Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
CHHATRAPATI SAMBHAJINAGAR.

CIRCULAR NO.SU/ Sci. & Tech./Sub-Campus/NEP/03/2024

It is hereby inform to all concerned that, the syllabi prepared by the Departmental Committee and recommended by the Dean, Faculty of Science & Technology, **Academic Council at its meeting held on 08 April 2024 has accepted** the following curriculum of All Post Graduate Degree Courses as per National Education Policy – 2020 under the Faculty of Science & Technology **run at Dr.Babasaheb Ambedkar Marathwada University, Sub-Campus, Dharashiv** as appended herewith.

Sr.No.	Syllabi of Deptt of BAMU, Sub Campus, Dharashiv .	Semester
1.	M.Sc. Chemistry specialization Analytical Chemistry, Organic Chemistry, Drug Chemistry.	IIIrd & IVth Semester
2.	M.Sc.Microbiology	IIIrd & IVth Semester
3.	M.Sc.Mathematics	IIIrd & IVth Semester
4.	M.Sc.Physics	IIIrd & IVth Semester
5.	M.Sc.Water & Land Management	IIIrd & IVth Semester

This is effective from the Academic Year 2024-25 and onwards.

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Chhatrapati Sambhajinagar.-
431 004.
REF.NO.SU/NEP/2024/901-09
Date:- 18.06.2024.

Deputy Registrar,
Academic Section

Copy forwarded with compliments to :-

1] **Head of the Department, All Departments**, Dr.Babasaheb Ambedkar Marathwada University, Sub-Campus, Dharashiv.
2] The Director, University Network & Information Centre, UNIC, with a request to upload this Circular on University Website.

Copy to :-

1] **The Director, Board of Examinations & Evaluation,** Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
2] The Section Officer,[M.Sc.Unit] Examination Branch, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
3] The Programmer [Computer Unit-1] Examinations, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
4] The Programmer [Computer Unit-2] Examinations, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
5] The In-charge,[E-Suvidha Kendra], Examinations, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
6] The Public Relation Officer, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.
7] The Record Keeper, Dr.Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, CHHATRAPATI SAMBHAJINAGAR

Syllabus of

M.Sc. Water and Land Management

IIIrd and IVth Semester

As per National Education Policy-2020

For Sub Campus, Dharashiv

From the Academic Year 2024-25 & Onwards.

Head
Department of Water & Land Management
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University Sub-Campus, Dharashiv.

Dean, Faculty of Science & Tech

AS PER NEP 2020

Illustrative Credit distribution structure for Two Years/One Year Programme with Multiple Entry and Exit options –

(Discipline Specific Core in Water and Land Management)

Class: M.Sc. Second Year Semester:IIIrd Semester Subject: Water and Land Management

Course type	Course Code	Course Name	Teaching Scheme (Hrs./ week)		Credits Assigned		Total Credits
			Theory	Practical	Theory	Practical	
Major Mandatory DSC	WLM/MJ/ 600T	Integrated Watershed Management	3	-	3	-	3+1+3+1+3 +1+2=14
	WLM/MJ/ 600P	Lab on Integrated Watershed Management	-	2	-	1	
	WLM/MJ/ 601T	Management of Irrigated Plants	3	-	3	-	
	WLM/MJ/ 601P	Lab on Management of Irrigated Plants	-	2	-	1	
	WLM/MJ/ 602T	Drinking Water Management	3	-	3	-	
	WLM/MJ/ 602P	Lab on Drinking Water Management	-	2	-	1	
	WLM/MJ/ 603T	Management Skills and Perspectives	2	-	2	-	
DSE (Choose any one from pool of courses)	WLM/DE/ 604TA	Energy, Ecology and Environment	3	-	3	-	3+1= 04
	WLM/DE/ 604PA	Lab on Energy, Ecology and Environment	-	2	-	1	
	WLM/DE/ 604TB	Financial Management	4	-	4	-	
	WLM/DE/ 604TC	Environmental Aspects of Water Resources Management	3	-	3	-	
	WLM/DE/ 604PC	Lab on Environmental Aspects of Water Resources Management	-	2	-	1	
RM	WLM/RP-1/605P	Research Project Stage-I	-	8	-	4	04
			14	16	14	08	22 credits

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Class: M.Sc. Second Year (Water and Land Management)

Third Semester: *DSC-Based on specialisation

1. DSC-1: Integrated Watershed Management

   DSC-2: Lab on Integrated Watershed Management

   DSC-3: Management of Irrigated Plants

   DSC-4: Lab on Management of Irrigated Plants

   DSC-5: Drinking Water Management

   DSC-6: Lab on Drinking Water Management

   DSC-7: Management Skills and Perspectives

2. DSE—1.2 &3 (T/P): (Choose any one from Pool /Basket)

   1. : Energy, Ecology and Environment

   2. : Financial Management

   3. : Environmental Aspects of Water Resources Management

3. RM-1: Research Project Stage-I

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Class: M.Sc. Second Year **Semester: IV Semester** **Subject: Water and Land Management**

Course type		Course Name	Teaching Scheme (Hrs./ week)		Credits Assigned		Total Credits
Course Type	Course Code	Course Name	Theory	Practical	Theory	Practical	
Major Mandatory DSC	WLM/MJ/ 650T	Groundwater Management	3	-	3	-	3+1+3+1+3 +1+2=14
	WLM/MJ/ 650P	Lab on Groundwater Management	-	2	-	1	
	WLM/MJ/ 651T	Crop Production Technology [Kharif and Rabi Crops]	3	-	3	-	
	WLM/MJ/ 651P	Lab on Crop Production Technology [Kharif and Rabi Crops]	-	2	-	1	
	WLM/MJ/ 652T	Optimization Techniques	3	-	3	-	
	WLM/MJ/ 652P	Lab on Optimization Techniques	-	2	-	1	
DSE (Choose any one from pool of courses)	WLM/DE/ 653TA	Agricultural Business Management	3	-	3	-	3+1= 04
	WLM/DE/ 653PA	Lab on Agricultural Business Management	-	2	-	1	
	WLM/DE/ 653TB	Agricultural Entrepreneurship	4	-	4	-	
	WLM/DE/ 653TC	Legal Aspects of Water Resources Management	4	-	4	-	
RM	WLM/RP-2/655P	Research Project Stage-II (Dissertation)	-	12	-	06	04
			14	16	14	08	22 credits

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Class: M.Sc. Second Year **Semester: Fourth Semester** **Subject: Water and Land Management**

Fourth Semester: *DSC-Based on specialisation

1. DSC-8: Groundwater Management

   DSC-9: Lab on Groundwater Management

   DSC-10 : Crop Production Technology [Kharif and Rabi Crops]

   DSC-11: Lab on Crop Production Technology [Kharif and Rabi Crops]

   DSC-12: Optimization Techniques

   DSC-13: Lab on Optimization Techniques

   DSC: 14: Skills in Water Measurement

2. DSE- 3&4 (T/P): (Choose any one from Pool /Basket)
   1. Agricultural Business Management
   2. Agricultural Entrepreneurship
   3. Legal Aspects of Water Resources Management
3. RM: Research Project Stage-II (Dissertation)

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Course title	Integrated Watershed Management			
Course Code	WLM/MJ/600T	Credit:3	3hr/week	Semester-III

1. Concepts of Watershed development, Morphological Characteristic of watershed, types of watershed
2. Types of soil erosion and their preventive measures, Soil and water conservation methods [Water harvesting methods in reference to Rural Development], Computation of runoff volume and peak rate of runoff.
3. Land capability classes, Plan; site preparation, suitability for various purposes such as plantation, forest. Irrigated agriculture, industry and grassland.
4. Agro forestry, Social Forestry and other agro–based development activities (animal husbandry, dairy, poultry, Biogas, Biological Composting, etc.)
5. Preparation of plan for watershed development considering rainfall, soil and morphology of watershed, Water Budgeting in watershed,
6. Sustainability: Maintenance of watershed development works, peoples' participation, role of Government and Non-Government Organizations.
7. Drought management
8. Community Infrastructure in Watershed.
9. Project Proposal Preparation

Course title	Practical Based on Integrated Watershed Management			
Course Code	WLM/MJ/600P	Credit:1	2hr/week	Semester-III

List of Practicals:

Sr. No.	Practical
1	Exercise on watershed delineation
2-3	Determination of morphological characteristics of watershed
4-5	Computation of runoff volume
6-7	Computation of peak rate of runoff
8-9	Determination of soil loss with Universal Soil Loss Equation
10	Design of Farm Pond
11-12	Study of Water Budget in a watershed
13-14	Visit to a watershed and NGO

Readings:

1. Watershed development, J. Narayanmurti.
2. National Watershed Development Project for Rain fed (NWDPRA)
3. Guidelines; Ministry of Agriculture, GOI, New Delhi-1991
4. Soil & water conservation by Dr. Dhruvanarayan
5. Handbook by AFARM

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Course title	Management of Irrigated Plants			
Course Code	WLM/MJ/601T	Credit:3	3hr/week	Semester-III

1. Crops and their classification, Agro-Technology: Tillage practices, Seed and sowing, manures and fertilizers and plant protection.
2. Irrigation water management of important agronomic crops, management of irrigated horticultural crops, optimization of crop production.
3. Cropping pattern, Farming system, Sustainable crop production and Organic farming,
4. Farm Machinery, Land development and land forming for irrigation.
5. Gravity Irrigation methods: Water application methods (border, basin and furrow method etc.) and their efficiencies.
6. Greenhouse Technology: Introduction, Types, Merits & Demerits, Management of Greenhouse, Installation & Operation.

Readings:

1. Irrigated crops, WALMI, Aurangabad, Pub. No.44.
2. Agro Technology for irrigated agriculture, WALMI, Aurangabad, Pub. No.47.
3. A text book at soil science,by Dai-J-A, J.R. Kadam, N.D. Patil, Media promoters & publishers, Mumbai, 1999.
4. Advances in soil physics by Dakshinmurthy C, DCAR publication, New Delhi.
5. Soil science by Gbildalyal B.P. & R.P. Tripathi, Willey Eastern ltd. New Delhi.
6. Cropping systems in the tropics – Principles & Management, Palaniappar S.P. Wiley Eastern ltd. New Delhi.
7. Principles of Agronomy by T.Y. Reddy & G.H. Reddy, Kalyani Publishers, New Delhi.

Sessional works: Visit to minimum five irrigated farms to study the above syllabus.

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Course title	Practical Based on Management of Irrigated Plants			
Course Code	WLM/MJ/601P	Credit:1	2hr/week	Semester-III

List of Practicals:

Sr. No.	Title of Practical
1	Classes of Seeds
2	Classification of Methods of Fertilizer Application
3	Types of Tillage Operations
4	Study of Integrated Nutrient Management
5	Study of Integrated Pest Management
6	Preparation of Organic Pesticides
7	Preparation of Organic Fertilizers and Vermi compost
8	Study of Cropping Systems and Farming Systems
9	Study of primary tillage implements
10	Study of secondary tillage implements

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Course title	Drinking Water Management			
Course Code	WLM/MJ/602T	Credit:3	3hr/week	Semester-III

1. Need to protect water supplies, Water Supply Schemes, Project Drawings, Importance of water supply project, Purpose of water use: domestic, cultural, industrial, for animals, sanitation, forest needs. Per capita consumption.
2. Demand and supply, Factors affecting rate of demand, Estimating population, Methods of population forecasts, Surface and underground sources of water supply schemes, management of drinking water.
3. Water & health: Quality of Water: Meaning of pure water, Impurities in water, Analysis of water, Maintenance of purity of water, water-borne diseases, Suitability of water for trade purposes.
4. Methods of purification & maintenance: Sedimentation tanks, Purpose and location, theory of sedimentation, types of sedimentation tanks, Purpose of coagulation. Principles of coagulation, Flocculation, Usual coagulants, feeding the coagulants. Filtration of water, theory of filtration, filter sand, classification of filters, double filtration. Necessity of disinfection, minor methods of disinfection, Chlorination, properties of chlorine
5. Rainwater Harvesting,: Concept and methods, Roof -Top rainwater Harvesting, Recycling & reusing of waste water – Municipal, Industrial.

Course title	Practical Based on Drinking Water Management			
Course Code	WLM/MJ/602P	Credit:1	2hr/week	Semester-III

List of Practicals:

Sr. No.	Title of Practical
1	Study of project drawings prepared in water supply projects
2	Study of methods of population forecasts
3	Study the surface and groundwater resources for water supply scheme
4	Study of how to conduct the sanitary survey of the area
5	Study of impurities in water samples

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6	Physical analysis of water samples
7	Chemical analysis of water samples
8	Bacteriological analysis of water samples
9	Study of test for chlorine
10	Study the roof top rainwater harvesting system for a building

Reading:

1. Water Supply Engineering - by Birdie

   - by Rangwala

2. Environmental Engineering & Management- by Dhameja

3. Irrigation & Water Power Engineering – by B.C. Punmia, Pande

4. Chapter.13: Water Harvesting of Soil & Water Conservation Engg. by R. Suresh

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Course title	Management Skills and Perspectives			
Course Code	WLM/MJ/603T	Credit:2	2hr/week	Semester-III

Management Skills

1. Managing people & Organizations: Managerial perspective on Organizational behaviour Manager's Job, Managerial Roles, Managerial functions, The human context of Management.

2. Communication technology & interpersonal processes: Definition of communication , Communication technology,

3. Leadership: Nature & Significance of Leadership, Leadership traits & Skills, Behavioural styles in Leadership, The Roles & activities of Leadership, Leadership Skills,

4. Group Dynamics and teams: The group dynamics & teams, The nature of Groups, Dynamics of informal groups, Dynamics of formal groups, Teams in modern workplace, The nature of teams, the effectiveness of teams, Flow to make team more effective.

5. Interactive conflict & negotiation Skills: Intra individual conflict, Interpersonal conflict, Inter group Behavioural conflict, Organizational conflict, Negotiation Skills,

Managerial Perspective

1. Concepts, Nature, Process and significance of Management. Types of Management, Organization & their functioning: - Govt. Semi – Govt. Corporation, NGO, Private, Co – Operative, organization etc
2. Planning organizing coordination, supervision, motivation, leadership & control :Discussion of these concepts with stress on farm – management.
3. Role of Former – as a Manager and entrepreneur.
4. Present decision – making process of farmer and all possible applications of modern management techniques to improve this process [such as optimization techniques , data base analysis , etc]

Reading:

1. Organizational Behaviour by Fred Luthans, McGRAW-HILL, International 7th Edition
2. Organizational Behaviour by Gregory Moorhead and Ricky W. Griffin [Jaico Publishing House]
3. Humal Relations & Organizational behaviour- A Global perspective by R.S. Dvivedi [Macmillan India Limited 4th Edition]
4. Successful Communication for business- by Angolawadia
5. Effective business communication – Asha Kaul [H.R.D.]
6. Principles of Management : by Dunker Pagare
7. Principles of Management : by Terry
8. Ozarche Pani [Marathi] by kaka upadhye
9. Productivity of Land & Water Ed. Jayant Patil , M.A. Chitade , & S. B. Varade , New Age International Publishers.
10. राजहंस पकाशन : योध्दा शेतकरी - ले. विजय परूळकर

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Course title	Energy, Ecology and Environment			
Course Code	WLM/DE/604(T+P)A	Credit:3+1	(3+2)hr/week	Semester-III

To provide detailed knowledge of carbon cycle, ecosystem, climate change and globalenvironmental change and inter linkages of renewable energy sources.

Unit I

Global carbon cycle. Carbon reservoirs flow and human interventions. Global warming and climate change. Energy efficient technology: Efficiency hierarchy, energy dependent activities, energy policies, linkage between energy use and economic growth and environment. Layers of Atmosphere.

Unit II

Ecosystem: Kinds, components of ecosystem, ecosystem development of evaluation, major ecosystem of the world, physical environment and meteorology.Environment, Environmental degradation, water pollution, Soil pollution, acid rain,

Unit III

Climate change: Impact and models. Energy for sustainable development: Development indices, pillars, subsystems, principles and dimensions. Low carbon technologies: Energy efficiency projects, carbon trading. Renewable and non-renewable energy sources. Global environmental changes: United Nations Framework Convention on Climate Change (UNFCC), Kyoto protocol and clean development mechanism.

Learning outcome

Students will be able to understand the relationship between carbon cycle, energy policies, energy use and economic growth and factors affecting the environment.

Suggested Reading

- Canter LC. 1979. *Environmental Impact Assessment.* McGraw Hill Pub. Co., New York.
- Coley D. 2008. *Energy and Climate Change*. John Wiley & Sons, Ltd., New Jersey.
- Dessler A. 2011. *Introduction to Modern Climate Change*. Cambridge University Press,Cambridge, England.
- Essam E and Hinnami EI. 1991. *Environmental Impact of Production and Use of Energy*. TycoolyPress Ltd, Dublin.
- Fowler JM. 1984. *Energy and the Environment, Second Edition*. McGraw-Hill, New York.

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- Kaushika ND and Kaushik K. 2004. *Energy, Ecology and Environment: A TechnologicalApproach.* Capital Publishing, New Delhi.
- Mathur AN, Rathore NS and Vijay VK. 1995. *Environmental Awareness,* Himanshu Pub.,Udaipur.
- Puppy HG. *Energy and Environment, Mankind and Energy Needs.* Elsevier Pub. Co., New York.
- Rathore NS and Kurchania AK. 2001. *Climatic Changes and their Remedial Measures.* ShubhiPublications, Gurgaon.
- Thomdike EH. 1978. *Energy and Environment: A Premier for Scientists and Engineers.* Adson,Wesley Pub. Co., Boston, US.
- Wilson R and Jones WJ. 1974. *Energy, Ecology and the Environment.* Academic Press Inc.,Cambridge, Massachusetts, US.
- C. Manoharo chary, P. Jayarams Reddy. Principles of Environmental studies (Ecology, Economicsmanagement and law) , B S Publications Hyderabad.

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Course title	Financial Management			
Course Code	WLM/DE/604TB	Credit:4	4hr/week	Semester-III

1. Agricultural financing: concept, nature and significance. Institutional structure of agricultural finance in India, Multi –Agency approach to agricultural finance.
2. Role of Central and State governments in Agricultural finance: Promotion and Regulation; Budgetary support: Agriculture & Irrigation.
3. International Financing agencies: IMF, World Bank, UNESCO.
4. Modalities of financing: Individual, Group & Co-operative project financing, Loan Proposal preparation and Procedure of credit disbursement.
5. Basic Principles of accounting in agriculture, Management of Income flow & Expenditure.
6. Productivity of water, productivity of land under different patterns of use.

Readings: -

1. Indian Economy: R. Datt & K.P.M. Sundaram.
2. Rural Banking: S.M. Desai.
3. Monetary Economics (Institutions, Theory & Policy) by Suraj B. Gupta.
4. Financial Management: Dr. Varma M.M. & R.K. Agrawal.
5. International Financial Management By V.K. Bhalla.
6. NABARD and Rural Transformation: N. Lalitha & R. Dayanandan.
7. Directory of credit Facilities-AFARM.

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Course title	Environmental Aspects of Water Resources Management			
Course Code	WLM/DE/604(T+P)C	Credit:3+1	(3+2)hr/week	Semester-III

1. Adverse effects of irrigated agriculture and industrial development related to water, Eutrophication of lakes.
2. Environmental impact assessment: Water logging, Salinity, Alkalinity;
3. Mitigating measures: Drainage & Other Remedies.
4. Impact of non – irrigation water use on irrigation, cost of water for non – irrigation purposes,
5. Laws related to Environmental protection, Health of soil, and Reuse of water

Readings:

1. Environmental Impact Assessment – by Canter

   Pub: Academic Press- Network.

2. Environmental Engineering & Management- by Dhameja

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Course title	Research Project Stage-I			
Course Code	WLM/RP-1/605P	Credit:4	8hr/week	Semester-III

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Course title	Groundwater Management			
Course Code	WLM/MJ/650(T+P)	Credit:3+1	(3+2)hr/week	Semester-IV

GROUNDWATER MANAGEMENT

1. Geology of Maharashtra, Ground Water Regions in India.
2. Hydrogeology, Aquifers, groundwater, survey techniques, Ground Water, Survey Techniques, Transmissibility of water, water holding capacity of aquifers, dynamic components.
3. Conjunctive use of surface and groundwater, abstraction of groundwater, artificial recharge to groundwater, filtration techniques.
4. Groundwater balance study, Economics of groundwater use.
5. Open dug wells, design of open wells, Hydraulics of well, Well yield estimation.
6. Tube wells& Types, Tube well drilling & their equipments, types of drilling, usages

Sessional Work:

1. Visit to recharge system
2. Yield estimation

Readings:

1. Ground water hydrology by Todd D. K. John Wiley.
2. Ground water & Tube wells by Garg S. P. (Oxford & IBH.)
3. Ground water Assessment,Development & Management by Karanth K. R.
4. Ground water Assessment, Development & Management by PBS Sharma
5. Irrigation Theory & Practices by Michael A. M.

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Course title	Crop Production Technology [Kharif and Rabi Crops]			
Course Code	WLM/MJ/651(T+P)	Credit:3+1	(3+2)hr/week	Semester-IV

1. Kharif Crops: Origin, geographical distribution, economic importance, Soil and climatic requirements, varieties, cultural practices and yield.

1. Cereals - Rice, Maize
2. Oil seeds - Groundnut, Soybean
3. Fibre crops - Cotton, Jute
4. Pulses - Pigeonpea, Mungbean

2. Rabi Crops: Origin, geographical distribution, economic importance, Soil and climatic requirements, varieties, cultural practices and yield.

1. Cereals - Wheat, Rabi Jowar
2. Oil seeds - Sunflower, Safflower
3. Pulses - Gram

Gram, Sunflower, Safflower, Wheat, Rabi Jowar

3.Integrated Nutrient Management and Integrated Pest Management, Agricultural land and drainage

Readings:

1. Irrigated crops, WALMI, Aurangabad, Pub. No.44.
2. Agro Technology for irrigated agriculture, WALMI, Aurangabad, Pub. No.47.
3. A text book at soil science,by Dai-J-A, J.R. Kadam, N.D. Patil, Media promoters & publishers, Mumbai, 1999.
4. Advances in soil physics by Dakshinmurthy C, DCAR publication, New Delhi.
5. Soil science by Gbildalyal B.P. & R.P. Tripathi, Willey Eastern ltd. New Delhi.
6. Cropping systems in the tropics – Principles & Management, Palaniappar S.P. Wiley Eastern ltd. New Delhi.
7. Principles of Agronomy by T.Y. Reddy & G.H. Reddy, Kalyani Publishers, New Delhi.

Sessional works: Visit to minimum five irrigated farms to study the above syllabus.

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Course title	Optimization Techniques			
Course Code	WLM/MJ/652(T+P)	Credit:3+1	(3+2)hr/week	Semester-IV

1. Nature and significations of Optimization Techniques
2. Linear programming, concepts & assumptions
   i) Graphical method of solving Linear Programming
   ii) Simplex method: Application of L.P. [Use of software packages]
3. Transportation Techniques. [NWCR], [MMM], [VAM], Basic feasible solution, Optimal solution
4. CPM & PERT: Critical path Method & Project Evaluation Review Technique. Concepts, objectives models and application
5. Inventory Models: Inventory Decisions & types of inventories

i) EOQ models (Economic Order Quantity Model)

ii) Inventory models with shortages

6. Sensitivity analysis

Readings:

1. Quantitative Techniques in Management by Vohra, Tata Mcgraw Hill
2. Operations Research by Goal, S.K Mittal
3. Operations Research by Chawla, Gupta, Sharma
4. Operations Research for Management by Shinony, Srivastava & Sharma
5. Operations Research & Statistical Analysis by P.K. Gupta & Manmohan
6. Production, Operation Management by B.S. Goal.
7. Economics, Theory & Operation, Analysis by Baumol
8. Introduction of Operations Research by Churchman Ackoff, Arnooff
9. Operations Research by Goal & Mittal

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Course title	Agricultural Business Management			
Course Code	WLM/DE/653TA	Credit:3	3hr/week	Semester-IV

Theory

Transformation of agriculture into agribusiness, various stakeholders and components of agribusiness systems.Importance of agribusiness in the Indian economy and New Agricultural Policy. Distinctive features of Agribusiness Management: Importance and needs of agro-based industries, Classification of industries and types of agro based industries. Institutional arrangement, procedures to set up agro based industries. Constraints in establishing agro-based industries. Agri-value chain: Understanding primary and support activities and their linkages. Business environment: PEST & SWOT analysis. Management functions: Roles & activities, Organization culture. Planning, meaning, definition, types of plans. Purpose or mission, goals or objectives, Strategies, polices procedures, rules, programsand budget. Components of a business plan, Steps in planning and implementation. Organization staffing, directing and motivation.Ordering, leading, supervision, communications, control. Capital Management and Financial management of Agribusiness. Financial statements and their importance.Marketing Management: Segmentation, targeting & positioning. Marketing mix and marketing strategies. Consumer behavior analysis, Product Life Cycle (PLC).Sales & Distribution Management.Pricing policy, various pricing methods.Project Management definition, project cycle, identification, formulation, appraisal, implementation, monitoring and evaluation.Project Appraisal and evaluation techniques.

Course title	Practical Based on Agricultural Business Management			
Course Code	WLM/DE/653PA	Credit:1	2hr/week	Semester-IV

Practical

Study of agri-input markets: Seed, fertilizers, pesticides. Study of output markets: grains, fruits, vegetables, flowers. Study of product markets, retails trade commodity trading, and value added products. Study of financing institutions- Cooperative, Commercial banks, RRBs, Agribusiness Finance Limited, NABARD.Preparations of projects and Feasibility reports for agribusiness entrepreneur.Appraisal/evaluation techniques of identifying viable project- Non-discounting techniques.Case study of agro-based industries. Trend and growth rate of prices of agricultural commodities. Net present worth technique for selection of viable project, Internal rate of return.

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Exercise	Title of Exercise
1.	Study of Input Market : Seed Fertilizer, Pesticides
2.	Study of Output market : Grain, Fruits, Vegetable, Flower
3.	Study of Financing Institutions, Co-operatives, Commercial Banks and Visit to Financial Institution
4.	Study of Regional Rural Bank
5.	Study of NABARD
6.	Study of Financial Criteria for appraisal of the Project, Appraisal of Irrigation Project
7.	Case study of Agro based Industries
8.	Study on E-Commerce of Agricultural Commodities
9.	Visit to Export Market of Fruits/Vegetables/Flowers/Grains
10.	Visit to Processed Industries/Malls/Producer's Companies

Suggested Readings:

1) Agribusiness Management by Dr. Shivaji Nagpure & Dr. R.G. Deshmukh, M/s.AGROMET Publishers, Nagpur.

2) Indian Agriculture & Agri-Business Management by Dr. Smita Diwase, M/s. ScientificPublishers, Jodhpur, Rajasthan.

3) Agricultural Finance & Management by S. Subha Reddy, & P. Raghu Ram, M/s. OxfordIBH Publishing Co. Pvt. Ltd., New Delhi.

4) Agri Business Management by Dr. J.S. Amarnath & Dr. A.P.V. Samvel, M/s. SatishSerial Publishing House, Delhi-110033.

5) The Agribusiness Book by Mukesh Pandey, Deepali Tewari, M/s. ibdc Publishers,Lukhnow (U.P.), Pin-226 001.

6) Economics analysis of Agricultural Projects by J. Price Gittinger, M/s. The EconomicsDevelopment Institute/World Bank, Washington D.C.-20433, U.S.A.

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Course title	Agricultural Entrepreneurship			
Course Code	WLM/DE/653TB	Credit:4	4hr/week	Semester-IV

1. Entrepreneurship: Definition, Concepts, and Types.

2. Trade concerns in Indian Agricultural due to worlds Trade Organization [WTO] and General Agreement on Tariffs and Trade [GATT]

3. Local, National and International Marketing, Role of Agricultural Produce Market Comities [APMC] and APEDA in marketing Agricultural Export opportunities and Standards and grades for including export and Standards, and grades for all type of marketing including exports.

4. Entrepreneurship: - Setting of Business Unit, Management of resources, financial aspects, legal aspects.

5. Maharashtra Agro – Industries Development Corporation [MAIDC] and Maharashtra Industrial Development Corporation [MIDC]: Schemes and Subsides, project report and procedural aspects for setting up small scale Agro based industries.

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Course title	LEGAL ASPECTS OF WATER RESOURCES MANAGEMENT			
Course Code	WLM/DE/653(T+P)C	Credit:4	4 hr/week	Semester-IV

1. Review of traditional Water Laws & Rules in View of Code of Conduct.
2. Provisions in the constitution, water rights, water laws of Maharashatra and other States.
3. National and State water Policies, Legal aspects of inter-basin transfer of water.
4. Participation of Farmer's & other water users in water management, water users Associations.
5. Laws related to Environmental protection, Health of soil, and Reuse of water

Readings:

1. Water laws by Jain
2. The Maharashatra Irrigation Act, 1976.
3. Maharashatra Management of irrigation systems by Farmers Act, 2005 (MMISF Act. 2005)
4. Model irrigation Act, GOI.
5. MWRRA 2005 Maharashatra water resources regulatory Authority Act
6. Water Policy: State & India- 1987 & 2002

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Course title	Research Project Stage-II (Dissertation)			
Course Code	WLM/RP-2/654P	Credit:6	12hr/week	Semester-IV

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