K5**

K1=Knowledge, K2=Understanding, K3=Application, K4=Analysis, K5=Synthesis

Mapping Course Outcome with PSO and PO:

(Programme Outcomes – **POs**, Programme Specific Outcomes – **PSOs**)

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	Sum of COs with POs & PSOs
CO1	3	2	2	2		3	2	2	2					18
CO2	2	2	2	2		2	2	2	2					16
CO3	2	2	3	2		2	2	2	3					18
CO4	2	2	3	2		2	2	2	2					17
CO5	2	2	3	2	3	2	2	2	2		3			23
Grand Total of COs with POs & PSOs														92
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{92}{44}$														2.09

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.09**
Observation	**COs of COMMUNITY BASED ORGANISATION is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc. RDS	Part	: III Core -13
Semester	: V	Hours	: 60
Sub. Code	: 19URDD35	Credit	: 3

RURAL SOCIAL PROBLEMS

(For Students admitted from the Academic Year 2008-2009 onwards under the New CBCS Pattern)

Course Educational Objectives :

1. To bring out the interrelationship between society and social problems
2. To provide the multifaceted aspects of rural poverty
3. To impart a comprehensive knowledge on rural unemployment and population explosion
4. To discuss the problems and challenges of youth
5. To explain the social problems faced by rural women and children

Unit – I: Social Problems: Meaning and Concept **10 Hours**

Meaning - definitions – concepts - characteristics - causes and types of social problems

UNIT - II: Rural Poverty **10 Hours**

Rural Poverty - concept, incidence, magnitude, causes, effective strategies for alleviating poverty

UNIT - III: Rural Unemployment, Population Explosion **10 Hours**

Rural Unemployment - magnitude, features, types, causes and consequences, measures to control unemployment - rural unemployment and remedies.

Population explosion - magnitude, causes, effects of population explosion - population policy, measures to control population explosion.

UNIT- IV: Problems of Youth **15 Hours**

Juvenile delinquency, Alcoholism, Drug abuse and drug addiction, AIDS, Terrorism, Youth unrest and agitations, Youth leadership and measures to combat problems of youth

UNIT - V: Problems of Rural women and Children **15 Hours**

Violence against women, dowry, women harassments, domestic violence, social violence. Child abuse, child labour, preventive and promotive measures, Legal protections of women and children

Book for Study

Ahuja, Ram, (2020), 'Social Problems in India', Rawat Publications, Jaipur.

Books for Reference

Husnain, Nadeem, (2020), 'Indian Society: Themes and Social Issues', McGrow Hill Education (India) Pvt. Ltd., Chennai.

Rao, Shankar C.N., (2015), 'Indian Social Problems: A Sociological Perspective', S. Chand Publishing, New Delhi.

Singh, Awadhesh Kumar and Jayanta Choudhury, (2012), 'Violence against Women and Children: Issues and Concerns', Serials Publications, New Delhi.

Teaching Learning Methods

- Field Exposure and Training
- Group Discussion
- Group Projects
- Individual cum Group Presentation

- Newspaper Reading and Analysis
- Peer Learning
- PowerPoint Presentation
- Short films and other educational videos

Course Outcomes (COs)

S. No.	Course Outcome At the end of the course, the students will	Knowledge Level (Bloom's Taxonomy)
CO1	Identify the social, economic, political and cultural causes of social problems	**K2**
CO2	Formulate suitable intervention strategies to alleviate rural poverty	**K4**
CO3	Organize programmes on population control and propose income generating activities for rural farmers	**K3**
CO4	Counsel the youth affected by social issues	**K3**
CO5	Suggest legal and other measures to safeguard women and child rights	**K2**

K1= Knowledge, K2= Understanding, K3= Application, K4= Analysis and K5= Synthesis

Mapping of Course outcomes with POs and PSOs

(Programme Outcomes – **POs**, Programme Specific Outcomes – **PSOs**)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2							3	1				9
CO2	2	2	2	3					2	2	1	1	2	17
CO3	2	2	2	2	1	1			2	1	1	2	2	18
CO4	2	1	2	2	1				2	2	1	2	2	17
CO5	2	1	3	2	1				1	1	2	2	2	16
Grand Total of COs with POs & PSOs														77
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{77}{45}$														1.71

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**1.71**	
Observation	**COs of RURAL SOCIAL PROBLEMS are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc. RDS	Part	: III Core -14
Semester	: V	Hours	: 90
Sub.Code	: 19URDD45	Credit	: 5

SOCIAL RESEARCH METHODOLOGY

Course Educational Objectives:

1. To impart knowledge about social research and its significance in rural development
2. To make the students understand different research designs and methods
3. To enable the students to get familiarized with sampling processes and procedures
4. To identify the appropriate tools of data collection in social science research.
5. To train the students to acquire report writing skills

Unit I – Introduction **(10 Hours)**

Social Research – Definition – Objectives – Scope – Limitations – Identification and formulation of research problem – Significance of social research in rural development – Inter-disciplinary approach.

Unit II – Research Design & Models **(20 Hours)**

Research Design: Exploratory design, Descriptive design, Diagnostic design, Experimental design.

Research methods: Survey method, Case study method, Experimental method, PRA method.

Unit III – Sampling **(20 Hours)**

Meaning and types – Simple random sampling – Systematic random sampling – Stratified random sampling – Multi-stage sampling – Purposive and Quota sampling

Unit IV – Data collection, Process and Analysis **(20 Hours)**

Data: Primary data, Secondary data; Techniques: Interview, unstructured interview, Observation; Tools: Interview guide, Questionnaire.

Classification, Tabulation, Interpretation & Presentation of the data, Measures of central tendency: mean, median, mode.

Unit V – Report Writing **(20 Hours)**

Purpose – Contents – Foot notes – Bibliography – Style of writing – Chapterization – Qualities of a good report.

Teaching Learning methods

- Class lecture
- PPT presentation
- Quiz
- Group discussions to formulate research problem
- Workshops and Hands-on Training to design tools
- Worksheets - statistical averages.

Books for study :

Kumar, Ranjit, (2011), *Research Methodology – A step-by-step guide for beginners,* New Delhi: Pearson.

Raiyani, Jagadish R, (2012), *Research Methodology – Theory and Techniques*, New Delhi, New Century Publications.

Krishnaswami, O.R, and M. Ranganatham, (2013,) *Methodology of Research in Social Sciences,* Mumbai, Himalaya Publishing House.
Kothari, C.R, and Gaurav Garg, (2014), *Research Methodology – Methods and Techniques*, New Delhi, New Age International (P) Limited Publishers.

Books for Reference :

Doolay David, (2004), *Social Research Methods*, New Delhi: Prentice Hall.
Kothari, (1990), *Research Methods and Techniques*, New Delhi: WishwaPrakasan.
Pauline V.Young, (2004), *Scientific Social Survey and Research*, New Delhi: Prentice Hall.
Sadha, (1985), *Research Methodology in Social Sciences,* Meerut: Himalaya Publishing
Santosh Gupta, (2001), *Research Methods and Statistical Techniques*, New Delhi: Deep and Deep Publications.
Vaus,De, (2002), *Surveys in Social Research*, Jaipur: Rawat Publishing.
Wilkinson, and Bandharkar, (1984), *Methodology and Techniques of Social Research*, New Delhi: Himalaya Publishers.

Course Outcomes

After completing this course, the students will

CO.No.	Course Outcome	Level
1.	Gain basic knowledge about social science research and realize its interdisciplinary approach, needs and importance in rural development	K2
2.	Become aware of different research designs, methods and sampling techniques used in social science	K2
3.	Recognize the significant tools used for data collection in social science research	K2
4.	Obtain the skills to calculate statistical average: mean, median and mode	K4
5.	Understand and apply the format and the styles of report writing.	K3

Mapping of Course Outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3							3	2				10
CO2	3	3							3	2				11
CO3		3			2					3	2			10
CO4						3					3	2		8
CO5	3	3			2	2			3	3	2	2		20
Grand Total of COs with POs & PSOs														50
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{50}{24}$														2.08

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.08**
Observation	**COs of SOCIAL RESEARCH METHODOLOGY is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE
COMMERCIAL AGRICULTURE

Class	: III B.Sc	Part	: III Core Elective -1
Semester	: V	Hours	: 60
Sub.Code	: 19URDE15	Credit	: 3

Course Educational Objectives:

1. To impart knowledge on the cultivation of silkworms.
2. To empower students on the technical features of honeybees.
3. To inculcate the agronomical aspects of mushroom
4. To elucidate the composting methods using earthworms.
5. To aquatint the students on the concepts of Agroforestry.

Unit I Sericulture **15 Hrs**

Sericulture –silkworm types and races – Mulberry cultivation – varieties and cultivation –Pests, and diseases of mulberry and their management. Rearing house – types – Chawki rearing – feeding, cleaning, spacing and moulting care in different stages – harvesting – Pests and diseases of silkworm and their management. – Yield- Economics of sericulture

Unit II Apiculture **15 Hrs**

Apiculture - Bee species – comparison- castes of bees, bee behaviour and bee dance; Apiary management practices – bee pasturage, foraging, seasonal variations; Bee products – properties and uses. Effect of agricultural inputs on bee activity – Yield – Economics of bee keeping

Unit III Mushroom cultivation **10 Hrs**

Mushrooms- Types- Oyster, Button and Milky mushrooms- Methods of cultivation- Prerequistes of mushroom shed- Physical conditions- Infrastructure needed. Marketing of mushrooms- Nutritive value –Yield- Economics of mushroom cultivation

Unit IV Vermicomposting **10 Hrs**

Vermicomposting- Earthworm- Life cycle- Types- Methods of vermicomposting- Soil- Tanks- Pits- Sheds- Substrate- Requirements for composting- Management of composting period- Yield- Economics of vermicomposting

Unit V Agroforestry **10 Hrs**

Important farm grown trees -Regeneration techniques – Tending –Rotation – Yield and Uses of *Tectonagrandis, Santalum album,* Casuarina species, Eucalyptus species*, Azadirachtaindica, Meliadubia, Leucaenaleucocephala, Aibizialebbeck, Acacia leucophloea, Acacia auriculilformis,*

Books for Reference :

David, B.V. and V.V. Ramamurthy. 2011. *Elements of Economic Entomology*, Namrutha Publications, Chennai, 386 p.

CSB. 2003. Seri Business Manual- Vol. III Farm & Industry Sectors, Central Silk Board, Bangalore.

Dandin, S.B., J.Jayaswal and K. Giridhar.2003. Hand book of Sericulture Technologies. Central Silk Board, Bangalore, 287 p.

Divya, M.P., K.T.Parthiban, K.Srinivasan, K.Vanangamudi and M.Govinda Rao. 2008. A text book on Social Forestry and Agroforestry. Satish Publishers, Delhi

Dwivedi, A.P. 1992. Agroforestry Principles and Practices. Oxford & IBH publishing Co., New Delhi

Web resources

http://www.sristi.org/hbnew

http://www.ncipm.org.in/recent-publications.htm

http://www.ipmnet.org

Teaching Learning Methods

ICT, Seminar, Field visit, Assignments, Demonstration etc.,

Course outcomes

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Knowledge of Raising allied enterprises of agriculture namely sericulture	**K1**
CO 2	Knowledge on rearing honey bees	**K1**
CO 3	Awareness on the Methods of cultivation of Mushroom	**K2**
CO 4	Skills of Different methods of Vermicomposting.	**K3**
CO 5	Knowledge of Various profitable trees employed in agroforestry.	**K3**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5

Mapping of Course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	2	2	1	1				2	2	2			14
CO2	2	1	2	2	2				2	2	1			14
CO3	2	1	2	2	1				2	1	1			12
CO4	1	2	1	1	1				1	2	2			11
CO5	2	2	2	1	1				2	2	1			13
Grand Total of Cos with POs & PSOs														64
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{64}{40}$														1.6

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**1.60**	
Observation	**COs of COMMERCIAL AGRICULTURE are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc	Part	: III Core
Semester	: V	Hours	: 75
Sub.Code	: 19URDP55	Credit	: 5

INTEGRATED RURAL DEVELOPMENT PRACTICAL
(For Students admitted from the Academic Year 2008-2009 onwards under the New CBCS Pattern)

Course Educational Objectives

1. To help the students to gain knowledge about appropriate field experience
2. Familiarize himself on various agencies in India
3. Acquire the specific knowledge on Self Help Groups
4. To discuss the problems and challenges of youth
5. To equip the students with skills in areas of project proposal, report writing and NGO management

Title

S.No.	Name of the Exercise
1	Visit to Non- Government organization
2	Visit to Block Development Office
3	Hands on exposure to students in implementing Government funded rural development programmes like MGNREGA, PMAY, THAI, etc
4	Observation visit to NGOs working in youth development etc
5	Observation visit to Nehru Yuva Kendra Sangathan(NYKS) under Ministry of Youth Affair
6	Organizing Skills (Participating in NGO Programmes and Organize) i. HIV Awareness Campaign ii. Environmental Awareness Campaign iii. Conducting Medical Camp iv. Conducting Eye Camp v. Conducting Veterinary Camp

Teaching and Learning Methods

- demonstration
- Presentation
- Learning through exposures and field work
- Record work & viva-voce

Course outcomes

Students will be able to

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Acquaint with the structure of non-government organization	K2
CO 2	Interrelate role of, NGO, panchayat raj, social media, banking and political institution	K3

CO 3	Competency to advise and train the Self-help Groups to promote the rural development activity	**K3**
CO 4	Counsel the youth affected by social issues	**K3**
CO 5	Students are motivated to set up an NGOs in future	**K3**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5

Mapping of the course outcome with POs and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

Course Out come	**Po 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PSO 8**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**Sum of CO's with PSO's & POs**
CO1	2	3	2		2	2			3	2	2	2		20
CO2	3	2	3		2	2			2	2	3	2		21
CO3	3	2	2		2	2			2	3	2	2		20
CO4	2	1	3	2	3	3	2	2	2	2	3	3	1	29
CO5	2	1	2	3	2	2	3	3		2	2	2	3	27
Grand Total of COs with PSO and POs														117
Grand total of COs with PSOs and POs = Mean Value of COs with PSO and POs 117 / Number of COs relating with PSOs and Pos 52 = 2.25														2.25

Strong – 3 Medium – 2 Low - 1

Mapping Scale	1	2	3
Relation	0.01 to 1.0	1.01 to 2.0	2.01 to 3.0
Quality	Low	Medium	Strong
Mean Value of COs with PSO and POs			2.25
Observation	COs of Integrated Rural Development - Practical Strongly related with PSOs and POs		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc	Part	: Self Learning Course
Semester	: V		
Sub.Code	: 19URDSL5	Crédit	: 3

MUSHROOM PRODUCTION
(For Students admitted from the Academic Year 2008-2009 onwards under the New CBCS Pattern)

Course Educational Objectives:

1. To introduce the taxonomy of mushroom
2. To elucidate the housing technologies of mushroom.
3. To impart the knowledge of different methods of mushroom cultivation.
4. To aquatint the students about the IPM measures of mushroom.
5. To empower the students on value addition in mushroom.

UNIT I: Mushroom – Definition – Importance – History of Mushroom in India – Morphology – life cycle of mushroom – Types and Varieties of Mushroom.

UNIT II : Housing: Meaning – Systems of housing – Housing material. Compost and methods of composting.

UNIT III: **Crop Management**: temperature – Humidity – Ventilation – Watering – Spawn running – Casing to Mushroom Period – Cropping Period – Picking, Yield storage and preservation methods.

UNIT IV : Problems In Mushroom Cultivation – Problems during Media Preparation and Planting of Spawn – Pest and Diseases.

UNIT V: Values Of Mushroom– Food Value – Proteins – Vitamins – Minerals – Carbohydrates and fats – Energy Values of Mushroom – Medical Values of Mushroom and other Important Uses – Delicious recipes of Mushroom - Value added products - marketing.

Books for Reference

Brig. Hramander Singh, (1991), Mushrooms: The Art of Cultivation, II Edition, New Delhi : Sterling Publishers Private Limited.
Chandy, K.T., (1996), Mushrooms: Cultivation Practices, New Delhi: Indian Social Institute,
Chandy, K.T., (1996), Mushrooms: Housing and Composting, New Delhi: Indian Social Institute.
Chandy, K.T., (1996), Mushrooms: in Human Life, New Delhi: Indian Social Institute.
Chandy, K.T., (1996), Problems in Mushrooms Cultivation, New Delhi: Indian Social Institute.
Chandy, K.T., (1997), White Button Mushrooms, New Delhi: Indian Social Institute.
Nita Bahl (1994), HandBook of Mushrooms, III Edition, New Delhi : Oxford and IBH Publishing Co. Pvt. Ltd.,

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TNAU (1999), Crop Production Guide, Directorate of Agriculture, Chennai.

Web resources

http://www.sristi.org/hbnew
http://www.ncipm.org.in/recent-publications.htm
http://www.ipmnet.org

Course outcomes

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Capability to differentiate edible and non-edible mushrooms	**K2**
CO 2	Technical knowledge on housing methodologies of mushroom	**K1**
CO 3	Agronomical skill of different types of mushrooms.	**K3**
CO 4	Proficiency on mushroom pest and disease management.	**K3**
CO 5	Nutritional skills on value addition of mushroom.	**K3**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5

Mapping of Course outcomes with POs and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	2	2	1	1				2	2	2			14
CO2	2	1	2	2	2				2	2	1			14
CO3	2	1	2	2	1				2	1	1			12
CO4	1	2	1	1	1				1	2	2			11
CO5	2	2	2	1	1				2	2	1			13
Grand Total of COs with POs & PSOs														64
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{64}{40}$														1.6

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**1.60**	
Observation	**COs of MUSHROOM PRODUCTION are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc. RDS	Part	: III Core-15
Semester	: VI	Hours	: 90
Sub.Code	: 19URDD56	Credit	: 5

DEVELOPMENT OF THE MARGINALISED

Course Educational Objectives:

1. To gain knowledge about the various subaltern groups and their problem in the society
2. To understand the socio-economic status of SC/STs, Women and Children in India
3. To create a perspectives on the different subaltern groups in India.
4. Critically examine the social systems that affect the growth and development of subaltern groups.
5. To integrate knowledge and field work practice – to understand the realities in the field and to understand interventions.

Unit – I **(15 Hours)**

Subalterns – Concept, Meaning, Classifications, demographic characteristics, Problems and Prospects.

Unit – II **(20 Hours)**

Concept and Classification of SC / ST, demographic features of SC / ST and their status with specific reference to socio – economic, cultural, educational and religious correlates. Untouchability, Discrimination.

Unit – III **(20 Hours)**

Constitutional provisions and Legislative measures, regarding removal of social disabilities, protective discrimination (reservation) and political will. UN Declaration of Human Rights and the Role of Gandhi, B.R.Ambedkar and Periyar Social equality.

Unit – IV **(20 Hours)**

Demographic characteristics and disadvantaged children with reference to India – Children in difficult Circumstances, Child Labour – Juvenile Delinquency – Street Children – Child abuse (Causes, Problems and Solutions)

Unit – V **(15 Hours)**

Demographic profile of Women in India and their status with specific reference to socio – economic, cultural, educational and religious correlates. Problems of Women, (womb to tomb)

Books for Study

Agarwal, Meenu (Edit), (2012), The Changing Status of Women in India Issues and Challenges, Pragun Publications, New Delhi.

Bhusan, Vidya and Sachdeva. (1997), An Introduction to Sociology. KitabMahal, Allahabad.

Chinnala, Bala Ramulu **, (**2020), Marginalized Communities and Decentralized Institutions in India: Exclusion and Inclusion. Routledge India, New Delhi .

Books for Reference

Ali Baig, Tara (Ed),(1987). Women of India, Publications Division, Ministry of Information and Broadcasting, Govt of India, New Delhi.

Kapur, Promila, (2000)., Empowering the Indian Women, Publications Division, Ministry of Information and Broadcasting, Govt of India, New Delhi.

Mandar, Harsh & Vidya Rao, (1999), An Agenda for Caring, Interventions for Marginalized Groups, New Delhi: Voluntary Health Association of India.
Rights of the Child, (2002), The Department of Women and Child Development, Ministry of IIRD, Govt. of India, New Delhi.
Sankar Sen, (2005), Trafficking in Women and Children in India, New Delhi: Orient Longman.

Teaching and Learning Methods

- Class Lecture
- Assignment
- Seminars
- Use of ICT
- Group Discussion
- Case Study
- Exposure Visit
- Field Work
- Internship Training

Course outcomes

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Identify the various subaltern groups and their problems in the society	**K1**
CO 2	Plan and organize various social welfare programmes	**K2**
CO 3	Safeguard and work for the rights of the Schedule caste, Schedule tribes, Women and Children	**K3**
CO 4	Train and provide technical support to various subaltern groups and social welfare organizations	**K4**
CO 5	Start social welfare institutions to work for the marginalized communities	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1		2							3	3				8
CO2		2		3					2	2	3			12
CO3		2		2	2				2	2	2		3	15
CO4			3	2					2	2	2	2	2	15
CO5				2		3			1	1	2	2	2	13
Grand Total of Cos with POs & PSOs														63
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{63}{29}$														2.1

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.1**
Observation	**COs of DEVELOPMENT OF THE MARGINALISED is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	:	III B.Sc. RDS	Part	: Core-16
Semester	:	VI	Hours	: 75
Sub. Code	:	19URDD66	Credits	: 4

CORPORATE SOCIAL RESPONSIBILITY FOR RURAL DEELOPMENT

Course Educational Objectives:

The course enables the pupil to

1. Understand the concept of corporate social responsibility (CSR)
2. Upgrade knowledge and skills on CSR
3. Acquire skills to frame CSR policies and practices
4. Build Capacity to create a project on CSR
5. Gain knowledge on the implementation on CSR activities

UNIT I

Corporate Social Responsibility (15 Hours)

Meaning and Definition, Concept, History and evolution, Principles, Concept of charity, corporate philanthropy, corporate citizenship.

UNIT II

Models of Corporate Social Responsibility (20 Hours)

Trusteeship, stakeholder, Ethical model, Statist model, Liberal model, Contemporary approach on Corporate Social Responsibility

UNIT III

Corporate Social Responsibility Legislation in India (20 Hours)

Government Policies on CSR; Provision of CSR in companies Act 2013, Companies (Corporate Social Responsibility Policy) Rule 2014

Unit IV

Corporate Community Participation (10 Hours)

CSR policies, Constitution of CSR committee, CSR process, CSR Activities, CSR through NGOs, Funding for various CSR activities; Concentration areas- Rural development , Health, Education and Environment.

Unit V

Success stories of CSR in public sector and private sector (10 Hours)

Case Study: TVS Motor Company Limited, Bharat petroleum Corporation Ltd, Hindustan Unilever Ltd, ITC's e-Choupal venture, Dalmia Cement (Bharath) Ltd, Thangamayil Jewellery Limited, Madurai

Books for study

Corporate Social Responsibility in India - Sanjay K Agarwal

Handbook on Corporate Social Responsibility in India, CII.

Handbook of Corporate Sustainability: Frameworks, Strategies and Tools - M. A. Quaddus, Muhammed Abu B. Siddique

Books for Reference

Benn & Bolton, (2011). Key concepts in corporate social responsibility. Australia: Sage Publications Ltd.

Brummer, J.J. (1991). Corporate Responsibility and Legitimacy: An interdisciplinary analysis. Westport, CT: Greenwood Press.
CV. Baxi (2005) Corporate Social Responsibility – concepts and cases.
M.Mahmoudi, (2005) Global Strategic Management, Deep & Deep Publications Pvt.Ltd, Delhi.
Werther, W. B. & Chandler, D. (2011). Strategic corporate social responsibility. Thousand Oaks, CA: Sage
Corporate Social Responsibility: Concepts and Cases: The Indian - C. V. Baxi, Ajit Prasad

e reference

http://www.diedi.de/CMSHomepage/openwebcms3.nsf/%28ynDK_contentByKey%29/ENTR7BMDUB/$FILE/Studies%2026.pdf
http://www.tatapower.com/sustainability/environmental.aspx

Teaching Learning Method:

- ICT based Direct **Instruction**
- Inquiry-based Learning
- Group discussion
- Expeditionary Learning
- Role plays

Course Outcome

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Outline and discuss the evolution of corporate social responsibility	**K1**
CO 2	Capable of knowledge on stakeholders of CSR and models of major CSR systems found around the world	**K2**
CO 3	Enumerate strategies for CSR legislations	**K3**
CO 4	Build Capacity to create a project on CSR	**K4**
CO 5	Analyse how CSR influence performance of individual firms	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2		2					3		2		2	14
CO2	2	2		2				3	2	3	2		2	16
CO3	2	3		2				2	2	2	2		2	17
CO4	2	2	2	3				2	2	2	2		2	19
CO5	1	2	2	2				1	1	2	2		3	16
Grand Total of COs with POs & PSOs														82
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{82}{39}$														2.1

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.1**
Observation	**COs of CORPORATE SOCIAL RESPONSIBILITY FOR RURAL DEVELOPMENT Is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc. RDS	Part	: III Core-17
Semester	: VI	Hours	: 60
Sub. Code	: 19URDD76	Credit	: 3

RURAL COMMUNITY HEALTH
(For Students admitted from the Academic Year 2008-2009 onwards under the New CBCS Pattern)

Course Educational Objectives

1. To provide basic knowledge on health and its dimensions
2. To help the students to understand the biological and psychological determinants of health.
3. To make them learn and recognize the signs and symptoms of common diseases and injuries
4. To update the disease prevention methods and techniques.
5. To educate the students about health education/promotion effort in our community and society

Unit-I Dimensions of Health (10 hours)

Health- Concept -Definition- Dimensions-Determinants of Health-Concept of Disease-Nature-Modes of intervention : Control and prevention methods-Community Health-Primary Health Care.

Unit-II Personal and Environmental Health (10 hours)

Personal Hygiene-Meaning- Definition-Maintenance of Health-Physical health-Mental health- -Various factors determining personal health – Characteristics of Environmental Health – Meaning, Importance and Safeguard measures- Water Borne Diseases.

Unit-III Epidemiology of Disease (10 hours)

Communicable diseases-Meaning - Agent and Host factors – Prevention - Disease transmission – Immunity – Disinfection – Definition –Types - Classification.

Unit-IV Rural Health Education (15 hours)

Health Education-Meaning – Definition – Approches - Content-Principles –Practice – Healthcare – Meaning – Concept – Elements – Principles - Primary Health care in India - Primary Health Center (PHC) - Role of NGOs in health education.

Unit-V Health and Development (15 hours)

Health planning and Management – needs and demands - resources – Health System in India – State, district and block level Health administration - Health Programmes-People's Participation in the Community Health Programme.

Books for Study

Park.k. (2000) Preventive and Social Medicine/S Jabalpur: Banarisdas Bhanot Publishing,
E. Vijay (2002) Community Medicine. Chennai: Beacon Zen.

Books for Reference

Rita Jain & Preeti Goel (2004), Health Education. New Delhi: Sports. (Part-2: Section –I- Health Hygiene & Section – II – Family Life Education)

S.L.Goel (2004) Health Care Organization & Structure. New Delhi: Deep & Deep.
Brett J. Cassens ed., (1990) Preventive Medicine and Public Health. Singapore:
John Wailley. (Chapters 1 & 4 – Epidemiology)
Rajiv Misra & Others (2003), India Health Report. New Delhi: Oxford

Teaching and Learning Methods

- Lecture
- Use of ICT
- Group Discussion
- Case Study
- Exposure Visits
- Study assignment

Course Outcome

Learning Outcomes: After studying the course, the student will be able to:

S.No	Course outcome	Knowledge level (Bloom's Taxonomy)
CO 1	Evaluate dimensions of health and how they relate to personal and/or community wellness.	**K1**
CO 2	Understand the importance of nutrition, a healthy lifestyle, and staying physically active in preventing premature disease and promoting wellness.	**K2**
CO 3	Describe the leading health problems, trends, and needs of diverse populations.	**K3**
CO 4	Asses the major agencies, foundations, and associations supporting health at local, state, national and international levels as well as data tools and resources.	**K4**
CO 5	Develop and implement a plan of healthy behavior to meet personal and community needs to enhance quality of life.	**K5**

Mapping course outcome with:

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3	2						3	3	2			16
CO2	2	3	2						2	3	2			14
CO3	2	2	2						2	2	2			12
CO4	2	2	2	3					2	2	2	2		17
CO5	1	1	2	2	3				1	1	3	2		16
Grand Total of COs with POs & PSOs														75
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{75}{35}$														2.1

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.1**
Observation	**COs of RURAL COMMUNITY HEALTH is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc., RDS	Part	: III Core-18
Semester	: VI	Hours	: 75
Sub. Code	: 19URDD86	Credit	: 5

RURAL INDUSTRIES AND MANAGEMENT

Course Educational Objectives:

1. To introduce the basic concepts related to rural industries
2. To provide inputs about the function of various agencies promoting rural industries
3. To make them aware of appropriate technology and its growing needs.
4. To clarify the cost concepts involved in production and marketing
5. To facilitate the students to identify various avenues and opportunities to become entrepreneurs.

Unit – I: Rural Industries (10 Hours)

Meaning, Scope, Need for rural industrial development in India – Rural industries and Rural Development – Classification and Changing trends. Opportunities for self-employment – Principles of Management (PODSCORB)

Unit – II: Agencies Promoting Rural Industries (15 Hours)

Policies in favour of rural industries – Rural and small industries under latest Five Year Plans – Agencies promoting rural and small scale industries: KVIC, Nationalise banks, NABARD, Industrial Estate Programmes in Tamil Nadu. DIC – Problems and Prospects of rural and small scale industries in TN.

Unit – III: Appropriate Technology (15 Hours)

Meaning, Capital saving and Labour – Intensive technology – Need for introducing appropriate Technology – Factors determining the appropriateness of technology in a given community.

Unit – IV: Production and Marketing (20 Hours)

Cost Concepts: Fixed Cost, Variable Cost, Average Cost, Labour Cost, Overhead Cost – Cost sheet, Prime Cost, Factory Cost, Cost of Production, Simple methods of unit cost. Marketing Process – Market research – Institutional assistance in marketing – Problems in Marketing – Impact of Globalisation on Rural Industries

Unit – V: Entrepreneurship Development (15 Hours)

Definition – Concept – Characteristics – Function of an Entrepreneur – Types of Entrepreneur – Women Entrepreneurs – Rural Entrepreneurship –Problems and Prospects.

Books for study

Desai, Vasant, (1999), *Small Scale Industries and Entrepreneurship*, Hyderabad: Himalaya Publishing House.

Dayanandan, R and A. NilascoArputharaj, (2012), *Entrepreneurship Development and Small Business Management*, New Delhi: Deep & Deep Publications Pvt. Ltd.

Books for Reference:

Sen, K.K, (1989), *Rural Industrialization in India*, New Delhi: Sultan Chand & Sons.

Soundarapandian, (1999,) *Rural Industrialisation*, New Delhi: Motilal Banarsidas.

Renu Arora (2003), *Fundamentals of Entrepreneurship of small Business,* New Delhi: Kalyan Publishers.

Sundaram, J.D, (1985), *Small Industries and Developing Economy*, New Delhi: Concept Publishing Co.
Rao, R.V., (1976), *Rural Industrialization in India*, Bombay: Vikas Publishing Co.

Teaching and Learning Methods

- Class lecture
- PPT presentation
- Assignments
- Visits to rural industries and Government agencies
- Interaction with experienced and successful entrepreneurs
- Case study
- Group Discussions

Course Outcomes

After completing this course, the students will

CO. No.	Course Outcome	Level
1.	Understand the importance and the scope of rural industries in India	K2
2.	Become aware of different agencies that promote rural industries.	K2
3.	Realize the needs and the benefits of appropriate technology	K2
4.	Gain knowledge about cost concepts and marketing processes and strategies of rural industries in the backdrop of globalization with its impact.	K2
5.	Identify the opportunities to become self-employed and motivated to become rural entrepreneurs.	K3

Mapping of Course Outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2							3	2				10
CO2	3	2							3	2				10
CO3	3	2							3	2				10
CO4	3	2		2					2	2	3	2		16
CO5	2	2	3	2		2			2	2	2	3		20
Grand Total of COs with POs & PSOs														66
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{66}{28}$														2.35

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.35**

Observation	COs of RURAL INDUSTRIES AND MANAGEMENT is strongly correlated with POs & PSOs

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc., RDS	Part	: III Core Practical
Semester	: VI	No. of Days	: 15
Sub. Code	: 19URDP66	Credits	: 5

Course Educational Objective

1. To impart practical knowledge in dairy, poultry and agriculture farming and social welfare institutions
2. To provide necessary knowledge about starting and running of poultry, dairy and rural development organizations.
3. To be acquainted with various polices and programme
4. To understand the various problems involved in the running of farm and social work institutions
5. To develop skills related to running of the dairy, poultry and agricultural farming and rural development progarmmes.

III B.Sc – Internship Training Programme

General Guidelines

Internship Training Programme is one of the important components in B.Sc Rural Development Science course. It is given to III B.Sc students during the sixth semester to equip them with professional skills and employment opportunities. It is part and parcel of the integrated rural development practical and is also a partial requirement for the completion of the B.Sc RDS course.

The General guidelines for the Internship Training Programme

1. Internship training programme aims at skill development professional training in the fields of NGO Management, Agricultural Sciences and Animal Husbandry.
2. To interrelate theory with practice and make the students as development personnel, based on the theoretical and practical knowledge they acquired in the class room/lab/ field.
3. The students may be placed (off campus) in any one of the organizations related to the subject they are taught (Social Science (NGOs, CBOs, Rural Industries,), Animal Husbandry Farms, Dairy Industries, Agricultural Farms and Agro industries)
4. Internship Training Programme for III B.Sc students will be given in the sixth semester, preferably middle of the semester for 15 full days from morning 9.00 am to 4 pm. The Students will follow the working office hours of the organization.
5. Health factors and financial situation of the students should be considered while allotting the organization for the internship training.
6. All the expenses incurred during the internship training programme shall be borne by the students completely.
7. A team of teaching staff will be assigned for the fixing of the organizations, intermittent visits during the internship training, report submission, correction and evaluation with the consultation of the Head of the Department.

8. Internship training is part of the semester Integrated Rural Development Practical and it is mandatory for every students to complete the IRD practical and no one is exempted from the internship training programme and failing to complete the internship training will be treated as arrears in the IRD practical.
9. No relaxation and changes will be entertained in the internship training programme.
10. The students should go for the field work without fail and follow the organizational norms and guidelines and this should be strictly adhered to during the time of internship training.
11. The students should write report of everyday activities and final consolidated report for the purpose of Integrated Rural Development Practical. The reports should be submitted at the end of the Internship training to the allotted staff in-charge.
12. It is advised that the students should follow the general format given by the department for writing the report.
13. Any difficulties faced by the students during the internship training programme must be brought to the notice of the team of staff and the HOD in order to take immediate necessary action.

Evaluation Procedure

1. Internship Training programme will be evaluated for 100 marks.
2. For 50 marks, the students are evaluated by the institutions in which they are placed.
3. The students must be assessed based on the following five criteria, they are
   i. Regularity
   ii. Adaptation to the working environment
   iii. Work consciousness and creative initiatives
   iv. Working ability and skills acquired
   v. Report

Internal Viva voce will be conducted for the internal 50 marks by the department at end of the semester after receiving the internship training marks along with the report from the concerned agency with consolidated final report.

Course Outcomes

After completing this course, the students will

CO. No.	Course Outcome	Level
1.	Practice the classroom learning in the field of rural development, Agriculture and Animal husbandry	K3
2.	Plan and start social Welfare organizations Agricultural and animal husbandry farm	K3
3.	Conduct training programmes on Rural development /Agricultural and animal Husbandry	K3
4.	Train and provide technical support to farmers and NGOs	K3
5.	Become an entrepreneur	K3

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3	3	2	2				3	3	1	2	1	20
CO2	2	2	3	3	3				1	2	1	2	2	18
CO3	3	2	3	3	3				3	3	2	3	1	26
CO4	2	2	2	2	2				2	3	2	2	1	20
CO5	3	3	3	3	2				2	2	2	2	2	24
Grand Total of COs with POs & PSOs														106
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{108}{50}$														2.16

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	**0.01-1.0**	**1.01-2.0**	**2.1-3**
Quality	**Low**	**Medium**	**Strong**
Mean Value of COs with POs and PSOs			**2.16**
Observation	**COs of internship are strongly correlated with POs and PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc. RDS	Part	: III Core Elective-2
Semester	: VI	Hours	: 60
Sub.Code	: 19URDE26	Credit	: 03

MARKETING OF ANIMAL PRODUCTS

Course Educational Objectives

1. To enable the learners acquire knowledge of livestock parameters
2. To make the pupil comprehend various costs of livestock management
3. To facilitate students in learning the cost of economics in an area related to small scale dairy units and industry.
4. To assist the novice in knowing the nuances of market management and market research
5. To help the learners gain in-depth knowledge on credit facilities for dairy products

Unit –I: Livestock parameters (10 Hours)

Basic knowledge about technical and production parameters in different types of farm –dairy, sheep, goat, piggery, rabbit, layer, turkey, quails and duck.

Unit-II: Cost Concepts (10 Hours)

Cost Concept-Investment-Fixed Cost-variable cost, Average cost and total cost-cost benefit ratio-breakeven analysis- livestock insurance.

Unit-III Working out the Economics (15 Hours)

Dairy units-10 cows -10 buffaloes - Layer Unit -1000 Birds- Sheep unit-20+1-Broiler Unit-500 Birds-Goat Unit-10+1 -Turkey Unit- 50 Birds-Piggery unit-10+1-Quail Unit -1000 Birds-Rabbit-20+2 - Rabbit Unit-100 Birds

Unit-IV: Marketing (15 Hours)

Definition of market – concepts in marketing– classification of markets – Marketing channels - problems – marketing costs and margin – planning , Marketing regulation and certification-Product and its sales-methods of sales – Limitations –- PFA, AGMARK, BIS *and* FSSAI. Organization related to marketing.

Unit V: Credit Facilities (10 Hours)

Credit facilities – Institutional credits-types and mode of repayment-livestock project formulation and submission-NABARD Model-Project appraisal-norms and standard for appraisal-Monitoring, Evaluation-M& E Tools –MIS.

Book for study

Gopalakrishnan, C.A., Livestock and Poultry enterprises for Rural Development, Mohan Primlani Publishers, New Delhi, 1980.

Books for reference:

A.S.Kahlon, Karam Singh, 1981. Economics of Farm Business Management in India Allied Publishers Private Limited.

Banerjee, G. C., A Text book of Animal Husbandry, Oxford & IBH Publishing Company, New Delhi, 2013.
C.P.Annathakrishnan and B.N.Padmanabhan, 1989-Dairy farming and Milk Production. Madras: Shri Lakshmi Publications,
Hand Book of Animal Husbandry 2015 ICAR,New Delhi
R.S.N.PillaiBagavathi, 2002, Modern Marketing Principles and Practices, S.Chand& Company Ltd. New Delhi
S.S.Johl and T.R.Happer, 1973. Fundamentals of Farm Business Management. Kalyani Publishers.

Teaching Learning Method

- Class lecture
- Assignments
- Seminars
- Quiz
- Power point presentation
- ICT
- Group Discussion

Course outcomes

After completion of this course, the students are able to

Course Outcome No.	Course Outcome	Knowledge Level upto
CO1	Discuss the various technical and production parameters of different types of farms	**K2**
CO2	Find the various costs associated in livestock management	**K3**
CO3	Illustrate the working of economics at small scale	**K3**
CO4	Explain the various trends in marketing dairy products	**K2**
CO5	Summarize the different credit facilities available to livestock management	**K2**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze, K5 = Evaluate, K6 = Create

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3		2	2				3		2	2	2	19
CO2	3	3	2	2	2				3	2	3	2	3	25
CO3	3	3	2	2	2				3	2	3	2	3	25
CO4	3	3		2	2				3		2	2	2	19
CO5	3	3	3	2	2				3		2	2	2	22
Grand Total of COs with POs & PSOs														111
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{107}{45}$														2.46

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.46**
Observation	**COs of MARKETING OF ANIMAL PRODUCTS is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: III B.Sc.	Part	: Self Learning Course
Semester	: VI	Hours	:
Sub.Code	: 19URDSL6	Credit	: 3

MILK PRODUCTS

(For Students admitted from the Academic Year 2008-2009 onwards under the New CBCS Pattern)

Course Educational Objectives:

1. To make them understand the importance of milk in human life.
2. To impart knowledge about the composition of milk.
3. To know about processing of milk.
4. To impart knowledge on preparation of various milk products.
5. To expose the students to various self-employment opportunities related dairy industry.

UnitI : Milk – Definition – Milk Production and Consumption in India and Global level–Milk Secretion – Composition Indian Standards on Milk – Food and Nutritive nature of milk.

Unit II : Milk and Public Health, Clean Milk Products, Milk Grading – Sampling – Weighing Testing – Preheating – Cooling Pasteurization – Homogenization – Standardisation – Storage of milk.

Unit III : Fermentation – Indian whole milk products – kheer – Khoa – Kulfi _Rabri.Coagulated Milk Products – Dahi – Srikhand – Paneer – Chhana.

Unit IV : Classified Butter Fat Products. Makkan (Butter), Ghee, Lassi (Butter Milk)

Unit V : Storage of Products – Keeping Quality – Marketing – Adulteration – AGMARK.

Book for study :

Sukumar, D.E., (2004), Outlines of Dairy Technology, London: Oxford University Press.

Books for Reference:

~~6.~~ Boghart Ralph, (1988), Scientific Farm Animal Production, New Delhi: Surjeet Publications,.

Clarence Henry, E., (1973), Milk and Milk Products, New Delhi: Tata McGraw Hill Publishing Co. Ltd.,

~~7.~~ Schmid, (1982), Principles of Dairy Science, New Delhi: Surjeet Publications.,

~~8.~~ Sharma, R., (2006), Production, Processing and quality of milk products, IBDC, 1st ed.

Teaching Learning Methods :

- Two contact classes per semester
- Preparation of assignments

Course Outcomes :

Course Outcome No.	Course Outcome	Knowledge Level upto
CO1	Discuss about the Milk Production and Consumption in India and Global level–Milk Secretion	**K2**

CO2	Find the various stages of milk processing	**K3**
CO3	Illustrate the fermented whole milk products	**K3**
CO4	Summarize the various Classified Butter Fat Products	**K2**
CO5	Explain the different types of Storage of Milk Products and Marketing.	**K2**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze, K5 = Evaluate, K6 = Create

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3		2	2				3		2	2	2	19
CO2	3	3	2	2	2				3	2	3	2	3	25
CO3	3	3	2	2	2				3	2	3	2	3	25
CO4	3	3		2	2				3		2	2	2	19
CO5	3	3		2	2				3		2	2	2	19
Grand Total of COs with POs & PSOs														107
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{107}{44}$														2.43

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.43**
Observation	**COs of MILK PRODUCTS is strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE
M.Sc. Dairy Science and Rural Management

SEM	Category	Sub.Code	Paper	Hours	Credits
I	Core	22PDMC11	Livestock Production Techniques	4	3
		22PDMP11	Livestock Production Techniques - Practical	2	2
		22PDMC21	General Microbiology	4	3
		22PDMP21	General Microbiology - Practical	2	2
		22PDMC31	Principles of Rural Management	6	5
		22PDMC41	Research Methodology	6	5
	Core Elective	22PDME11	IRD Practical – 1	6	4
	Total			**30**	**24**
II	Core	22PDMC52	Dairy Chemistry and Dairy Microbiology	4	3
		22PDMP32	Dairy Chemistry and Dairy Microbiology – Practical	2	2
		22PDMC62	Soil and Fodder Management	4	3
		22PDMP42	Soil and Fodder Management – Practical	2	2
		22PDMC72	Social Statistics and Computer Applications	6	5
	NME*	22PDMN12	Social Problems and Intervention Strategies	4	4
	Core Elective	22PDME22	IRD Practical – 2	6	2
		22PDMI12	Block Placement		2
		22PLFS12	Life Skills	2+2*	2
			MOOC / SWAYAM		2**
	Total			**30**	**25**
III	Core	22PDMC83	Entrepreneurship Development	4	3
		22PDMP53	Entrepreneurship Development – Practical	2	2
		22PDMC93	Watershed Management	4	3
		22PDMP63	Watershed Management - Practical	2	2
		22PDMD03	Dairy Products and Packaging -I	4	3
		22PDMP73	Dairy Products and Packaging -I Practical	2	2
		22PDMD13	ICT for Rural Development	6	5

	Core Elective	22PDME33	IRD Practical – 3	6	4
			MOOC / SWAYAM		2**
	Total			**30**	**24 + 2****
IV	Core	22PDMD24	Dairy Products and Packaging -II	4	3
		22PDMP84	Dairy Products and Packaging II- Practical	2	2
		22PDMD34	Energy and Environment	4	3
		22PDMP94	Energy and Environment - Practical	2	2
		22PDMD44	Project Work	12	5
	Core Elective	22PDME44	Dairy Business Management	6	4
	Total			**30**	**19**
***NME (Non-Major Elective is offered to the students of other Disciplines)**					

Semester	**I**	**II**	**III**	**IV**	**Total**	**Extra Credit**
Credit	**24**	**25**	**24**	**19**	**92**	**4****

Self-Learning Courses :

(By MHRD, Govt. of India)

*** represents practical outside the class hour**

**** Extra Credit Course**

MOOC/SWAYAM (2 credits for each course, maximum of 2 courses)

1. **MOOC – SWAYAM – I (I Year - II Semester) syllabus**
2. **MOOC – SWAYAM – II (II Year – III Semester) syllabus**

DEPARTMENT OF RURAL DEVELOPMENT SCIENCE
PG - DAIRY SCIENCE AND RURAL MANAGEMENT
Programme Specific Outcome (PG)

After the completion of the PG programme the students are

1. Able to gain knowledge about dairy science and rural management which help to realize the applications of its various techniques that strengthen the nexus among dairy science, agriculture and rural management.
2. Equipped with skills and confident in utilizing as well as sharing/disseminating the knowledge acquired for the welfare of the rural society.
3. Able to inspire and train rural youths and become role-models by involving and contributing constructively to agriculture, dairy industry and rural development which pave way for sorting out many prevailing rural social problems.
4. Trained to become rural development personnel and to act as catalysts for change, growth and development.
5. Empowered to be entrepreneurs with the help of hands-on training, exposure and block placement and also persuaded to pursue research to expand the horizon of knowledge and skills.

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M.Sc.DS & RM	Part	: Core -1
Semester	: I	Hours	: 60
Sub.Code	: 22PDMC11	Credit	: 3

LIVESTOCK PRODUCTION TECHNIQUES
(2022 -2023 onwards)

Course Educational Objectives

1. To impart in depth knowledge about the identification of dairy cattle and buffalo breeds.
2. To train them in selection of dairy cattle and buffaloes for breeding and milk production
3. To impart knowledge and skill on recent trends in breeding techniques of dairy animals.
4. To train them in computation of ration and feeding management of dairy animals.
5. To orient them in searching of new techniques in all the spheres of dairy animal management.

UNIT I Breeds of cattle (15 hours)

Breeds of dairy cattle and buffalo –indigenous and exotic breeds-various housing methods and management-construction details-young and adult management-farm waste disposal.

UNIT II Feeding (10 hours)

Feed-conventional and unconventional feeds and fodders –their composition –anti nutritional factors including aflatoxin-different methods of feeding-Hydroponics methods fodder cultivation -preservation of fodder-hay and silage making –computation of ration-feeding standard-feed production techniques.

UNIT III Breeding techniques (10 hours)

Oestrus cycle-heat symptoms-hormone regulation in estrus-artificial insemination techniques-types of frozen straws semen-sexed semen –synchronization of oestrum -embryo transfer technique.

UNIT IV Milk and Milk secretion (10 hours)

Mechanism of milk secretion-methods of milking-milking machine-principles-types-clean milk production –handling and storage of milk in farms.

UNIT V Government schemes (15 hours)

Central and state government schemes for dairy industry- NLM, AHIDF, RGM, KCC, NPDD,DPIDF, SDCFPO- CIS, RBPS, SFDS & FREEMILCH COWS, SHEEP , GOAT SCHEME, bank loans –softwares in dairy management.

Books for Reference :

Banerjee, G.C., (2007), Animal Nutrition – Oxford and I BH Publications.
Banerjee, G.C., (2002), Text Book of Animal Husbandry, Mohan Primlani Publishers, New Delhi.
Mukherjee, D.D. and G.C.Banerjee, (1980), Genetics and Breeding farm animals, Mohan Primlani Publishers, New Delhi.
Ranjan,S.K., (1981), Animal Nutrition, Vikas Publications.

Sundaresan, P, (1972), Livestock Breeding in India, Vikas Publications.
Sukumar, D.E., 2004, Outlines of Dairy Technology, Oxford University Press, London, 19th ed

Teaching Learning Methods

- PPT presentations.
- Lab practical
- Hands On Training

- Video presentations
- Record Work

C.O.NO.	Course Outcome	Knowledge level upto
1	Able to identify the characteristics of different milch breeds of cattle and buffaloes	**K2**
2	Able to judge and select good dairy cattle in the selection process	**K3**
3	Able to plan and do cattle breeding, feeding and management scientifically.	**K3**
4	Initiated to search for new techniques in all the spheres of dairy production management	**K4**
5	Enabled to establish own dairy enterprise with the government schemes available.	**K3**

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3				2				3	2	2	2	3	17
CO2	3		3	2	2				3	2	2	2	3	22
CO3	2		3	2	2				3	2	2	2	3	21
CO4	2		3	2			3		3	2		3	3	21
CO5	2		3	2			3	2	3	2			3	20
Grand Total of COs with POs & PSOs														101
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{101}{40}$														2.52

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.52**

Observation	**COs of LIVESTOCK PRODUCTION TECHNIQUES are strongly correlated with POs & PSOs**

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M.Sc.DSRM	Part	: Core Lab-1
Semester	: I	Hours	: 30
Sub.Code	: 22PDMP11	Credit	: 2

LIVESTOCK PRODUCTION TECHNIQUES PRACTICAL

Course Educational Objectives

1. To impart practical knowledge in assessing dairy characteristics of dairy animals.
2. To train them in the management of indigenous breeds of dairy cattle.
3. To impart skill on analyzing the quality of milk composition.
4. To train them in working out of computation of ration and feeding management of dairy animals.
5. To orient them in searching of new techniques in all the spheres of dairy animal management.

EX.NO.	NAME OF THE EXERCISE
1	Assessing dairy traits in cattle and buffaloes.
2	Importance of rearing of indigenous dairy animals
3	Comparative analysis on milk composition
4	Computation of ration for dairy animals (Thumb rule method)
5	Enriching feed materials
6	Frozen semen and motility examination
7	Synchronization and Artificial insemination in dairy animals
8	Milking machine : types and operation
9	Sterilization techniques of farm equipment.
10	Formulation of a bankable dairy project

Teaching Learning Methods

1. PPT presentations - seminar.
2. Laboratory and farm practical
3. Hands On Training
4. Video presentations
5. Record Work

Course Outcome:

C.O.NO.	COURSE OUTCOME	Knowledge level upto
1.	Able to identify the characteristics of different milch breeds of cattle and buffaloes	**K2**

2.	Able to judge and select good dairy cattle in the selection process	**K3**
3.	Able to compute feeding rations manually and the preparation of feed mixtures.	**K3**
4.	Initiated to search for new techniques in all the spheres of dairy production management	**K4**
5.	Enabled to establish own dairy enterprise with the government schemes available.	**K3**

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3				2				3	2	2	2	3	17
CO2	3		3	2	2				3	2	2	2	3	22
CO3	2		3	2	2				3	2	2	2	3	21
CO4	2		3	2			3		3	2		3	3	21
CO5	2		3	2			3	2	3	2			3	20
Grand Total of COs with POs & PSOs														101
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{101}{40}$														2.52

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.52**
Observation	**COs of LIVESTOCK PRODUCTION TECHNIQUES are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514

DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc.DSRM	Part	: Core-2
Semester	: I	Hours	: 60
Sub.Code	: 22PDMC21	Credits	: 3

GENERAL MICROBIOLOGY

Course objectives:

1. To become familiar with the foundation concepts of history of microbiology and morphology of bacteria.
2. To understand the structure and reproduction, nutrition and metabolism of bacteria.
3. To understand, learn and gain skills of isolation, culturing and maintenance of culture.
4. The course provides the conceptual basis for understanding sterilisation and disinfection
5. To understand, learn and gain skills of design and structure of dairy microbiology lab

UNIT 1- Introduction & History of Microbiology (12 hours)

History of microbiology, Definition for Microbes and Branches of Microbiology and its Application, contribution of Louis Pasteur and Robert Koch to the Microbiology, Difference between Prokaryotes & Eukaryotes, Classification of bacteria based on Bergey's manual, Morphology of bacteria- Shape, size and arrangement of bacteria, Capsule, flagella, motility of bacteria, fimbriae/pili.

Unit II-Structure, growth, reproduction, nutrition& metabolism (12 hours)

Morphological variation of bacteria, - cell structure, endospores, sporulation and vegetative reproduction. Reproduction methods and Growth rate, Growth curve of bacterial population, classification based on temperature requirement, Nutrition- Phototrophs, Chemotrophs, Heterotrophs, Autotrophs, different methods of energy production and pathways of bacterial metabolism, Energy production in bacteria – energy and ATP, aerobic and anaerobic respiration,

Unit III- Sterilisation and Disinfection (12 hours)

Sterilisation, disinfection, antiseptic, tyndallisation, pasteurization: Physical- dry heat, moist heat, UV light, ionizing radiation, filtration, HEPA filter, Chemical-phenol and phenolic compounds, (Halogen aliphatic alcohol, Formaldehyde, Quartenary ammonium compounds, Ethylene oxide, heavy metals) anionic and cationic detergents. Biosafety and Bioethics.

UNIT IV Cultures and media (12 hours)

Media: selective and different types of media, method of preparation, different plating techniques, preservation of cultures. Various Staining techniques, viable count, differential count, Serial dilution, starter culture- collection, activation and maintenance and preservation of starter culture, preparation of culture room.

Unit-V Dairy microbiology laboratory- plan and design (12 hours)

Design and Structure of dairy microbiology lab, sterilization, disinfection, various equipments- hot air oven, autoclave, bacteriological hood, incubator, colony counter, water bath and various microbiological platform test in dairy industry.

References

Schlegal, H.G.(1986). General Microbiology (2nd Edn.,) Prentice Hall of India(P) Ltd., New Delhi.

Pelczar, M.J., Chan E.C.S. & Krieg, N.P.(2001). Microbiology Tata Mcgraw Hill Publishing Co., Ltd., New Delhi.

Pelczar Michael. J. (1993). Microbiology. New York, Mc. Graw hill.

Sharma, P.D (1993). Microbiology Rastogi Publications, Meerut, India.

Gunasekaran.P.(1995). Laboratory Manual in Microbiology New age International (P) Ltd., Publishers New Delhi.

Duby, R.C. and Maheswar, D.K (201`0). Text book of Microbiology. S. Chand and Co., New Delhi.

Subba Rao, N.S (1999). Soil Microbiology. (4th Edition) Oxford IBH Publishing Co., (P) Ltd., New Delhi.

Susila, S.P. and Shantaram, S (1998). General Microbiology. Oxford IBH Publishers Co., (P) Ltd., New Delhi.

Sukumar De. (1996). Outline of Dairy industries. Oxford University Press Indian Branch. New Delhi.

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1. https://www.researchgate.net/publication/317340829_Fundamentals of Microbiology
2. https://www.agrimoon.com/fundamentals-of-microbiology-pdf-book

Teaching and Learning methods

- Class Lecture
- Digital Presentation
- Lab Practical and demonstration
- Learning through exposure
- Record work

Course Outcome

S.No	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO1	The students understand the basic concepts of history, relevance of microbiology and classification of bacteria.	**K3**
CO2	The student will learn the techniques of studying, morphological variation, reproduction methods, nutrition and energy production in bacteria.	**K2**
CO3	Acquire scientific and technical understanding on method of preparation, various staining techniques and starter culture.	**K2**
CO4	This course provides analysis of the sterilisation, disinfection, biosafety and bioethics.	**K4**
CO5	The students will be aware of Concepts and knowledge of Design and Structure of dairy microbiology lab and various equipments.	**K1**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with Pos and PSOs
(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	3		3	3	2		2	2			3	2	22
CO2	3		2	3	3	2	2			2		2	2	21
CO3	3	2		2	2		2		3	2	2	2		20
CO4	2	3	3		2			3	2	2			2	19
CO5	3	3		2		3		2		2	2	3		20
Grand Total of Cos with POs & PSOs														102
Mean Value of Cos with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{102}{43}$														2.37

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of Cos with POs & PSOs			**2.37**
Observation	**Cos of GENERAL MICROBIOLOGY are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M. Sc.,	Part	: Core Lab-2
Semester	: I	Hours	: 30
Sub.Code	: 22PDMP21	Credits	: 2

GENERAL MICROBIOLOGY PRACTICAL

Course objectives:

Learner acquires basic skills in aseptic techniques, usage of laboratory instruments, microscopy, different staining techniques, microbial cultivation and enumeration techniques.

Practical

1. Handling and Maintenance of compound microscope and description of various types of microscopes.
2. Handling of microbiological laboratory instruments and Laboratory safety measures.
3. Cleaning of glassware and sterilization of glass wares.
4. Preparation of various Culture media
   a. Nutrient medium b). Muller Hinton Agar c). PDA d). Nutrient Broth e). MacConkey Agar f). Esoin Methylene Blue.
5. Testing of milk quality-Enzymatic test by
   a. Methylene Blue reductase test
   b. Phosphatase activity of milk
6. Techniques for isolation of pure culture of micro-organisms
7. Isolation, Identification and enumeration of Bacteria from milk, water and air.
8. Isolation technique for pour plate and streak plate methods.
9. Staining of microorganisms (Gram's straining).
10. Microbial antibiotics (Assay Antibiotics).
11. Determination of microorganisms by direct count and viable count.
12. Hanging Drop Method for Bacterial Motility.
13. Visit to modern dairy microbiological lab.

Teaching and Learning Methods

1. Digital animation and Presentation
2. Hands-on practice in laboratory
3. Learning through exposures
4. Demonstration
5. Record work

S. No	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's

		Taxonomy)
CO1	The students will be able to understand the principles, knowledge, handling and maintenance of microscope, microbiological laboratory instruments.	**K2**
CO2	Students will able to acquire scientific and technical understanding on cleaning of glassware and sterilization of glass wares and Preparation of various Culture media.	**K2**
CO3	Students will have gained practical skill on analysis of Testing of milk quality-Enzymatic test and isolation of pure culture of micro-organisms.	**K4**
CO4	Skilled both theoretically and practically to analysis of pour plate and streak plate, Hanging drop and Gram's staining methods.	**K3**
CO5	The students gained practical skill on analysis of microorganisms by direct count and viable count and Assay antibiotics.	**K5**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with Pos and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3		2	3	2		2	2	2		3		22
CO2	2	3	2	3	3	2	2			2		2	2	23
CO3	3	3		2	2		2		3	3	2	2		22
CO4	2	3	3		2			3	2	2			2	19
CO5	3	3	2	2		3		2	2	2		3		22
Grand Total of Cos with POs & PSOs														108
Mean Value of Cos with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{108}{45}$														2.4

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of Cos with POs & PSOs			**2.4**
Observation	**Cos of GENERAL MICROBIOLOGY are strongly correlated with POs & PSOs**		

References

1. Aneja KR (2005). Experiments in Microbiology, Plant pathology and Biotechnology. 4th Edition, New Age International Publishers, Chennai.
2. Rajan S and Selvi Christy (2011). Experimental procedures in life sc1ences. Anjana Book House, publishers and distributors, Chennai
3. Kannan N (1996). Laboratory Manual in General Microbiology. First edition, Palani Paramount Publications, Palani. Tamil Nau.
4. HaroldJBenson(1998).MicrobiologicalApplicationsLaboratoryManualinGeneralMicrobiology.SeventhInternationaledition,MeGrewHill,Boston.
5. https://www.researchgate.net/publication/317340829_Fundamentals of Microbiology 7. https://www.agrimoon.com/fundamentals-of-microbiology-pdf-book

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR -625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	**: I M.Sc. DSRM**	**Part**	**: Core-3**
Semester	**: I**	**Hours**	**: 90**
Sub.Code	**: 22PDMC31**	**Credit**	**: 5**

PRINCIPLES OF RURAL MANAGEMENT

Course Educational Objectives

1. To learn the basic concept of rural development and Management
2. To enable the students understand in Planning and Organizing.
3. To train the students to acquire the specific knowledge on manpower planing in an organization.
4. To facilitate the students to learn about the leadership ad control in an organization.
5. To gain the basic knowledge in budgeting and Registration of organization.

Unit – I **(20 hours)**

Introduction Rural Development and Management

Rural Development: Meaning, Concept. Approaches and Strategies to Rural Development. **Management**: Definition, features, Nature, Characteristics, Administration Vs Management. Principles of Management, Levels of Management – Top, Middle and low level. Functions of Management: Planning, Organising, Staffing, Directing, Coordinating, Reporting and Budgeting (POSDCORB).

Unit – II

Planning and Organizing **(20 hours)**

Planning: Concept of planning, Significance of planning, Classification of planning: Strategic plan, Tactical plan and Operational plan, Process of planning, Barriers to effective planning. Decision Making: Strategies of decision making, Steps in rational decision making process, Factors influencing decision making process.**Organizing**: Defining organising, Principles of organising, Process of organising, Types of organizational structure, Span of control, Centralization vs. Decentralization of authority.

Unit III **(20 hours)**

Staffing, Directing and Motivation

Staffing: Concept, Objective of staffing, Manpower planning - recruitment – selection, training. **Directing**: Concept, Techniques of directing and supervision, Types of supervision, Essential characteristics of supervisor. **Motivation**: Concept, Forms of employee motivation, Need for motivation.

Unit IV **(15 hours)**

Leadership and Control

Leadership: Types, Process of Leadership, Importance of leadership, Characteristics of an effective leader. **Controlling**: Concept, Importance of controlling, Types of control, Steps in control process

Unit V **(15 hours)**

Budgeting and Registration of Organization

Budgeting: Meaning, types, functions, formulating budgets. Registration of organization: Societies, Trusts, and Non-Profit Companies, CSR, Project formulation, Project management ad Project evaluation.

Books for Study

1. Durai, P. (2015). Principles of Management, Text and Cases. New Delhi: Pearson Education.
2. Robbins & Coulter (2013). Management. New Delhi: Prentice Hall
3. Bhatia, B.S. and G.S.Batra, (2005), Rural Development Management, Deep & Deep, Bombay.
4. Koontz, H. (2010). Essentials of Management. New Delhi: Tata McGraw-Hill Education.
5. Gopalakrishnan, P. (2014). Textbook of Project Management. New Delhi: Macmillan.

References

1. Prem Kumar & Asit K. Ghosh, (1991), Management of Rural Development, Anmol Publications, New Delhi.
2. Rao, VSP and P.S. Narayana, (1998), Principles and Practice of Management, Konark Publishing Company Ltd, New Delhi.
3. Vasant Desai, (1991), Rural Development, Vol. 1 & 2, Himalaya Publishing House, New Delhi.
4. Verma, S.B., (2005) Rural Management, Deep & Deep Publications Pvt., Ltd., New Delhi.

Teaching and Learning Methods

- ICT based class Lecture
- Group Discussion
- Brainstorming
- Role plays
- Study assignment

Course Outcome

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Acquaint with the basic concept of rural development and Management	**K1**
CO 2	Analyze the concept of Planning and Organizing in management.	**K2**
CO 3	Expert in analyze the functions of manpower planning.	**K3**
CO 4	Acquire the specific knowledge on leadership and control.	**K4**
CO 5	Gain knowledge in budgeting and project formulation.	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of course outcomes with POs and PSOs
(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs withPOs & PSOs
CO1	3	2							3	2			2	12
CO2	2	2						3	2	3			2	14
CO3	2	3						2	2	2	2		2	15
CO4	2	2	2	3				2	2	2	2		2	19
CO5	1	2	2	2				2	1	2	2		3	17
Grand Total of COs with POs & PSOs														77
Mean Value of COs with POs & PSOs =									Grand Total of Cos with POs & PSOs / Number of Cos relating with POs & PSOs = 77/34					2.3

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.3**
Observation	**COs of PRINCIPLES OF RURAL MANAGEMENT is strongly correlatedwith POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M.Sc. DSRM	Part	: Core-4
Semester	: I	Hours	: 90
Sub.Code	: 22PDMC41	Credit	: 5

RESEARCH METHODOLOGY

Course Educational Objectives:

1. To understand the basics of social research methodologies and its process in addressing the rural social issues
2. To identify and formulate the rural problems and to conduct field related research.
3. To study the specific methods of research for promoting the rural livelihood.
4. To learn the various methods of sampling and data collection which are relevant to rural issues
5. To evolve and construct relevant tool for data collection to be used in the field to collect the data, analyze it and learn to write the research report

Unit I Introduction (15 hours)

Meaning and Objectives of research- Scope and importance of social research and interdisciplinary research - Selection of Research Topic – Formulation of research problem – Pilot study - Nature of scientific method in social research – Role of theory in social research – Limitations of social research

Unit II Research Design & Hypothesis (15 hours)

Research Design – Meaning, Need & Types – Hypothesis - Meaning – Formulation of Hypothesis – Types of hypothesis – Importance of hypothesis

Unit III Research Methods (25 hours)

Social Survey: Meaning – objectives – types – merits and demerits – limitations -Case study: meaning – sources – importance – Experimental method: – meaning – types – steps in experimental technique – limitations - Content analysis: meaning – types – uses – advantages & Disadvantages - Participatory Rural Appraisal: features – application – principles - uses - methods

Unit IV Collection & Sources of data (25 hours)

Sampling: meaning – types – size of sample – uses of sampling – Tool for data collection: (a) Interview Schedule– meaning – purpose – kinds – types of questions– steps in conducting interview- advantages & disadvantages - (b) Questionnaire: meaning – characteristics – types – merits & demerits – (c) Observation: meaning – features - types – uses – merits & demerits - Pre-testing – Sources: types -Documentary sources: Meaning – Kinds – uses of documentary sources in research

Unit V Report Writing (10 hours)

Report Writing - objectives – contents – Guidelines – Steps – Format -– Characteristics—qualities of a good report - Foot notes – References and Bibliography

Book for study

Thomas William A (**2021**) Research Methods – Quantitative, Qualitative & Mixed methods, Authorspress, New Delhi. ISBN: 978-93-90459-89-6) – 2021

(Amazon link: https://www.amazon.in/dp/B08VWSC498?ref=myi_title_dp)

References

Agnihotri Vidyadhar, (1980), Techniques of Social Research, M.N. Publishers, New Delhi.

Blalock, H.M. & Blalock, A.E., (Eds), (1980), Methodology in Social Research, McGraw Hill New York.

Conhran villiam, (1985), Sampling Techniques, John Wiley, New York.

Dasgupta Sugaia, (1967), Methodology of Social Research, Imphal Publishers, New Delhi.

Jaspal Singh, (2001), Ethno-methodology and Techniques of Social Research, Kanishka, New Delhi.

Kothari CR (1990) Research Methodology, New Age international, New Delhi

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Teaching Learning Methods

1. PPT presentations.
2. Case Study
3. Hands On Training in various methodology techniques
4. Record Work

Course Outcome

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Understand the basic research methodologies and its process in terms of its relevance in social research and its type in addressing the rural social issues	**K2**
CO 2	Independently formulate the research problems and appropriate research methodology to conduct field related research.	**K3**
CO 3	Apply independently the techniques of research methodology for the promoting of rural livelihood.	**K3**
CO 4	Analyze the various rural issues with the relevance of social research and its methods as alternatives	**K4**
CO 5	Create the relevant tool for data collection and the ability to use is in the field to collect the data, analyse it and write the research report	**K5**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3	3	3	3	2	3	3	3	3	3	3	3	38
CO2	3	3	3	3	3	3	3	3	3	3	3	3	2	38
CO3	3	3	3	2	3	3	3	2	3	2	3	3	3	36
CO4	3	3	3	3	3	2	3	3	3	3	3	2	3	37
CO5	3	3	2	3	3	3	3	3	3	3	3	3	3	38
Grand Total of COs with POs & PSOs														187
Mean Value of COs with POs & PSOs = $\frac{GrandTotalofCoswithPOs\&PSOs}{NumberofCosrelatingwithPOs\&PSOs} = \frac{187}{65}$														2.87

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.87**
Observation	**COs of RESEARCH METHODOLOGY are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M.Sc. DSRM	Part	: Core Elective-1
Semester	: I	Hours	: 90
Sub.Code	: 22PDME11	Credit	: 4

INTEGRATED RURAL DEVELOPMENT PRACTICAL - 1

1. Visit to a Small Scale Industry
2. Understanding Management Functions (POSDCORB) in an organization
3. To know about Marketing Strategies
4. Learning the various Statutory Requirements
5. Understanding HR functions in an Organization
6. PRA Training
7. Proposal Formulation
8. Mini Project
9. Application of SPSS
10. Writing a Research Paper

Outcomes

On completion of this course the students will be able to

- Comprehend the setup small scale industry and apply strategies of marketing
- Efficiently work in an organization by using the profound knowledge of management and HR functions
- Apply statistical software in mini project on rural integrated aspects
- Draft a project proposal incorporating the elements of PRA
- Write a research paper in collaboration with faculty on the recent trends in rural development

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Comprehend the setup small scale industry and apply strategies of marketing	**K3**
CO2	Efficiently work in an organization by using the profound knowledge of management and HR functions	**K3**
CO3	Apply statistical software in mini project on rural integrated aspects	**K3**

CO4	Draft a project proposal incorporating the elements of PRA	**K3**
CO5	Write a research paper in collaboration with faculty on the recent trends in rural development	**K3**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze K5 = Evaluate K6 Create

Mapping Course outcome with

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**Sum of COs with POs & PSOs**
CO1	**2**	**2**						**2**	**3**	**3**	**2**	**2**	**3**	19
CO2	**2**	**2**				**3**		**2**	**3**	**3**	**2**	**2**	**3**	22
CO3	**2**		**2**	**2**	**2**		**3**	**2**	**3**	**3**	**2**	**2**	**3**	26
CO4	**2**		**2**	**2**	**2**		**3**	**2**	**3**	**3**	**2**	**2**	**3**	26
CO5	**2**		**2**	**2**	**2**		**3**	**2**	**3**	**3**	**2**	**2**	**3**	26
Grand Total of COs with POs & PSOs														119
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{119}{50}$														2.38

Strong – 3, Medium – 2, Low – 1

Mapping Scale	**1**	**2**	**3**
Relation	**0.01-1.0**	**1.01-2.0**	**2.1-3**
Quality	**Low**	**Medium**	**Strong**
Mean Value of COs with POs & PSOs			**2.38**
Observation	**COs of Integrated Rural Development Practical – I with POs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M. Sc. DSRM	Part	: Core-5
Semester	: II	Hours	: 60
Subject code	: 22PDMC52	Credit	: 3

DAIRY CHEMISTRY AND DAIRY MICROBIOLOGY

Course Educational Objectives:

This course is designed to impart knowledge to the students with:

1. Recent advances in Dairy chemistry and dairy microbiology
2. Types of Microorganisms associated with milk
3. Beneficial effects of microorganisms of milk
4. Techniques in detecting pathogenic and spoilage type organisms in milk and milk products.
5. Food borne intoxication & infection

UNIT I Dairy Chemistry (10 hours)

Constituents and gross composition of milk of different species and breeds of milch animals, physio- chemical properties of milk constituents, physio- chemical properties of milk- acidity, pH, colour, flavour, density, specific gravity and freezing point of milk. Various type of platform tests.

UNIT II Micro organisms Associated with Milk (15 hours)

Important groups and their classification of dairy micro organisms, role of microorganisms in spoilage of milk-souring, curdling, bitter cream, proteolysis, lipolysis; abnormal flavours and discoloration. Mastitis milk.

UNIT III Microbial Quality of Milk (10 hours)

Impact of milking, chilling, bactofugation and membrane filtration on microbial quality of milk.Importance of psychotropic organisms in raw and pasteurized milks.Various type of heat treatment of milk.

UNIT IV Anti Microbial Substances in Milk (15 hours)

Immunoglobulin, lactoferrin, lysozymes, LP systems etc. Quality Control in Dairy Industry, Microbial Standards of various milk & milk products. Zoonosis and public health aspects of milk.

UNIT V Starter Culture (10 hours)

Starter cultures - types, propagation, defects. Fermented milk - Natural butter milk, Cultured butter milk, Acidophilus milk, Bulgarian butter milk, Kumis, Kefir and Yoghurt.

References:

Banarjee, G.C. , A Text book of Animal Husbandry, Oxford and IBH Publishing Co. Pvt Ltd, New Delhi, F.2, 2014.
Food Safety & Quality Assurance—IGNOU, New Delhi, 2014.
Hazards to food Safety, IGNOU, New Delhi, 13th March 2014.
Henry V Atherten, J. A. Newlanders, Chemistry and testing of Dairy products, CBS Publishers and distributors, New Delhi, 2015.
Introduction to food safety, IGNOU, New Delhi, 2011.
RAI, M.M., Dairy chemistry and Animal nutrition, Kalyani Publishers, Chennai, 2005.
Sing, K., Dairy Microbiology, Oxford Book Company, New Delhi.
Singh, K., Dairy microbiology, Oxford book company, New Delhi, 2012.
Sukumar De, Outlines of Dairy Technology, Oxford University, Delhi, 2002.
Wong, N.P. R. Jenners, M. Keeney and E.H. Marth, Fundamentals of dairy chemistry, CBS Publishers and distributors, New Delhi, 2001.
Yadav J.S., Sunita Grover, V.K. Batish, A Comprehensive Dairy Microbiology publisher Metropolitan, New Delhi, 1993.

Teaching Learning Methods

1. PPT presentations
2. Lab practical
3. Hands On Training
4. Video presentations
5. Record Work

Course Outcome :

After this course the students are

C.O.NO.	COURSE OUTCOME	Knowledge level upto
1	Trained in all the important techniques of dairy science and meet the needs of the dairy industry.	**K2**
2	Able to set up a dairy lab in future.	**K4**
3	Able to operate and maintain the different types of equipment in a dairy plant.	**K4**
4	Motivated to carry out research in the field of dairy science.	**K4**
5	Capacious to train the poor dairy farmer to become a milk entrepreneur.	**K4**

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2							3	2				10
CO2	3	2							3	2				10
CO3	2	3		3	2				2	2	2	2	2	20
CO4	2	3		3	3		3		2	2		3	2	23

CO5	2	3		3	3		3		2	2		3	3	24
Grand Total of COs with POs & PSOs														77
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{77}{35}$														2.2

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.2**
Observation	**COs of DAIRY CHEMISTRY AND DAIRY MICROBIOLOGY are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M. Sc. DSRM	Part	: Core Lab-3
Semester	: II	Hours	: 30
Subject code	: 22PDMP32	Credit	: 2

DAIRY CHEMISTRY AND DAIRY MICROBIOLOGY - PRACTICAL

Course Educational Objectives:

The course is designed to impart practical knowledge to the students with:

1. Recent advanced practices in the estimation of various components of milk.
2. Modern techniques carried out to analyse the quality of milk.
3. Handling various sterilization and microbiological types of equipment used in the dairy industry.
4. Analysis of various microbes and foodborne pathogenic microbes level.
5. Application in searching of value addition technology in milk products

Sl.No.	Practical	Nature
1	Sampling and estimation of Acidity, Fat, SNF content of milk	Lab
2	Quality control tests in the dairy industry	Lab
3	Detection of Adulterants and Preservatives in Milk	Lab
4	Handling of Autoclave, Hot air oven and Bacteriological Hood	Lab
5	Grams method of straining of bacteria	Lab
6	Standard Plate Count	Lab
7	Coliform count	Lab
8	Thermophilic count	Lab
9	Test for pasteurized milk – Phosphatase test	Lab
10	Visit to modern dairy units	Field visit

Teaching and Learning Methods

- Class Lecture and demonstration
- Digital animation and Presentation
- Hands-on practice in laboratory
- Learning through exposures
- Record work

Course Outcome

Students will be able to

S.No	COURSE OUTCOME	Knowledge level (Bloom's Taxonomy)
CO1	The comprehensive knowledge on various sampling techniques and analysis of the components of milk.	**K2**
CO2	Explain the specific skills on various quality-control tests and detection of adulterations, additives, preservatives in milk and milk products.	**K3**
CO3	Use the various sterilization and microbiological equipment in dairy plants.	**K3**
CO4	Identify the various types of microbes in milk and milk products.	**K4**
CO5	Determine an industrialist in the production and marketing of the dairy industry.	**K5**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with POs and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

Out come	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of CO's with PSO's & POs
CO1	2	3	2		2	2			3	2	2	2		20
CO2	3	2	3		2	2			2	2	3	2		21
CO3	3	2	2		2	2			2	3	2	2		20
CO4	2	1	3	2	3	3	2	2	2	2	3	3	1	29
CO5	2	1	2	3	2	2	3	3		2	2	2	3	27
Grand Total of Cos with PSO and POs														117
Grand total of Cos with PSOs and POs = Mean Value of COs with PSO and POs 117 / Number of Cos relating with PSOs and Pos 52 = 2.25														2.25

Strong – 3 Medium – 2 Low - 1

Mapping Scale	1	2	3
Relation	0.01 to 1.0	1.01 to 2.0	2.01 to 3.0
Quality	Low	Medium	Strong
Mean Value of COs with PSO and POs			2.25
Observation	COs of Dairy Chemistry and Dairy Microbiology - Practical is Strongly correlated with PSOs and POs		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514

DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M.Sc. DSRM	Part	: Core-6
Semester	: II	Hours	: 60
Sub. Code	: 22PDMC62	Credit	: 3

SOIL AND FODDER MANAGEMENT

Course Educational Objectives

1. To enable the students have a deeper knowledge on soil types and properties
2. To impart skills necessary for soil testing
3. To inculcate the soil reclamation methods
4. To conceptualize the nutritional facts of fodders
5. To empower the students of agronomical practices for selected fodder crops

Unit I **(15 hours)**

Definition of soil, Soil types of India, their conservation problems and their productivity. Potentials Soil forming processes, rocks and minerals. Soil profile and its development, Soil classification (taxonomy) Soil physical properties Texture and structure, effective soil depth, Bulk density, particle density and porosity. Soil Moisture constants. Classification of soil moisture, Soil chemical properties- Cation and Anion exchange capacity of soil, biological properties.

Unit II **(15 hours)**

Soil testing, concept, objective, soil chemical analysis pH, EC, organic carbon, available Nitrogen, Phosphorous, potassium and organic carbon. Essential elements of soil fertility evaluation, Deficiency symptoms and their role in plant growth.Importance of fertilizer and manure on soil. Soil erosion and conservation methods

Unit III **(10 hours)**

Saline and alkaline soil and their identification. Methods of reclamation chemical, Biological and Mechanical, acid soils and their management, Land capability classification. Classes sub classes and units Land use planning and its importance in soil conservation.

Unit IV **(10 hours)**

Fodders- Description, nutritive value and anti nutritionalfactors. Non leguminous fodder Sorghum, Maize, Cumbu,Cumbu-Napier hybrids, Buffalo grass, Elephant grass,Anjan grass, Sugarcane tops, Tapioca, Paddy straw. Leguminous fodders- HedgeLucerne, Lucerne, Stylo, Cowpea, Desmodium, Sangupushpam and Soyabean. Tree species– Sesbania, Glyricidia, Erythrinia, Subabul, Acacia, Mulberry

Unit V **(10 hours)**

Cultivation practices of the fodder crops – Cumbu- Napier hybrids, Buffalo grass, Elephant grass, Hedge Lucerne, Lucern, Sesbania, Subabul - Ratooning.

References

Hough Hammond Bennett, (2003), Soil Conservation for Sustainable Agriculture, Agrobios, India, Jodhpur.

Krishna, K.R., (2002), Soil Fertility and Crop Production, Oxfore and IBH Publishing Co. Pvt. Ltd., New Delhi.

Naren Kumar Dutta (2005), Principles and Practices of Soil Science, Kanishka Publishers, New Delhi.

Nyle Brady (2002), Nature and properties of soil.PHI New Delhi.

Purohrt, S.S., DushyentGohlot(2006), Trends in Organic Farming in India Agrobios India, Jodhpur.

Sahai, V.N., (2006), Fundamentals of Soil, Kalyani Publishers, New Delhi.

Soil Survey Division Staff (2004), Soil Survey Manual Scientific Publishers, Jodhpur.

TalaShilkar, S.C., and Dosani, A.A.K., (2005), Earthworms in Agriculture, Agrobias, India, Jodhpur.

Tirupathi, R.P., and Singh, H.P. (2001), Soil Erosion and Conservation New Age International Pvt. Ltd., New Delhi.

Yawalkar, K.S., Agarwal, J.P., and Bokde (2002), Manure and Fertilisers:Agri-Horticultural Publishing House, Nagpur.

Web resources

http://www.sristi.org/hbnew

http://www.ncipm.org.in/recent-publications.htm

http://www.ipmnet.org

Teaching Learning Methods

ICT, Seminar, Field visit, Assignments, Demonstration etc.,

Course Outcomes:

On completion of this course the students will be able to

Course outcome No	Course outcome	Knowledge level upto
CO1	Knowledge on integrated approach on soil management	K 3
CO2	Through understanding of soil testing methods	K3
CO5	In-depth awareness on reclamation methodology of problem soils	K5
CO4	Capability to analyse the nutritional contents of different fodders	K3
CO5	Technological ability on agronomical aspects of selected fodder crops	K3

K1=Remember, K2=Understand, K3=Apply, K4=Analyze, K5=Evaluate, K6=Create.

Mapping of Course outcomes with POs and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	2	2	1	1				2	2	2			16
CO2	2	1	2	2	2				2	2	1			14
CO3	2	1	2	2	1				2	1	1			12

CO4	1	2	1	1	1				1	2	2			11
CO5	2	2	2	1	1				2	2	1			13
Grand Total of COs with POs & PSOs														66
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{66}{35}$														1.88

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**1.88**	
Observation	**COs of SOIL AND FODDER MANAGEMENT are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M.Sc. DSRM	Part	: Core Lab-4
Semester	: II	Hours	: 30
Sub. Code	: 22PDMP42	Credit	: 2

SOIL AND FODDER MANAGEMENT – PRACTICAL

Course Educational Objectives:

1. To impart practical technical knowledge on soil sampling
2. To provide knowledge on determination of the soil physical properties
3. To impart practical skills in testing soil chemical properties
4. To provide training in cultivation of various fodder crops
5. To provide hands on training in soil and fodder management

S.No.	Name of the exercise
1	Soil Sample Collection
2	Soil Moisture Estimation
3	Soil Density Measurement
4	pH Measurement
5	EC Analysis
6	Texture Measurement
7	Different types of fodder sample collection
8	Fodder cultivation method
9	Visit to Soil processing centre
10	Visit to Agriculture College, Madurai.

Course Outcome:

After this course the students will be with

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Technical knowledge on soil sampling	**K4**
CO2	Knowledge to determine the soil physical properties	**K3**
CO3	Practical skills in testing soil chemical properties	**K3**
CO4	Training in cultivation of fodder	**K3**
CO5	Hands on training in soil and fodder management	**K3**

Mapping of Course outcomes with POs and PSOs
(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	3	3	3	3	2	2	1	2	1	3	**1**		26
CO2	2	3	3	3	3	1	1	2	1	2	3	**1**		25
CO3	2	3	3	3	3	2	1	1	2	2	3	**2**		27
CO4	2	3	3	3	3	2	2	2	1	1	3	**1**		26
CO5	2	3	2	1	1	1	2	2	1	2	2	**1**		20
Grand Total of COs with POs & PSOs														124
Mean Value of COs with POs & PSOs = $\frac{GrandTotalofCoswithPOs\&PSOs}{NumberofCosrelatingwithPOs\&PSOs} = \frac{124}{60}$														2.0

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**2.0**	
Observation	**COs of Soil & Fodder management practical are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR 625 514, MADURAI DIST.
DEPT OF RURAL DEVELOPMENT SCIENCE

Class	: I.M.SC DSRM	Part	: Core 7
Semester	: II	Hours	: 90
Sub: Code	: 22PDMC72	Credit	: 5

SOCIAL STATISTICS AND COMPUTER APPLICATIONS

Course Educational Objectives

1. To equip the students with diverse knowledge in statistics and understand its implication in social science research.
2. To build competencies in students so as to understand the importance and relevance of various statistical tools in social science research.
3. To identify, integrate and apply various statistical tools in research.
4. To train and develop the capacity of students in applying statistical packages such as MS EXCEL and SPSS.
5. To review various statistical tools applied in various researches.

Unit 1. Introduction

Statistics-Meaning-Definitions-Scope-functions-Importance-limitations-Uses of Statistics in Social Science Research-Tabulation of data-Contents of a Table-Types of Tables-Advantages and Limitations.

Unit-2. Diagrammatic and Graphic Presentation

Meaning of diagram-Importance-Significance-Kinds of Diagrams-Choice of suitable diagram-Construction of diagrams, Graphs: - Meaning- Importance- Kinds- Construction of Graphs, Histogram-Frequency Polygon-Frequency Curve- Limitations of Diagrams and Graphs.

Unit 3. Measures of Central Tendency

Meaning- Definition- Characteristics of Good Average- Types: Arithmetic Mean, Median, Mode-Relationship between different kinds of averages- Selection of suitable averages.

Unit 4. Statistical Tools

Meaning- Various measures of Dispersion-Range- Inter quartile Range- Mean Deviation-Standard Deviation- Co-efficient of Variation- Chi Square Test condition for applying Chi square -Yates Correction- Uses of Chi-square test- Limitations. Measurement of Correlation-Karl Pearson's Coefficient of Correlation- Test of Significance of Correlation Coefficient- Application of MS Excel, SPSS and COSTAT packages- in statistical analysis.

Unit-5 Scaling Techniques

Meaning-Need for Scaling-reliability-Validity- Social Distance Scale of Bogardus- Likert Scale-Thurston Scale- Socio- metric Measurements of Moreno- Sociogram- Chapin's Social Status Scale- Limitations of Scaling

Books for Reference:

Agarwa, l B.L, (1991), Basic Statistics, Wiley Eastern Publication, New Delhi
Asthana and Braj Bhushan, (2017), Statistics for Social Sciences (With SPSS), PHI Learning Pvt Ltd, New Delhi
Gosh, B.N, (1983), Scientific Methods of Social Research, Sterling Publishers, New York.
Gupta, S P (2005), Statistical Methods, Sultan Chand and Son, New Delhi. (34th Edition)
Gupta, C B (2004), Introduction to Statistical Methods, Vikas Publishing House, New DelhiGupta, S C (1987), Fundamentals of Statistics, Himalaya Publishing House, New Delhi.
Kalyanaraman, K (2016), Statistical Methods for Research-A step by Step Approach using SPSS, Atlantic Publishers, New Delhi.
Radha Mohan, (2016), Using SPSS in Research, Neelkamal Publishers, New Delhi.
Rajaretnam, T (2016), Statistics for Social Sciences, Sage Publication, New Delhi
Raza, M (Ed.) (1978), Sources of Economic and Social Statistics in India, Eureka Publishers, New Delhi.
Sharma Ramnath, (1987), Elements of Social Statistics, Raj Hans Prakhasan, New Delhi.

Teaching Learning Methods

1. PPT presentations.
2. Case Study
3. Hands On Training in SPSS and EXCEL
4. Record Work

Course Outcomes (CO):

On completion of this course the students will be able to

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Appraise the various applications of statistics in social science research.	**K4**
CO2	Employ various methods to represent data and make inferences	**K3**
CO3	Choose and select the appropriate statistical tool in his research.	**K5**
CO4	Derive, summarise and interpret the results analysed through statistical packages.	**K5**
CO5	Apply various scaling measures in social science research	**K3**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze K5 = Evaluate K6 Create

Mapping of Course outcomes with POs and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	**3**	**2**	**2**						**2**			**2**	**2**	13
CO2	**3**	**2**	**2**						**2**			**2**	**2**	13

CO3	**3**	**2**	**3**	**3**	**3**				**2**			**2**	**2**	20
CO4	**3**	**2**	**3**	**3**	**3**	**3**			**2**			**3**	**3**	25
CO5	**3**	**2**	**3**	**3**	**3**				**2**			**2**	**2**	19
Grand Total of COs with POs & PSOs														90
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{90}{37}$														2.43

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.43**
Observation	**COs of SOCIAL STATISTICS AND COMPUTER APPLICATIONS are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514

DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M.Sc. DSRM	Part	: Non Major Elective-1
Semester	: II	Hours	: 60
Sub. Code	: 22PDMN12	Credit	: 4

SOCIAL PROBLEMS AND INTERVENTION STRATEGIES

Course Educational Objectives:

1. To study the nature, meaning and characteristics of the social issues that it's prevalent in Indian society.
2. To understand the social problems in terms of its types and consequences
3. To improve the knowledge in finding out proper intervention strategies in order to combat the social issues and challenges
4. To analyze the various social problems of children, youth and women
5. To review the social problem, social disorganization and social change to plan preventive strategies

UNIT I Social Problems: Concept and Approaches (15 hours)

Meaning - Definition – characteristics- causes and types of social problems – Rural and Urban Problems – Theoretical approaches to social problems - Methods of studying social problems - Social problems and social change in India.

UNIT II Poverty, Unemployment, Population Explosion (15 hours)

Poverty – concept, incidence, magnitude, causes effective strategies for alleviating poverty. Unemployment – magnitude, features, types, causes and consequences, measures to control unemployment – Rural unemployment and remedies. Population Explosion - population policy, measures to control population explosion.

UNIT III Communalism and Secularism (10 hours)

Concept of communalism – communal violence – concept, features incidence, causes —Secularism —prescriptive measures to combat communalism.

UNIT IV Problems of Youth (10 hours)

Alcoholism, Drug addiction, AIDS, Terrorism, Youth Unrest, Measures to combat problems of youth

UNIT V Social Problems of children and women (10 hours)

Child abuse, - Child labour, Violence against women, Dowry, Domestic violence, Crimes against SCs and STs – Preventive Strategies

Books for study

Madan G.R., Social Problems in India, Allied Publishers Pvt. Ltd., Mumbai.

Ram Ahuja, (2004), Social Problems in India, Rawat Publications, Jaipur.

Books for References

Kumar.A, (2002), Social problems, Anmol Publications, Pvt. Ltd., New Delhi.
Singh, B.K.(2006), Women Empowerment through Self Help Groups, Adhyayan Publishers & Distributors, New Delhi.
Singh, Y.P. Indian Village, 2020 – Vision and Mission (Vol I & Vol. II), (2006) Concept Publications co., New Delhi.

Course Outcomes

On completion of this course the students will be able to

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Describe the nature, meaning and characteristics of the social issues that it's prevalent in Indian society.	**K42**
CO2	Able to interpret the social problems in terms of its types and consequences	**K3**
CO3	Ability to apply the knowledge in finding out proper intervention strategies to combat the social issues and challenges.	**K3**
CO4	Analyze the social problems for the target groups such as children, youth and women for the purpose of ameliorating them from those clutches	**K5**
CO5	Assessing the social problem, social disorganization and social change for planning preventive strategies	**K3**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze K5 = Evaluate K6 Create

Mapping of Course outcomes with POs and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	**3**		**3**	**2**	**2**	**2**	**3**	**3**	**2**	**3**	**3**	**2**	**3**	31
CO2	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**2**	**3**	**2**	32
CO3	**3**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**2**	30
CO4		**2**	**2**			**2**	**2**	**2**	**3**	**3**	**2**	**2**	**2**	22
CO5	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**3**	34
Grand Total of COs with POs & PSOs														149
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{149}{63}$														2.36

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong

Mean Value of COs with POs & PSOs			**2.36**
Observation	**COs of SOCIAL PROBLEMS AND INTERVENTION STRATEGIES are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class : I M.Sc. DSRM
Part : Core Elective-2
Semester : II
Hours : 90
Sub.Code : 22PDME22
Credit : 2

INTEGRATED RURAL DEVELOPMENT PRACTICAL – 2

1. Preparation of tool and collecting quantitative data for statistical applications
2. Organising and Processing of statistical data
3. Classification of collected data
4. Preparation of different types of tables
5. Preparation of different types of Diagrams and Graphs
6. Introduction to Microsoft Excel, Data Entry, Preparation of Graphs, Data Analysis
7. Structure of SPSS windows and options
8. Variable declaration and data entry, data cleaning in SPSS
9. Creating Diagrams and Graphs using SPSS

Data Analysis using SPSS : Statistical outputs like, Mean, Media, Standard Deviation, Correlation.

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Explain the statistical applications in data analysis	**K2**
CO2	Effectively employ data collection tools	**K3**
CO3	Use SPSS software in computing test of statistical significance	**K3**
CO4	Apply the tools of COSTAT to data visualization	**K3**
CO5	Make inferences from the statistical results	**K4**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze K5 = Evaluate K6 Create

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	**2**						**2**		**2**				**3**	9
CO2	**2**						**2**		**2**				**3**	9
CO3	**2**						**2**		**2**				**3**	9
CO4	**2**						**2**		**2**				**3**	9
CO5	**2**				**2**		**2**		**2**		**2**	**2**	**3**	15

Grand Total of COs with POs & PSOs	51
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{51}{23}$	2.22

Strong – 3, Medium – 2, Low – 1

Mapping Scale	**1**	**2**	**3**
Relation	**0.01-1.0**	**1.01-2.0**	**2.1-3**
Quality	**Low**	**Medium**	**Strong**
Mean Value of COs with POs & PSOs			**2.22**
Observation	**COs of Integrated Rural Development Practical – II with POs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: I M. Sc.	Part	: Block Placement
Semester	: II	Hours	: One Month (Industry/Farm/NGO Placement)
Subject code	: 22PDMI12	Credit	: 2

I MSc. (DS & RM) Block Placement Programme

Course Educational Objectives:

1. To help the students to gain practical knowledge on dairy company practices and rural management practices.
2. To familiarize the students on various challenges of modern technologies in dairy product manufacturing and modern practices in rural management.
3. To analyse practically the manufacture of various dairy products and analysis of various set up in the rural management structures.
4. To initiate to search of value addition technology in the manufacture of various milk products and recent trends in rural management.
5. To equip the students with skills in areas of project proposal, report writing and managerial skills

General Guidelines

Block Placement Programme is one of the important components of the Post Graduate Course in MSc. Dairy Science and Rural Management. It is a separate course in the Second Semester. It is a partial requirement for the completion of the PG Course. 2 credits are allotted for this programme. The general guidelines for this programme are as follows:

01. The Block Placement Programme aims at Skill oriented Training of the students in the field of Dairy Science and Rural Management.
02. To make students skilled Personnel based on the theoretical and practical knowledge they acquired in the class room/lab/field.
03. The students may be placed in any one of the institutions related to the subjects they taught
    (Dairy Science and Rural Management) and which are listed by the Department.
04. This programme is conducted summer vacation at the end of the Second Semester of the course after the completion of the Semester Examination.
05. Llimitations like health, finance etc., will be considered while allotting of the institutions for the placement.
06. All the expenses incurred during the Block Placement Programme must be borne by the students completely.

07. A separate Teaching staff Team may be assigned for the arrangement, intermittent visits during the programme, report submission and correction and evaluation with the consultation of the Head of the Department.
08. No relaxation and change will be given in doing the placement programme particularly the time allotment and the institution fixed for placement. However for any specific reason the student may ask for relaxation from the HOD with the recommendation of the Staff team.
09. The students must submit to the Department A). A copy of the weekly reports submitted to the placed institution and B). Final consolidated Placement Report.
10. It is advised the student to follow the general format given by the Department for submitting the Final Consolidated Placement Report.
11. Any difficulty faced by the students during the placement programme must be brought to the notice of the Staff Team and the HOD in order to take immediate necessary action.

Evaluation Procedure

1. The Block Placement Programme will be evaluated for 100 Marks.
2. For 50 Marks the students are evaluated by the institution in which they are placed.
3. The students must be assessed on the Five criteria. They are
   i. Regularity
   ii. Adoption to the working environment
   iii. Work Consciousness
   iv. Working ability and skills acquired
   v. Presentation of report
4. For 50 marks, Viva Voce will be conducted by the Department after receiving the placement mark along with the report from the concerned agency/institution/company.

Teaching and Learning Methods

- Learning through one month placement in an agency.
- Placement report

Course Outcomes

On completion of this course the students will be able to

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Acquaint with the structure of dairy and rural management agencies	**K4**
CO2	Associate the technology with changes both in dairy industry and in rural management sectors.	**K3**
CO3	Identify the spaces for value addition in milk products production and familiarise with the recent trends in the rural management agencies.	**K4**
CO4	Determine the marketing trends in dairy industry and the running strategy of rural management agencies.	**K5**
CO5	Students are motivated to set up small scale industry and an agency to do rural management activities.	**K6**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze K5 = Evaluate K6 Create

Mapping of the course outcome with POs and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

Out come	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of CO's with PSO's & POs
CO1	2	3	2		1	2			3	2	2	2		19
CO2	3	2	2		1	2			2	2	3	2		19
CO3	3	2	2		2	2			2	3	2	2		20
CO4	2	1	3	2	3	2	1	2	2	2	3	2	1	26
CO5	2	1	2	3	2	2	3	3		2	2	2	3	27
Grand Total of COs with PSO and POs														111
Grand total of COs with PSOs and POs Mean Value of COs with PSO and POs 117 = ----------= ------- =2.13 Number of COs relating with PSOs and Pos 52														2.13

Strong – 3 Medium – 2 Low - 1

Mapping Scale	1	2	3
Relation	0.01 to 1.0	1.01 to 2.0	2.01 to 3.0
Quality	Low	Medium	Strong
Mean Value of COs with PSO and POs			2.13
Observation	COs of Block placement programme in the milk industry Practical Strongly related with PSOs and POs		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc. DSRM	Part	: Core-8
Semester	: III	Hours	: 60
Sub.Code	: 22PDMC83	Credit	: 3

ENTREPRENEURSHIP DEVELOPMENT

COURSE EDUCATIONAL OBJECTIVES

1. To introduce basic concepts related to entrepreneurship development
2. To impart awareness and knowledge about the role of small enterprises in rural development
3. To familiarize with the content and the formulation of project report
4. To understand the different methods of project appraisal.
5. To identity the sources of finance to start-up enterprises.

Unit I **(10 hours)**

Entrepreneur: Definition – Concept – Characteristics – Functions of Entrepreneur – Types of Entrepreneur – Women Entrepreneur – Rural Entrepreneurship – Their Problems and Prospects.

Unit II **(15 hours)**

Small Enterprises: Introduction – Definition – Characteristics – Relationship between Small and Large Scale Units – Objectives – Scope – Opportunities for an Entrepreneurial career – Role of small Enterprises in Economic Development – Tax benefits to SSI - Problems and Prospects.

Unit III **(15 hours)**

Project Identification and Selection: Meaning – Identification – Selection. Project Formulation: Meaning of Project report – Significance and contents of a Project report – Formulation of a Project report.

Unit IV **(10 hours)**

Project Appraisal: Concept of Project Appraisal – Methods of Project Appraisal – Feasibility Analysis – Economic, Financial, Market, Technical and Managerial Competence – Analysis.

Unit V **(10 hours)**

Financing of Enterprises: Need for financial Planning – Sources and Finance – Capital Structure – Term loans – Sources of Short-term finance – Capitalization – return capital – export finance.

Books for Study

Khanka, S.S (2004), Entrepreneurial Development, S. Chand & Company Ltd., New Delhi.
Dayanandan, R and A. NilascoArputharaj, (2012), Entrepreneurship Development and Small Business Management, Deep & Deep Publications Pvt. Ltd., New Delhi.
Murthy, C.S.V(2004), Small Scale Industries and Entrepreneurial Development, Himalaya Publishing House, Hyderabad.
Desai, Vasanth, (1999), Small-scale Industries and Entrepreneurship, Himalaya Publishing House, Hyderabad.

Books for Reference

Bhattacharaya, (1999), Rural Industrial Management in India, B.R. Publishing Corporation, Mumbai.
Feasibility Study for a Small Industry, S (1973), IET, Hill Co., New Delhi & Madras.
Prasanna Chandra, (1987), Project Preparation, Appraisal, Budgeting, Implementation, Tata McGraw Hill, New Delhi.
Vasant Desai, (1980), Project management, Himalaya Publishing House, Second Revised Ed.

Teaching and Learning Methods

1. Class Lecture
2. ICT Presentation
3. Group discussion
4. Assignments and Paper presentations
5. Observational visits to small scale enterprises
6. Conversing with successful entrepreneurs.
7. Visits to government organizations that promote entrepreneurial development
8. Visits to lead banks that help entrepreneurs.

COURSE OUTCOMES

After completing this course,

CO.No.	Course Outcome	Level
CO1	The students will understand the fundamental concepts of entrepreneurship.	**K1**
CO2	The students will identify the opportunities for entrepreneurial career.	**K3**
CO3	The students will equip themselves to develop the contents of project report.	**K3**
CO4	The students will be familiar with the methods of project appraisal of proposed small scale enterprises	**K2**
CO5	The students will be aware of financial planning by understanding the sources of finance and types of term loans.	**K2**

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with

														POs & PSOs
CO1	3								3					6
CO2				2		3				2	3			10
CO3		2	3								2	3		10
CO4		3	2						3	3				11
CO5	3								3				2	9

Grand Total of COs with POs & PSOs	46
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{46}{17}$	2.70

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.70**
Observation	**COs of ENTREPRENEURSHIP DEVELOPMENT are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc. DSRM	Part	: Core Lab-5
Semester	: III	Hours	: 30
Sub. Code	: 22PDMP53	Credit	: 2

Course Educational Objectives

1. To impart entrepreneurial knowledge and skills among the students.
2. To facilitate them to identify entrepreneurial opportunities.
3. To make the students to become familiar with Government organizations and Schemes that promote entrepreneurship.
4. To enable the students to prepare project proposals and budget proposals to start their own business.
5. To help the students to come up with innovative business plans and perspectives.

ENTREPRENEURSHIP DEVELOPMENT PRACTICAL

Sl.No.	Title	Practical	Skills
1.	Women Entrepreneurs	• Self help groups • Own business product • Handicraft • Food Products	• Starting a new business by the stydebts after study
2.	Rural Entreprenurship	• Small Scale Industries • Match Industry • Fire works industry • Bricks industry • Cement industry	• The students will come up with new innovations to develop rural people skills
3.	Small and large scale units	• Visit the industries through proper channel • Allow students to take up a minimum projects regarding the topic and sector	• Entrepreneurial career- it provides students to have practical session and hands on training.
4.	Project appraisal	• The total investment for a particular sector	• It provides students to understand the potential market for competition

			and feasible study of the industry and investment.
5.	Source of short term finance	• Banks provide loans to rural entrepreneur and medium enterprises	• It helps the students to know how to prepare a budget and other estimation of the project learn to approach
6.	Industrial visits	• NABARD BANK • Agricultural Banks • Agro based companies (susee farm) • Entrepreneurs both men and women • SHG in Women Entrepreneurs • Internship from a particular companies	• Knowledge

Course Outcomes

After completing this,

CO No.	Course Outcome	Level
CO1	The students will be able to gain knowledge about various business ventures through field visits.	**K1**
CO2	The students identify and acquire entrepreneurial skills through interaction with successful entrepreneurs of different enterprises.	**K3**
CO3	The students will become aware of various Government schemes and project proposal writing techniques, appraisal methods of the projects	**K2**
CO4	The students will be able to do market analysis and need assessment surveys.	**K4**
CO5	The students will be motivated to actualize opportunities to start-up new ventures and equip themselves to become entrepreneurs.	**K3**

Mapping of Course Outcomes with POs and PSOs

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs and PSOs
CO1	3	2	2	2			2		3	2	2		3	21
CO2	2	2	2	2				2		3	2		3	18
CO3			2	2	2		2	2			2	2	3	17
CO4					2	2	2	2		2	2	2	2	16
CO5				2		2	2	2		2	2		3	15

	Grand Total of COs with POs and PSOs	87
	Mean Value of COs with POs and PSOs Grand Total of COs with POs and PSOs = 87/ 40 No of Cos relating with POs and PSOs	**2.17**
	COs of **Entrepreneurship Development** course is strongly correlated with PSO and PO	

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514

DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc.DSRM	Part	: Core-9
Semester	: III	Hours	: 60
Sub.Code	: 22PDMC93	Credit	: 3

WATERSHED MANAGEMENT

Objective

1. To impart an in-depth knowledge on watershed management
2. To enable the students learn the skills to construct the watershed devices
3. To impart in depth knowledge on water management for different cropping system
4. To impart various techniques on land treatment and management
5. To study in depth about dam and farm pond structures

Unit – I **(10 hours)**

General Description of watershed management – Identification of watershed problems, objectives and properties – location – Climate – Vegetation – Present Land Use System – Land Use Capability Classification – Water Resources – Human Resources – Live stock resources – Evaluation.

Unit – II **(15 hours)**

Water Availability period – rain water management in different climatic and soil conditions – Rainfall analysis – different water shed technology for rain water management – Soil survey – water budgeting – Soil erosion.

Unit – III **(15 hours)**

Selection of cropping systems for watershed management – Agro Ecological conditions – Biomass development – Nursery – Planning-layout – Methods of propagation, plant protection methods – Afforestation – Selection of species an management – Agro Forestry and management – Silvipasture and Management

Unit – IV **(10 hours)**

Soil Management / Land treatment

BUNDING – Graded, Vegetative, Contour and Stone bundings – TERRACING – Bench, Continuous and Contour terracing – Diversion – Drain Treatments on water logged areas.

Unit – V **(10 hours)**

Live Check dams Brush wood dam – loose boulder structures – Gulley Plug – Gabian structures – Earthen structures – Cement *Nalla*bunding – K.T. Wier – Farm and Sunken Pond – Role of NGO and people in Watershed Management – PRA Techniques.

Books for study

Rajesh Arora, 1998, Integrated Watershed Management A field Manual for equitable production and sustainable development, Rawat Publications – New Delhi.

Rae Buruham 1981 Land Evaluation Clanderon Press, Oxford. Michael A.M 1984 Irrigation Theory and Practice

Books for Reference :

Choudry, Land 1982, Utilization Subarnarekha basin, Classical Publishing Company, New Delhi.

John Mathur, 1984, Water Resources evaluation: Use and Management John Wiley and Sons, New York.

Lal and Greenland, 1979 soil a Physical properties and Crop Production in the tropics, John Wileef and Sons, New York..

S.P. Palaniappan. 1988, Cropping Systems in the tropics: Principle and management.

Teaching learning methods

1. Conventional classroom teaching
2. ICT tools
3. Technical hands on training in formation of water conservation structures
4. Field visits to water conservation units.

Course Outcome:

Course outcome No	Course outcome	Knowledge level upto
CO1	Understanding the technological advances in water resource management.	K2
CO2	Knowledge on management of rain water conservation technology	K1
CO5	Ability to plan soil specific cropping systems	K3
CO4	Diversified knowledge on land management technology for different types of terrains	K4
CO5	Technical capability on various water conservation structures	K4

Mapping of the course outcome with Pos and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	2	2	1	1	2				1	2	2	1	2	16
CO2	2	2	1	2	1				1	2	2	1	2	16
CO3	2	2	1	1	2				2	2	1	1	2	16
CO4	2		2	2	1				2	2	1	1	2	17
CO5	2	2	1	1	2				1	2	2	1	2	16
Grand Total of COs with POs & PSOs														81
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{81}{45}$														1.8

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**1.8**	
Observation	**COs of WATERSHED MANAGEMENT are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class : II M.Sc.DSRM
Semester : III
Sub.Code : 22PDMP63

Part : Core Lab-6
Hours : 30
Credit : 2

WATERSHED MANAGEMENT PRACTICAL

Course Educational Objectives :

1. To impart technical knowledge on recording rainfall
2. To practice in the estimation of average rainfall
3. To train in various irrigation types and techniques
4. To provide skill on the methods of watershed management techniques.
5. To expose and practically observe the watershed structures in the field.

S.no	Exercise	Nature
1.	Visit to B-class meteorological observatory	Field
2.	Rainfall Measurement-Standard and recording type rain gauges	Lab
3.	Calculation of Rainfall using arithmetic and Thessian mean	Lab
4.	Visit to the farm pond and Percolation pond in Fr. Rajanayagam Research Farm	Field
5.	Computation of volume of a pond using Prismoidal formula	Lab
6.	Demonstration of types of irrigation and Calculation of irrigation efficiency	Field
7.	Identification of elementary surveying equipments	Lab
8.	PRA training in Watershed	Training
9.	Watershed structures –A field visit	Field
10.	A visit to NGO involved in Watershed management	Field

Course Outcome

After completion of the course

S.No	COURSE OUTCOME	Knowledge level (Bloom's Taxonomy)

CO1	Technical knowledge on recording rainfall	**K2**
CO2	Knowledge to estimate the average rainfall	**K2**
CO3	Hands on training in irrigation types	**K4**
CO4	Skill to identify the methods of watershed management.	**K3**
CO5	Field level exposure to watershed structures.	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of Course outcomes with Pos and PSOs

(Programme Outcome – **POs**, Programme Specific Outcome – **PSOs**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	**2**	**3**	**3**	3	2	2	2	1	1	1	3	**1**		24
CO2	**2**	**3**	**3**	3	3	1	1	2	1	2	3	**1**		25
CO3	**2**	**3**	**3**	3	3	2	1	1	2	2	2	**2**		25
CO4	**2**	**3**	**3**	3	2	2	2	1	1	1	3	**1**		24
CO5	**2**	**3**	**2**	1	1	1	2	2	1	2	2	**1**		20
Grand Total of COs with POs & PSOs														118
Mean Value of COs with POs & PSOs = $\frac{GrandTotalofCoswithPOs\&PSOs}{NumberofCosrelatingwithPOs\&PSOs} = \frac{118}{60}$														1.9

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs		**1.90**	
Observation	**COs of Watershed management practical are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc.DSRM	Part	: Core-8
Semester	: III	Hours	: 60
Sub.Code	: 22PDMD03	Credit	: 3

DAIRY PRODUCTS AND PACKAGING- I

Course Educational Objectives:

The course is designed to impart knowledge to the students with:

1. Recent advances in Dairy chemistry and dairy microbiology
2. Recent techniques in detecting pathogenic and spoilage type organisms in milk.
3. Recent techniques in detecting pathogenic and spoilage type organisms in milk products.
4. Analysis of food borne intoxication & infection
5. Application in searching of value addition technology in milk products

UNIT-I Introduction (10 Hours)

Status of fat-rich dairy products and market milk industry in India and abroad, credits of Indian dairying, lacunae in Indian dairy sector, India's Dairy Cooperative Movement, Operation Flood (OF) Programme, types of fat-rich dairy products.

Unit- II Cream (10 Hours)

Definition and legal (including microbiological) standards, Efficiency of cream separation and factors affecting it- Control of fat concentration in cream- Operation, care and maintenance of cream separators - Planning and operating a cream production unit – receiving grading, sampling and weighing, neutralization, standardization, ripening, and pasteurization/vacreation and cooling/aging of cream, packaging, storage, and distribution- Preparation and properties of different types of cream –Factors affecting the quality of the cream. Defects (both microbiological and non-microbiological) in cream - causes and prevention

Unit-III Butter (15 Hours)

Introduction to butter-making process, theories of churning, legal standards (BIS, PFA and AGMARK)- Technology of butter manufacture – Batch and continuous methods, over-run in butter, control of fat loses in buttermilk, packaging, storage, and transportation, rheology of butter, uses of butter, defects in butter- Butter making equipment –Operation, care and maintenance of factory butter churn, continuous butter making machine (CBMM)

Unit-IV Special butter and related products (10 Hours)

Manufacture, packaging, storage and properties of whey butter, flavoured butter, whipped butter, renovated butter/ fractionated and polyunsaturated milk fat products, vegetable oil-

blended products and low-fat spreads-Margarine - Manufacture, packaging, storage and characteristics of different types of margarine.

Unit-V Ghee and butter oil (15 Hours)

Definition and legal specifications for ghee (BIS, PFA and AGMARK) and butteroil. Ghee composition and changes during manufacture, fat constants and their significance, packaging and storage, granulation of ghee, Nutritional aspects of fat-rich dairy products and health aspects of milk fat, Defects in ghee.

References

Anantakrishnan, C.P. and Srinivasan, M.R.1964. Milk Products of India. ICAR Publications, New Delhi.

Rangappa, K.S. and Acharya, K.T. 1974. Indian Dairy Products. Asia Publishing House, New Delhi De, S.1980. Outlines of Dairy Technology. Oxford University Press, Delhi.

Aneja, R.P., Mathur, B.N., Chandan, R.C. and Banerjee, A.K. 2002. Technology of Indian Milk Products. A Dairy India Publication, Delhi.

Aneja, R.P., Mathur, B.N., Chandan, R.C. and Banerjee, A.K. 2002. Technology of Indian Milk Products. A Dairy India Publication, Delhi.

A H Varnam and J P Sutherland, 1994. Milk and Milk Products Technology Chemistry and Microbiology

Yadav, J.S., Sunita Grover, Batish, V K. 1993. A Comprehensive Dairy Microbiology. Metropolitan, New Delhi, India.

Webb, Byron H Johnson, Arnold H Eds, 1972. Fundamentals of Dairy Chemistry.

R.K.Robinson, 1993. Modern Dairy Technology - Advances in milk processing, Ed.2 Vol 2

Bhattacharyya, D.K., Pal, P.K. and Ghosh, S. 2000. Isopropanol Fractionation of oil butter and characteristics of fractions. *JAOCS 77:* 1215–1218

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Teaching and Learning Methods

- Class Lecture
- Digital Presentation
- Lab Practical and demonstration
- Learning through exposure
- Record work

Course Outcome

After completion of the course

S.No	COURSE OUTCOME	Knowledge level (Bloom's Taxonomy)
CO1	The students will be with comprehensive knowledge on manufacturing of various types of fat rich dairy products	**K2**
CO2	Students are equipped with the specific skills on chemistry, microbiology, packing and storage of the fat rich dairy products.	**K2**
CO3	Students are able to integrate various aspects of dairy production to carry out research in value addition of fat rich dairy products.	**K4**
CO4	Students are able to train and assist the poor farmers or livestock owners in augmenting their income through manufacturing of various dairy products.	**K3**

CO5	The students are able to become an entrepreneur in the production and marketing of fat rich dairy products.	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with Pos and PSOs
(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2	2		2				3	3		2		17
CO2	2	3	2		2				2	3		2		16
CO3	3	2	3		3				3	2	3	3	2	22
CO4	2	3							3	2	3	2	3	18
CO5														
Grand Total of COs with POs & PSOs														73
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{73}{28}$														2.6

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.6**
Observation	**COs of DAIRY PRODUCTS AND PACKAGING- I are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc. DSRM	Part	: III Core Lab-7
Semester	: III	Hours	: 30
Sub.Code	: 22PDMP73	Credit	: 02

Dairy Products and Packaging - I

Course Educational Objectives:

The course is designed to impart practical knowledge to the students with:

1. Advanced practices in the assembling of parts and operation of various cream separators.
2. Handling of various equipment used in the fat-rich dairy products industry.
3. Current techniques to analyse the various physicochemical qualities of cream, butter and ghee.
4. Analysis of various microbes and foodborne pathogenic microbes level.
5. Application in searching of value addition technology in milk products

Practical Exercises

1) Parts and Functions of the cream separator
2) Separation of cream using cream separator
3) Sampling and analysis of cream for moisture/TS, fat and acidity
4) Sampling and analysis of butter for moisture, fat, salt curd and acidity
5) Sampling and analysis of ghee for fat, moisture, FFA
6) Demonstration of operation of the power-operated butter churn
7) Microbial analysis of cream, butter and ghee - MBR time

Teaching and Learning Methods

- Class Lecture and demonstration
- Digital animation and Presentation
- Hands-on practice in laboratory
- Learning through exposures
- Record work

Course Outcome

Students will be able to

S.No	COURSE OUTCOME	Knowledge level (Bloom's Taxonomy)
CO1	Technologically advanced knowledge on various type and parts of	**K2**

	cream separators.	
CO2	Fitted out with specific skills to operate various type and capacity cream separators, butter churner and ghee makers.	**K3**
CO3	Analyse the various physicochemical test of fat-rich dairy products.	**K4**
CO4	Detect the various types of microbes in fat-rich milk and milk products.	**K4**
CO5	Determine an industrialist in the production and marketing of the fat-rich dairy products industry.	**K5**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with Pos and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

Out come	Po 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PS 8	PSO 1	PSO 2	PSO 3	PSO 4	PO 5	Sum of CO's with PSO's & POs
CO1	2	3	1		1	1			3	2	1			14
CO2	3	2	1		1	1			2	3	1			14
CO3	2	1	3	3	3	3	2	2		2	3	3	2	29
CO4	2	1	3	3	3	3	2	2		2	3	3	2	29
CO5	2	1	2	2	2	2	3	3		2	2	2	3	26
Grand Total of COs with PSO and POs														112
Grand total of COs with PSOs and POs = Mean Value of COs with PSO and POs 112 / Number of COs relating with PSOs and POs 52 = 2.11														2.15

Strong – 3 Medium – 2 Low - 1

Mapping Scale	1	2	3
Relation	0.01 to 1.0	1.01 to 2.0	2.01 to 3.0
Quality	Low	Medium	Strong
Mean Value of COs with PSO and POs			2.11
Observation	COs of Dairy Products and Packaging – I is Strongly correlated with PSOs and POs		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II MSc.,	Part	: Core-11
Semester	: III	Hours	: 90
Subject Code: 22PDMD13		Credit	: 05

INFORMATION AND COMMUNICATION TECHNOLOGY FOR RURAL DEVELOPMENT
(Students admitted from the Academic Year 2015 – 2016 onwards)

Course Educational Objectives :

This course enables the learners to acquire intense knowledge on the various kinds of technology pertinent to rural development and to obtain the skills of communication to articulate.

1. Define the nature and process of communication and describe the various kinds of Communication
2. Describe and explain the importance of extension education and classify the different extension methods.
3. Explain the various forms of Mass Communication and cite the role of Mass Media in socio political change in rural India.
4. Classify the new age media and connect the contribution of new age media to development.
5. Develop and write reports/projects and make oral presentations.

UNIT – I: Communication, Classification and Models (20 Hours)

Definition-Nature and scope of communication, elements and process of communication, Kinds of communication, Intrapersonal and Inter-personal communication, Characteristics of verbal and non-verbal communication, small group and mass communication. Communication models, Aristotle model, Lasswell model, Shannon and Weaver models of communication

UNIT –II Extension Education (18 Hours)

Extension education- Its meaning Scope and Objectives, Philosophy and Principles of Extension, Extension Methods: Tools and Techniques (Individual Contacts, Group contacts, Mass Contacts) Audio Visual Aids used in Extension.

UNIT – III: Mass Communication (18 Hours)

Characteristics and functions of mass communication- Importance of mass communication- Forms of Mass media – (Print Media and Electronic Media), advertising and Public Relation. Role of mass media in socio-political and economic change in rural India. Role of traditional folk media in social change

UNIT – IV: Technology and Rural Development (16 Hours)

Use of Modern Technology and electronic gadgets- Internet in development, application and potential - New Age Media. E-learning and electronic media — village resource centre – open distance learning, Models of ICT in Rural development

UNIT –V : Communication Skills (18 Hours)

Oral communication - Presentations - Using audio, visual and Digital Aids-Public speaking as communication, Body Language, Listening. Written communication - Importance of professional writing - Features of good writing - Choice of words and phrases - Length of sentences and paragraphs – Report writing

References:

ADIVI REDDY, A., 1982, Extension Education, Sree Lakshmi Press, Guntur, A.P.

DAHAMA, O.P., 2002, Education and Communication for Development, Oxford and IBH Publishing Co Pvt. Ltd, New Delhi.

Prasad, B.K., 2004, NGO's and Development, Anmol Publication., New Delhi.

Teaching Learning Methods:

- Lecture Method, ICT, Assignment, Quiz, Group Discussion

Course Outcomes (CO):

On completion of this course the students will be able to

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Describe the various models of communication	K2
CO2	Explain the concept of extension education with illustrations	K2
CO3	Summarize the various forms of mass communication	K2
CO4	Develop ICT models towards rural development	K3
CO5	Apply the skills in presentation and writing,	K3

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze, K5 = Evaluate, K6 = Create

Mapping of the course outcome with Pos and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3			2		3			3	2		2	2	17
CO2	3			2		3			3	2		2	2	17
CO3	3			2		3			3	2		3	2	18
CO4	3	3		2		3			3	2		3	2	21
CO5	3	3		2		3			3	2		2	2	20
Grand Total of COs with POs & PSOs														93
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{93}{37}$														2.51

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.51**
Observation	**COs of INFORMATION AND COMMUNICATION TECHNOLOGY FOR RURAL DEVELOPMENT are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

INTEGRATED RURAL DEVELOPMENT PRACTICAL – 3

Class : II M.Sc. (DSRM) Part : Core Elective-3
Semester : III Hours : 90 hours/Semester
Subject Code : 22PDME33 Credit : 4

Course Educational Objectives :

1. To impart Knowledge on research in the field of rural development
2. To make to identify the specific problems and issues in the field of rural development
3. To practice in applying Problem formulation techniques on specific target groups
4. To train in analysing and acquiring Skills in research – sampling, designing and tools preparation
5. To practice in evaluating the reports, literature and research documents

Sl.No	Practicals	Agency
1	Educational Media	E.M.R.C. M.K.University
2	Content Development	ACPR, AAC
3	Communication Studies	Development Communication, Dept. of Journalism and Mass Communication, MKU
4	Women Empowerment	Wed Trust
5	Human Rights Issues and	People's Watch
6	Media and Development	Sathangai Communication Centre
7	Street Theatre, Folk Arts	ARD
8	Radio Communication	All India Radio, Madurai
9	Village Knowledge Centre	Kannivadi, MSSRF
10	ICT Dissemination	Vidiyal,Theni.

Course outcomes

SL.NO	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO 1	Informed Knowledge about research the field of rural development	**K1**
CO 2	Understanding the specific problems and issues in	**K2**

	the field	
CO 3	Applying Problem formulation techniques on specific target groups	**K3**
CO 4	Analysing and acquiring Skills in research – sampling, designing and tools preparation	**K4**
CO 5	Evaluating the reports, literature and research documents	**K5**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 Evaluation

Mapping of Course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3		3				3		3	2	3	2		19
CO2		3	2	2	3					3	2		3	18
CO3			3	2			2	3	3	2	3		2	20
CO4		2	3	3		2			3		2	3		18
CO5				2	3		3		3	2	2		3	18
Grand Total of COs with POs & PSOs														93
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs}$ = 93/36														2.58

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.58**
Observation	**COs of IRD Practical - 3 are strongly correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc. DSRM	Part	: III Core- 12
Semester	: IV	Hours	: 60
Sub. Code	: 22PDMD24	Credit	: 03

DAIRY PRODUCTS AND PACKAGING – II

Course Educational Objectives:

1. To impart knowledge and practical skill to the students on advanced techniques in manufacturing of cheese, ice cream, condensed milks and skim milk powder
2. To impart knowledge and practical skill to the students on manual and local techniques in production of traditional milk products.
3. To impart practical skill on analyzing the nutrient composition, packaging and storage of milk products
4. To impart practical knowledge on licensing and marketing of dairy products.
5. To make the students to search for value addition with a health note in the production of milk products.

Unit- I Cheese **10 Hrs**

Cheese – definition, classification, composition, food and nutritive value, manufacture of cheddar cheese, cottage cheese, yield – processed cheese products – advantages of processed cheese products – packing, storage, Defects in cheese its causes and prevention, uses of cheese

UNITT- II Frozen Dairy Products **10 Hrs**

Definition, classification and composition of ice cream. Nutritive value of ice cream. Role of milk constituents in manufacture of ice cream. Stablizers, emulsifiers, sweetners, colouring and flavouring agents, fruits and nuts – their properties. Method of manufacture of ice cream and its Physico – Chemical properties. Processing and freezing of ice cream mix and control of over – run. Packaging, hardening and storage.

UNIT -III Condensed Milks **15 Hrs**

Introduction – Definition – Composition and standards – food and nutritive value of condensed and evaporated milk – physic chemical properties – method of manufacture of condensed and evaporated milk – Heat stability of milk - packaging and storage – defects its causses and prevention – uses

UNIT- IV Milk Powder **10 Hrs**

Dried milk – Definition, legal Standards, Composition. Role of milk constituents. Method of manufacture of WMP, SMP by drum drying and spray drying. Packaging and Storage.

UNIT - V Traditional Dairy Products and Marketing of dairy products **15 Hrs**

a) Composition, method of manufacture – Khoa, Paneer, Channa and Gulabjamun, Peda.
b) Procedure of HACCP and its importance. Licensing – certification - Marketing channels for milk and milk products. Effluent / waste management system in a dairy industry.

References

Clarence Eckles, Milk and Milk Products, Tata McGraw Hill Publishers, New Delhi.
Lincoln M.Lampert., Modern Dairy Products, Eurasia Publishing House (Pvt) Ltd., New Delhi, 1987.
Sukumar De., Outlines of Dairy Technology, Oxford University Press, New Delhi, 2004.

Teaching and Learning Methods

- Class Lecture
- Digital Presentation
- Lab Practical and demonstration
- Learning through exposure
- Record work

Course Outcome

S.No	COURSE OUTCOME	Knowledge level (Bloom's Taxonomy)
CO1	The students are with detailed practical knowledge on manufacturing of low fat dairy products.	**K2**
CO2	The students are able to do the manufacturing process of low fat dairy products on their own.	**K3**
CO3	The students are able to train others on the manufacturing process of low fat dairy products.	**K3**
CO4	The students are equipped with entrepreneurial skills to market their products.	**K3**
CO5	The students will be with a thirst of searching new techniques to produce new low fat dairy products to the satisfaction of the customers.	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with POs and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	2	2		2				3	3		2		17
CO2	2	3	2		3				2	3		2		17
CO3	3	2	3		3	2			3	2	3	3	2	26
CO4	2	3				3			3	2	3	3	3	21
CO5						2								2
Grand Total of COs with POs & PSOs														83
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{83}{33}$														2.51

S – Strong; M – Medium; L – Low

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.51**
Observation	**COs of DAIRY PRODUCTS AND PACKAGING – II are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc. DSRM	Part	: III Core Lab -8
Semester	: IV	Hours	: 30
Sub. Code	: 22PDMP84	Credit	: 02

DAIRY PRODUCTS AND PACKAGING PRACTICAL– II

Course Educational Objectives:

1. To impart practical skill to the students in the advanced techniques in manufacturing of cheese, ice cream, condensed milks and skim milk powder
2. To impart practical skill to the students on manual and local techniques in production of traditional milk products.
3. To impart practical skill on analyzing the nutrient composition, packaging and storage of milk products
4. To impart practical knowledge on waste recycling and disposal in a dairy company.
5. To initiate the students to search for healthy value addition in the production of milk products.

EX.NO.	NAME OF THE EXERCISE
1	Sampling and analysis of cheese for moisture/Total Solids, fat and acidity
2	Sampling and analysis of condensed milk for moisture/Total Solids, fat and acidity
3	Study of over run in Ice cream making
4	Microbial analysis of cheese and condensed milk
5	Sampling and analysis of milk powder for moisture/Total Solids, fat and protein . – Demonstration
6	Sampling and analysis of channa and paneer for moisture/Total Solids, fat and acidity
7	Study about effluent management system in a dairy industry.

Teaching Learning Methods

1. PPT presentations - seminar.
2. Laboratory practical
3. Video presentations
4. Record Work

C.O.NO.	COURSE OUTCOME	Knowledge level upto
1	Able to sample and store various milk products for analysis	**K3**

2	Able to prepare various milk products in industrial methods	**K3**
3	Able to plan and produce various traditional milk products scientifically.	**K3**
4	Initiated to search for new techniques with health note in the production of milk products	**K4**
5	Enabled to establish own dairy enterprise with the government schemes available.	**K3**

Mapping of course outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3				2				3	2	2	2	3	17
CO2	3		3	2	2				3	2	2	2	3	22
CO3	2		3	2	2				3	2	2	2	3	21
CO4	2		3	2					3	2		3	3	18
CO5	2		3	2					3	2			3	15
Grand Total of COs with POs & PSOs														93
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{93}{37}$														2.51

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.51**
Observation	**COs of LIVESTOCK PRODUCTION TECHNIQUES are strongly correlated with POs & PSOs**		

ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc.DSRM	Part	: Core-13
Semester	: IV	Hours	: 60
Sub.Code	: 22PDMC34	Credit	: 3

ENERGY AND ENVIRONMENT

Course Educational Objectives :

1. To impart knowledge and understand energy scenario, energy sources and their utilization
2. To make the students aware of latest trends in energy applications and environmental problems.
3. To have complete awareness about environment and eco system.
4. To comprehend the essential concepts of air, water and noise pollution.
5. To involve the students in the promotion of environmental protection for sustainable development.

Unit – I **(12 hours)**

ENERGY AND ENVIRONMENT – Energy – Definition, units of measurements, Laws of Thermodynamics. **Energy resources:** Conventional and non-renewable energy sources – coal, oil and natural gas; non-conventional and renewable energy sources – solar energy, wind energy, bioenergy, tidal energy.

Unit – II **(12 hours)**

Energy crisis – Energy consumption pattern.**Waste recycling –** Wealth form waste; biomass – definition, sources – terrestrial – residues and wastes, sewage, sludge, animal waste, crop residues forest products and residues, energy plantations. **Energy storage –**Principles and ways of eliminating waste of energy.

Unit – III **(12 hours)**

Environment: Meaning, ecosystem – structural properties – components, functional properties – trophic relationships, ecological pyramids, energy flow, limiting factors, and biogeochemical cycles and hydrological cycle.

Unit – IV **(12 hours)**

Environmental problems and resource management: Pollution – air, Water, noise – their effects, and control, depletion of resources – bioresources, soil, water and minerals.

Unit – V **(12 hours)**

Environmental Protection: Environmental laws, environmental education, role of Government, Educational Institutions, NGOs, movements and peoples' participation.

Books for Reference:

Agrawal, M.P., (1985), Solar Energy, S.Chand& Company Ltd., New Delhi.

Ananthakrishnan, T.N. (1990), Bioresources Ecology. Oxford IBH & Co, New Delhi.

Desai, A.V., (1990). Non – Conventional Energy, New Age International (P) Ltd., Publishers, New Delhi.

Kothandaraman, H. and GeethaSwaminathan, 1997, Principles of Environmental Chemistry B.I.Publications Pvt. Ltd., Chennai.

Kormondy, E.J., (1985), Modern Concepts of Ecology, PHI Pvt.Ltd., New Delhi.

Kothari, D.P.Singal, K.C. and RakeshRanjan, (2008). Renewable Energy Sources and Energy Technologies, Prentice Hall of India Private Ltd., New Delhi.

KoteswaraRao, M.V.R., (2004), Energy Resources.

Kumar, (1985), Basic concepts of Ecology, Vikas Publications, New Delhi.

Kudesia, V.P.(1990) Pollution, PragatiPrakashan, Meerut.

Odum, E.P. (1972), Fundamentals of Ecology, Oxford University Press, New Delhi.

Readings in integrated rural development, (1987), Society of Social Economists, Oxford & IBH, New Delhi.

Reddy, B.S. and P.Balachandra, (2006), Energy Environmental Development A Technologies Perspective,Narosa Publishing House, New Delhi.

Teaching and Learning methods

- Class Lecture
- Digital Presentation
- Lab Practical and demonstration
- Learning through exposure
- Record work

COURSE OUTCOME

On completion of the course, the student should be able to:

S. No	COURSE OUTCOME	KNOWLEDGE LEVEL (Bloom's Taxonomy)
CO1	Acquire the basics and advanced concepts of energy and environment resources.	**K2**
CO2	Make awareness about the air, water, land and noise pollutants, sources, effects and its control and also the importance of environment laws	**K3**
CO3	Summarize the environment ecosystem and familiarize its importance among the rural masses	**K4**
CO4	Skilled both theoretically and practically to address the issue of energy crisis with emerging technologies of energy generation.	**K3**

CO5	Search for solutions for the problems related to energy and environment.	**K4**

K1 = Knowledge, K2 = Understanding, K3= Application, K4= Analysis and K5 = Synthesis

Mapping of the course outcome with POs and PSOs
(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3	3		2				3	3			2	3	19
CO2		3					2				3		2	10
CO3		2		3					3					8
CO4					2			3			2			7
CO5		2				3					3			8
Grand Total of COs with POs & PSOs														52
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ with\ POs\ \&\ PSOs} = \frac{52}{20}$														2.6

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.6**
Observation	**COs of ENERGY AND ENVIRONMENT are moderately correlated with POs & PSOs**		

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR- 625514
DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc DSRM	Part	: Core Lab-9
Semester	: IV	Hours	: 30
Sub.Code	: 22PDMP94	Credit	: 2

ENERGY AND ENVIRONMENT PRACTICAL

Course Educational Objectives:

1. To provide hands on training to students estimation of fuel properties. To acquaint with different equipments in energy research
2. The subject offers the readers a fundamental understanding of the water quality parameters of dissolved oxygen content and carbon dioxide.
3. To develop the skill for conducting Treatability studies of carbonate and bicarbonate alkalinity various water sample.
4. To introduce the students how the common environmental experiments relating to biochemical oxygen demand and hardness in various water sample.
5. To train the students to carry out the solar and bio energy.

Ex No	PRACTICALS
	Field Study / Field Visits
1	Domestic Energy Consumption Pattern
2	Energy Input in Agriculture
	Lab Practicals
3	Estimation of Dissolved Oxygen Content in various water samples
4	Estimation of Carbon dioxide in various water samples
5	Estimation of Carbonate and Bicarbonate alkalinity in different water samples
6	Estimation of Hardness in different water samples.
7	Determination of Biochemical Oxygen Demand
8	Determination of Energy using Oxygen Bomb Calorimeter
	Lab Cum Field Study
9	Energy Applications – Solar and Bio energy

ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR - 625514
DEPRTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II MSc., DS&RM	Part	: III Core - 14
Semester	: IV	Hours	: 180
Subject Code	: 22PDMD44	Credits	: 05

PROJECT WORK

Course Educational Objectives:

1. To gain analytical knowledge on manufacture of various dairy products and rural management practices.
2. To familiarize the students on the various modern technologies in dairy product manufacture and rural management.
3. To analyse the manufacture of various dairy products and the various set up in the rural management structures practically.
4. To initiate to search for value addition technology in the manufacture of various milk products and recent trends in rural management.
5. To equip the students with skills of doing project work and report writing.

General Guidelines

Project work course is one of the important components of the Post Graduate programme in MSc. Dairy Science and Rural Management. It is a separate course in the Second year IV Semester. The project work dissertation submission is the partial requirement for the completion of the PG programme. 5 credits are allotted for this programme. The general guidelines for this programme are as follows:

01. The project work course aims at initiation of research thirst in the minds of the students in the field of Dairy Science and Rural Management.
02. To make the students as research oriented personnel based on the theoretical and practical knowledge they acquired in the class room/lab/field.
03. The students (project worker) may choose any research title related to the subjects taught in the PG programme i.e. agriculture/ animal husbandry/rural management.
04. The project worker is also given freedom to fix their project work supervisors (Guides) according to the project title they have chosen.
05. This project work course is given 12 hours per week in the IV semester of the PG programme.
06. The project worker is expected to utilize maximum all the facilities available in the laboratory and field in the department/college to do their project work.
07. Llimitations like health, finance etc., will not be considered while doing the project work course.

08. All the expenses (lab and field) incurred during their project work course must be borne by the students completely.
09. A department senior staff will be given in-charge of this work. He will plan a schedule and proceedings of this course till the end.
10. The project worker has to follow strictly the project work time schedule given by the staff in-charge of the project work course.
11. A separate Teaching staff board is designated as an evaluating board having the Head Of the Department as the chair person may be assigned to evaluate the performance of the project worker at different stages of his project work course.
12. The project worker has to maintain a project work diary to note the discussions they had with their supervisors every week and the same has to be submitted to the staff in-charge of project work course of the department to get their attendance.
13. Change of project titles and supervisors will not be permitted after the first board viva. However if the project work supervisor suggests a change it may be considered with the consultation of the HOD and the project work in-charge of the Department.
14. The project worker must submit two (2) copies of his dissertation to the Department one week before the date allotted for submission.
15. The project worker/project work supervisors must follow the format (for both experimental and social science) given by the Department for submitting the Final project work dessertation.
16. Any difficulty faced by the project worker during the project work course must be brought to the notice of the Staff in-charge and the HOD in order to take immediate necessary action.

Evaluation Procedure

1. The Project work course will be evaluated for 100 Marks.
2. For 50 Marks the students are evaluated by the department concurrently at different stages of the students' project work including the evaluation after the submission of the project work report finally.
3. The submitted Project work report will also be evaluated by the external examiner for another 50 marks.

Course Outcomes

On completion of this course the students will be

Course Outcome No.	Course Outcome	Knowledge Level Upto
CO1	Gained analytical knowledge on manufacture of various dairy products and rural management practices.	**K3**
CO2	Able to analyse the manufacture of various dairy products and the various set up in the rural management structures practically.	**K4**
CO3	Familiarized with the various modern technologies in dairy product manufacture and rural management.	**K2**
CO4	Initiated to search for value addition in the manufacture of various milk products and recent trends in the rural management.	**K5**

CO5	Equipped the students with skills of doing project work and report writing.	**K6**

K1 = Remember, K2 = Understand, K3 = Apply, K4 = Analyze K5 = Evaluate K6 Create

Mapping of the course outcome with Pos and PSOs

(Programme Outcome- Pos, Programme Specific Outcome- PSOs)

Out come	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of CO's with PSO's & POs
CO1	2	3	2		1	2			3	2	2	2	2	21
CO2	3	2	2		1	2			2	2	3	2	2	21
CO3	3	2	2		2	2			2	3	2	2	2	22
CO4	2	1	3	2	3	2	1	2	2	2	3	2	1	26
CO5	2	1	2	3	2	2	3	3		2	2	2	3	27
Grand Total of COs with PSO and POs														117
Grand total of COs with PSOs and POs Mean Value of COs with PSO and POs 117 = ---------- = ------- = 2.08 Number of COs relating with PSOs and POs 56														2.08

Strong – 3 Medium – 2 Low - 1

Mapping Scale	1	2	3
Relation	0.01 to 1.0	1.01 to 2.0	2.01 to 3.0
Quality	Low	Medium	Strong
Mean Value of COs with PSO and POs			2.13
Observation	COs of Project work Course is Strongly related with PSOs and POs		

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DEPARTMENT OF RURAL DEVELOPMENT SCIENCE

Class	: II M.Sc., DSRM	Part	: Core- Elective
Semester	: IV	Credit	: 4
Sub. Code	: 22PDME44	Hours	: 60

Dairy Business Management

Educational Course Objectives

1. To make the students to understand the basic economic concepts of Dairy farm.
2. To impart knowledge on dairy management practices.
3. To prepare young minds and enthusiastic students to start Dairy related enterprises.
4. To gain organizational skills involved in functioning the Dairy cooperative societies.
5 To inculcate and motivate the students to apply the marketing strategies and financial management.

Unit- I Introduction **10 Hours**

Definition, Concepts, Characteristics of Dairying, Scope, Importance and Principles of Dairying, Economic Viability for different sizes of Dairy Enterprises, Various Economic Principles to support the Dairy Industries.

Unit –II Milk Procurement **10 Hours**

Planning for Milk Collection, Mode Milk procurement, Measures to enhance Milk Procurement during Lean season, Strategies to improve Milk Procurement, transportation routes, system of milk Pricing, Pricing of milk and Milk products.

Unit –III Dairy Development Programmes **10 Hours**

Dairy Development Programmes. White Revolution- Aims and Achievements-Impact on Individual Dairy Farmers, National Technology Mission for Dairy Development.

Unit- IV Dairy Cooperatives **15 Hours**

History of Cooperative Movement in India, Cooperative Movement in Dairy Industry. Milk Cooperatives, Functioning of Private Milk owners and their cost benefit analysis, Roles and functions of District Milk Union. Role of State Milk Cooperative Federations, Records and Registers in a Milk Society, Coordination with other Institutions concerned with Dairy Development. Role of insurance and its importance.

Unit –V Marketing and Dairy Accounts **15 Hours**

Definition, concept, Nature, importance and Principles of Marketing. E-Marketing, Determinants, Purchase and sales of Milch Animals, Marketing Strategies for Milk and Milk Products, Role of Advertisement for Market Promotion, Analysis of Consumer Demand and

Acceptance, General Principles of Account Keeping, Single and Double Entry System, Maintenance of Financial Records, Preparation of Balance Sheet Auditing.

Books for Reference

Article II. Jagdish Prasad, 2016 Principles & Practices of Dairy Farm Management.

Bath Donald & Others, 1985 Dairy Cattle Principles, Practice, Problems and Profit Philadelphia Publication.

R.S.Gupta, 1995 Book Keeping & Accounts –. Sulthan Chand Publication.

Nataraj, B.S. 2007. Marketing of Milk and Milk Products: Opportunities for Entrepreneurship. In: Souvenir, National Workshop on Entrepreneurship Development in Dairy and Food Industry, NDRI, Karnal,

Pandey, I.M. 2004. Financial Management.9th ed. Vikas Publ. House. New Delhi.

Dairy India Year Book. 2007. P.R. Gupta Publ., New Delhi.

E-Resources

http://www. business@mapsofindia.com

http://www.technopark.com.

http://www.nddb.org

http://www.dahd.nic.in/dahd/reports/compendium-of-schemes.aspx

http://www.123helpme.com/producer-company-concept-view.asp?id=166965

http://ecoursesonline.iasri.res.in/mod/page/view.php?id=4864

Teaching Learning Methods

- PPT Presentations.
- Lab Practical
- Hands on Training
- Video Presentations
- Record Work

C.O.NO.	Course Outcome	Knowledge level upto
1	Learn the economic importance of dairy enterprises	
2	Able to undertake routine operation in the Dairy farm.	**K2**
3	Explore the avenues and programmes that facilitate the dairy enterprises.	**K3**
4	Guided to establish dairy farm and encourage to register their own Dairy farm with the prevailing Government Schemes	**K4**
5	Acquired practices to market the Dairy products and maintain the accounts.	**K3**

Mapping of Course Outcomes with POs and PSOs

(Programme Outcome- POs, Programme Specific Outcome- PSOs)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	Sum of COs with POs & PSOs
CO1	3				2				3	2	2	2	3	17
CO2	3		3	2	2				3	2	2	2	3	22
CO3	2		3	2	2				3	2	2	2	3	21
CO4	2		3	2			3		3	2		3	3	21
CO5	2		3	2			3	2	3	2			3	20
Grand Total of COs with POs & PSOs														101
Mean Value of COs with POs & PSOs = $\frac{Grand\ Total\ of\ Cos\ with\ POs\ \&\ PSOs}{Number\ of\ Cos\ relating\ \ with\ POs\ \&\ PSOs} = \frac{101}{40}$														2.52

S – Strong; M – Medium; L – Low

Mapping Scale	**1**	**2**	**3**
Relation	0.01-1.0	1.01-2.0	2.1-3
Quality	Low	Medium	Strong
Mean Value of COs with POs & PSOs			**2.52**
Observation	**COs of DAIRY BUSINESS MANAGEMENT are strongly correlated with POs & PSOs**		

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PG – DAIRY SCIENCE AND RURAL MANAGEMENT

QUESTION PATTERN

SECTION A

Multiple Choice Questions **(10x1 =10 Marks)**

SECTION B

Short Answer Questions **(5x6 = 30 Marks)**
(Either or type questions**)**

SECTION C

Long Answer Questions **(5x12=60 Marks)**
(Either or type questions)