DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO. ACAD/SU/Engg./B.Tech./Syllabi/96/2014

It is hereby informed to all concerned that, the syllabus prepared by the Boards of Studies, Ad-hoc Board, Committees and recommended by the Faculty of Engineering and Technology, the Academic Council at its meeting held on 08-07-2014 has accepted the following **"Revised Syllabi in all Branches of B.TECH."** as appended herewith :-

Sr. No.	Revised Syllabi
[1]	B.Tech. Civil Engineering,
[2]	B.Tech. Mechanical Engineering,
[3]	B.Tech. Electronics & Telecommunication Engineering,
[4]	B.Tech. Computer Science & Engineering,
[5]	B.Tech. Agricultural Engineering,
[6]	B.Tech. Plastics & Polymer Engineering,
[7]	B.Tech. Instrumentation & Control Engineering,
[8]	B.Tech. Production Engineering.

This is effective from the Academic Year 2014-2015 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,
Aurangabad-431 004.
REF.NO. ACAD/ SU/ B.TECH./
SYLLABI / 2014/
A.C.S.A. I.No.446[02].

Date:- 13-08-2014.

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Director,
Board of College and
University Development.

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Copy forwarded with compliments to :-

1] The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.

2] The Director, University Network & Information Centre, UNIC, with **a request to upload the above all syllabi on University Website.**

Copy to :-

1] The Controller of Examinations,

2] The Superintendent, [Engineering Unit],

3] The Programmer [Computer Unit-1] Examinations,

4] The Programmer [Computer Unit-2] Examinations,

5] The Superintendent, [Eligibility Unit] ,

6] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,

7] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Revised Syllabus of

B.TECH.

AGRICULTURAL ENGINEERING

[Effective from 2014-15 & onwards]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
Faculty of Engineering & Technology
Syllabus Structure wef. 2014-15
Final Year B. Tech. Agricultural Engineering

Sub Code	SEMESTER-VII	Contact Hrs / Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	TA	P	Total	Credits	Duration of Theory Exam
AED401	Soil Conservation Structures Design	3	1	-	4	20	80	-	-	100	4	3 Hrs
AED402	Wells & Pumps	3	1	-	4	20	80	-	-	100	4	3 Hrs
AED403	Micro Irrigation System Design	4		-	4	20	80	-	-	100	4	3 Hrs
AED404	Food Processing Plant Design	4		-	4	20	80	-	-	100	4	3 Hrs
AED441 To AED444	Elective II	4		-	4	20	80	-	-	100	4	3 Hrs
AED421	Lab-I -Soil Conservation Structure Design	-	-	2	2	-	-	50	50	100	1	NA
AED422	Lab-II -Wells & Pumps	-	-	2	2	-	-	50	-	50	1	NA
AED423	Lab-III-Micro-irrigation system Design	-	-	2	2	-	-	50	50	100	1	NA
AED424	Lab-IV - Food Processing Plant Design	-	-	2	2	-	-	50	-	50	1	NA
AED425	Project-II	-	-	6	6	-	-	100	100	200	3	NA
	Total of Semester-VII	**18**	**02**	**14**	**34**	**100**	**400**	**300**	**200**	**1000**	**27**	

Sub Code	SEMESTER-VIII	Contact Hrs / Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	TA	P	Total	Credits	Duration of Theory Exam
AED471	In-Plant Training (IPT)* Seminar	-	-	-		-	-	300	300	600	27	NA
	Total of Semester-VIII	-	-	-	-	-	-	**300**	**300**	**600**	**27**	-
	Grand Total of VII & VIII	-	-	-	-	**100**	**400**	**600**	**500**	**1600**	**54**	-

L: Lecture hours per week T: Tutorial hours per week P: Practical hours per week CT: Class Test
TH: University Theory Examination TW: Term Work P: Practical/Oral Examination NA: Not Applicable

Elective-II:
AED441-Watershed Planning & Management
AED442-Agricultural Economics & Farm Management
AED443-General Agricultural Engineering
AED444-Open Elective

***After every two weeks of In-Plant Training (IPT) student shall appraise the progress of training to the internal guide and get the required inputs.**

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus **Final Year B. Tech. Agricultural Engineering**

Code No.: AED401	**Semester-VII**
Teaching Scheme:	**Title: Soil Conservation Structure Design**
Theory: 03Hrs/week	**Class Test (Marks) : 20**
Tutorial: 01Hr/week	**Theory Examination (Duration): 03 Hrs**
Credits:04	**Theory Examination (Marks): 80**

Objectives	:	As an Agroneer, the student has to deal with various soil and water conservation structures in management of a hydrological watershed. The course is aimed for 1. Awareness of problems of soil erosion and various achievements in this regard. 2. Soil and water conservation programmes. 3. Design of some permanent soil and water conservation structures. 4. Design of Earthen embankments and farm ponds. 5. Sedimentation analysis of reservoirs.
Unit-I	:	Soil erosion problems and achievements in India, Soil and water conservation programmes and achievements, National land resources regions. (Descriptive) (08 Hrs.)
Unit-II	:	Water Resources Development- Earthen Embankments, design of small Earthen Embankments, Farm ponds, types, Components, site selection, Design of pond embankment. Seepage losses in ponds, Dug out ponds, Design and site selection for dugout ponds. Nala Bunding- location and execution. (Descriptive & Analytical) (12 Hrs.)
Unit-III	:	Earthen Dam- Types, Design criteria, Design of earthen dam, Causes of Failure, Retaining wall- Types, Design of masonry retaining wall. (Descriptive & Analytical) (10 Hrs.)
Unit-IV	:	Land Use Capability Classification- Soil survey, mapping unit, soil and land use capability classifications, Identification of classes in the field, land use capability classification. (Descriptive & Analytical) (05 Hrs.)
Unit-V	:	Erosion control structure Design-Hydrologic, hydraulic and structural design, design and estimation of Drop spillway, Drop inlet Spillway and Chute spillway with site selection and adaptabilities. (Descriptive & Analytical) (15 Hrs.)
Unit-VI	:	Reservoir Sedimentation- Sources of Sedimentation, factors affecting yield of sedimentation, types of load, sediment transportation, bed load estimation, sediment distribution in reservoir, factors affecting distribution pattern, estimation of sediment distribution, Rates of sedimentation, Reservoir sediment control. (Descriptive & Analytical) (10 Hrs.)
Reference Books:	:	1. Gurmel Singh, C. Venkataramanan, G. Sastry & B. P. Joshi. Manual of Soil & Water Conservation Practices by Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. 2. R. Suresh, Soil & Water Conservation Engineering. Standard Publisher Distributors, New Delhi. 3. G. O. Schwab, R. K. Frevert, T. W. Edminster and K. K. Barnes. Soil & Water Conservation Engineering 4. V. V. N. Murthy. Land & Water Management Engineering Kalyani Pub. New Delhi.

Section A: Includes Unit I, II, II and IV; Section B: Includes Unit V, VI and VII.

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus Final Year B. Tech. Agricultural Engineering

Semester-VII
Code No.: AED402
Title: Wells and Pumps
Teaching Scheme:
Class Test (Marks) : 20
Theory: 03Hrs/week
Theory Examination (Duration): 03 Hrs
Tutorial: 01Hr/week
Theory Examination (Marks): 80
Credits:04

Objectives	:	The day-by-day depleting status of the ground water due to continuous exploitation has brought need of exploration of the ground water. The same can achieve by fulfillment of following objectives under this subject. 1. To study the groundwater hydraulics 2. To study the wells, bore wells and well development. 3. To study of design characteristics of various pumping systems with its working.
Unit-I	:	Introduction- Types of water bearing formations, Artificial ground water recharge, Ground water exploration techniques, aquifer characteristics, (Descriptive & Analytical) (04Hrs.)
Unit-II	:	Well Hydraulics: Basic terminologies, Theories for steady & unsteady state of flow to wells in confined & unconfined aquifers, Pumping tests of wells, (Descriptive & Analytical) (06 Hrs.).
Unit-III	:	Irrigation wells: Design of open wells & tube wells, Well screens, gravel packs, Equipments and procedures for construction of open wells and tube wells, methods of drilling of wells, percussion, rotary, reverse rotary, design of assembly and gravel pack, installation of well screen, completion and development of well, Common well troubles. (Descriptive & Analytical) (20 Hrs.)
Unit-IV	:	Pumping Systems: Water lifting devices, different types of pumping machinery, classification of pumps, Positive & variable displacement pumps, Pump characteristics, component parts of centrifugal pumps; principle of operation, priming, Classification, pump selection, installation, maintenance & trouble shooting, design of centrifugal pumps (Descriptive & Analytical) (10 Hrs.)
Unit-V	:	Vertical turbine pump, characteristics, installation, operation, maintenance & trouble shooting, construction and operation of submersible pumps, propeller pumps, mixed flow pumps and their performance characteristics. (Descriptive & Analytical) (10 Hrs.)
Unit-VI	:	Pump selection- criteria & procedures, power requirements, efficiencies, economics of irrigation pumping plants, performance curves, effect of speed on head capacity, power capacity and efficiency curves, effect of change of impeller dimensions on performance characteristics; hydraulic ram, (Descriptive & Analytical) (10 Hrs.)
Reference Books:	:	1. A. M. Michael, Irrigation Theory and Practices by Vikas publishing house, New Delhi. 2. A. M. Michael & S. D. Khepar. Water, Well and Pump Engineering by Tata Mc Graw-Hill pub. Co. Ltd, New Delhi. 3. Raghunath H.M. Ground (1990). Water Hydrology by New-Age International, 2nd Edition. 4. Preparation of Lift Irrigation Scheme, Mannual of minor irrigation project, Pub. Govt. of Maharashtra (1987-88). 5. Todd D. K. & L. W. Mays, Ground Water Hydrology by New Wiley publication, New York

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
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Syllabus Final Year B. Tech. Agricultural Engineering

Code No.: AED403	**Semester-VII**
Teaching Scheme:	**Title: Micro Irrigation System Design**
Theory: 04Hrs/week	**Class Test (Marks) : 20**
Credits:04	**Theory Examination (Duration): 03 Hrs**
	Theory Examination (Marks): 80

Objectives	:	1. To stress the importance of micro-irrigation methods, design and operation of sprinkler & drip irrigation methods. 2. To emphasis the adoption of micro-irrigation in field & the economics aspects of management
Unit-I	:	Past, present and future need of micro-irrigation systems, Role of Govt. for the promotion of micro-irrigation in India, Merits and demerits of micro-irrigation system, (Descriptive & Analytical) (06 Hrs.)
Unit-II	:	Types and components of micro-irrigation system, Micro-irrigation system- design, design synthesis, Installation and maintenance. (Descriptive & Analytical) (12 Hrs.)
Unit-III	:	Sprinkler irrigation - types, planning factors, uniformity and efficiency, Layout Design-laying pipeline, hydraulic lateral, sub-mains and main line design, pump and power unit selection. (Descriptive & Analytical) (12 Hrs.)
Unit-IV	:	Drip irrigation – potential, automation, crops suitability. Fertigation – Fertilizer application criteria, suitability of fertilizer compounds, fertilizer mixing, injection duration, rate and frequency, capacity of fertilizer tank. (Descriptive & Analytical) (12 Hrs.)
Unit-V	:	Quality control in micro-irrigation components, design and maintenance of polyhouse, prospects, waste land development –hills, semi-arid, coastal areas, water scarce areas, Benefit and Cost analysis (Descriptive & Analytical) (10 Hrs.)
Unit-VI	:	Design of micro-irrigation system for orchard, row crop, hilly terraced land. (Descriptive & Analytical) (08 Hrs.)
Reference Books:	:	1. A. M. Michael, Irrigation Theory and Practices, by Vikas publishing house, New Delhi. 2. Keller, J. and R.D. Bliesner. 1990. Sprinkle and Trickle Irrigation. Van Nostrand Reinhold. New York. 652 pages. 3. Cuenca, R.H. 1989. Irrigation System Design - an Engineering Approach. Prentice Hall, Englewood Cliffs, NJ. 4. ASAE. 1988. Standards 2988, American Society of Agricultural Engineers, St. Joseph, Michigan. 32nd Edition. A more recent edition is available at the science reference desk. S671 A32 Sci. Ref. 5. Natural Resource Conservation Service. National Engineering Handbook. Section 15. Chapter 2 Irrigation Water Requirements; Chapter 7 Trickle Irrigation; Chapter 11 Sprinkle Irrigation. United States Department of Agriculture.

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
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Syllabus Final Year B. Tech. Agricultural Engineering

Semester-VII

Code No.: AED404
Title: Food Processing Plant Design
Teaching Scheme:
Class Test (Marks) : 20
Theory: 04Hrs/week
Theory Examination (Duration): 03 Hrs
Credits:04
Theory Examination (Marks): 80

Objectives	:	To impart knowledge on plant layout and design of food processing industries. This course is design by keep in view following objectives. 1. The student will acquire knowledge on theoretical aspect to be considered for site selection, layout and design considerations for a food processing plant. 2. The student will develop skill and acquaint in project preparations, estimations and cost estimates of different equipment and utilities of various food processing industries.
Unit-I	:	Introduction: Plant design concepts, site selection, plant design situations, differences in design of food processing and non-food processing plants and types of layout. (Descriptive & Analytical) (10 Hrs).
Unit-II	:	Salient feature of processing plant for cereal, pulses, oilseeds, horticultural and vegetables crops, poultry, fish, meat and meat product and milk and milk products (Descriptive & Analytical) (10 Hrs).
Unit-III	:	Symbols used for food plant design and layout: Storage vessels, conveyors and feeders, separators, mixing and commination and process control and instrumentation symbols. (Descriptive & Analytical) (10 Hrs)
Unit-IV	:	Material of construction of food equipment, Characteristics of suitable construction material: Stainless Steel, Aluminum, Nickel and Monel, Plastic Materials, Illumination and ventilation, Cleaning and Sanitization, Maintenance of Food Plant Building: Safety colour code, Roof Inspection, care of concrete floors (Descriptive & Analytical) (10 Hrs)
Unit-V	:	Comparative rating of product ideas: Present Market, Market Growth Potential, Costs, Risks Pre-selection/pre-feasibility stage, Analysis Stage: Market Analysis, Situational analysis related to market (Descriptive & Analytical) (10 Hrs).
Unit-VI	:	Technical Analysis, Financial Analysis, Sensitivity and risk analysis, Feasibility Cost estimates Break Even Analysis: Introduction, Break Even Chart, Fixed Costs, Variable Costs, Break Even point calculation (Descriptive & Analytical) (10 Hrs).
Reference Books:	:	1. Antonio Lopez-Gomez. Food Plant design 2. Unis C. Robberts Food Plant Engineering Systems by CRC Press, Washington 3. Zacharias B, Maroulis and George D. Saravacos. Food Plant Economics published by Traylor and Francis Group, LLC 4. Ronald M Scott, Basic Concept of Industrial Hygiene. CRC Press. 5. M. Cumo & Naviglia. Safety Design Criteria for Industrial Plants. CRC Press.

Section A: Includes Unit I, II and II!; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
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Syllabus Final Year B. Tech. Agricultural Engineering

	Semester-VII
Code No.: AED441	**Title: Elective –II (Watershed Planning & Management)**
Teaching Scheme:	**Class Test (Marks): 20**
Theory: 04Hrs/week	**Theory Examination (Duration): 03 Hrs**
Credits:04	**Theory Examination (Marks): 80**

Objectives	:	With awareness of soil and water conservation problems, an 'Agroneer' should aware with integrated management of watershed. Present course is intended for fulfillment of following objectives 1. To study various methods of water resource management 2. To understand Rehabilitation, Protection and improvement of water yields. 3. To study the formulation of project proposals for watershed management programmes
Unit-I	:	Watershed management - problems and prospects; watershed based land use planning, watershed characteristics – physical and geomorphologic, factors affecting watershed management. (Descriptive) (10 Hrs.)
Unit-II	:	Hydrologic data for watershed planning, watershed delineation, delineation of priority watershed, water yield assessment and measurement from a watershed. . (Descriptive & Analytical) (10 Hrs.)
Unit-III	:	Hydrologic and hydraulic design of earthen embankments and diversion structures; sediment yield estimation and measurement from a watershed and sediment yield models. (Descriptive & Analytical) (10 Hrs.)
Unit-IV	:	Rainwater conservation technologies - in-situ and storage, design of water harvesting tanks and ponds, water budgeting in a watershed; effect of cropping system, land management and cultural practices on watershed hydrology; evaluation and monitoring of watershed programmes. (Descriptive & Analytical) (10 Hrs.)
Unit-V	:	People's participation in watershed management programmes; planning and formulation of project proposal. (Descriptive & Analytical) (10 Hrs.)
Unit-VI	:	Cost benefits analysis of watershed programmes; watershed management technologies, optimal land use models, case studies. (Descriptive & Analytical) (10 Hrs.)
Reference Books:	:	1.G. Singh, C. Venkataramanan, G. Sastry & B. P. Joshi, Manual of Soil & Water conservation Practices by Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. 2.R. Suresh, Soil & Water Conservation Engineering by Standard Publisher Distributors, New Delhi. 3.V. V. Druvanarayan, G. Sastry & U. S. Patnaik, Watershed Management 4.N.W. Hudson, Soil Conservation 5.G. O. Schwab, R. K Frevert, T. W. Edminster and K. K. Barnes. Soil & Water Conservation Engineering 6.R. P. Singh. Field Manual on Watershed Management. 7.H. M. Raghunath. Hydrology- Principles, Analysis, Design and Analysis

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
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Syllabus **Final Year B. Tech. Agricultural Engineering**

Semester-VII

Code No.: AED442	**Title: Elective –II (Agricultural Economics & Farm Management)**
Teaching Scheme:	**Class Test (Marks) : 20**
Theory: 04Hrs/week	**Theory Examination (Duration): 03 Hrs**
Credits:04	**Theory Examination (Marks): 80**

Objectives	:	To prepare a student with the modified & scientific knowledge of farm economic analysis and agricultural business assets
Unit-I	:	Introduction: Basic terminologies, concepts of economics, scope of economics, microeconomics & macroeconomics, price, value. (Descriptive & Analytical) (12 Hrs.)
Unit-II	:	Law of demand and market supply, factors governing supply, law of supply, markets & price determination under different market situations. (Descriptive & Analytical) (08 Hrs.)
Unit-III	:	Meaning & scope & importance of farm management, farm planning and budgeting. (Descriptive & Analytical) (10 Hrs.)
Unit-IV	:	Depreciation and methods of calculating depreciation cost of cultivation and cost of production, economic size holding, economic feasibility of agricultural projects, BC ratio, IRR, payback period, NPR. (Descriptive & Analytical) (10 Hrs.)
Unit-V	:	Problems related to farm mechanization, management of land, labour, capital, farm machinery and irrigation system, measures of farm efficiencies, government policy in sector of agriculture & finance, sources of farm finance. (Descriptive & Analytical) (10 Hrs.)
Unit-VI	:	Basics of agricultural business management including planning, organizing, controlling, leading, forecasting. (Descriptive & Analytical) (10 Hrs.)
Reference Books:	:	1. S. S. Joshi and T. R. Kapur Fundamentals of Farm Business Management 2. S.P. Dhondyal. Farm Management 3. K. K. Dewett. Elementary Economics 4. M. L. Seth. Principles of Economics 5. Agrawal and Bansal. Agricultural Production in India 6. R. L. Joshi. Principles & Practices of Marketing in India

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

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Code No.: AED443	Semester-VII
Teaching Scheme:	Title: Elective –II (General Agricultural Engineering)
Theory: 04Hrs/week	Class Test (Marks): 20
Credits:04	Theory Examination (Duration): 03 Hrs
	Theory Examination (Marks): 80

Objectives	:	With the awareness of basic agricultural engineering, an Agroneer must be aware with the advances that becoming essential parts in enhancing agricultural production. current syllabus is designed with following aims 1. Awareness about farm structures 2. To study recent advances related with fertilizer 3. To study various agricultural enterprises
Unit-I	:	**Farm Buildings:** Planning of farmsteads & farm residence ,location size & arrangement of farmstead, design of improved farm house, septic tanks, fencing posts, estimating cost of buildings building materials foundation, roofing, concrete, lime, cement, sand, surkhi, gravel, mortar, bricks, timber. (Descriptive & Analytical) (10 Hrs.)
Unit-II	:	**Vermi-culture & vermicompost:** Introduction, Advantages, Vermi-culture & vermicompost, vermin-technology, turning garbage into money, chemical composition of vermicompost, manufacturing at home, classification of earthworms, physical & chemical effects of earthworms on soil, earthworms life cycle studies & pattern, earthworm breeding, fertilizer use & deterioration of soil environment, impact of vermicompost. (Descriptive & Analytical) (10 Hrs.)
Unit-III	:	**Sericulture:** Scope & Importance of sericulture, History of sericulture, economy of sericulture sector, verities of mulberry, soil type requirement, rearing house. (Descriptive & Analytical) (10 Hrs.)
Unit-IV	:	**Poultry:** Economics of poultry industry, site selection criteria of poultry, different breeds of poultry birds, different poultry houses, brooder houses, poultry equipment. (Descriptive & Analytical) (10 Hrs.)
Unit-V	:	**Energy in rural sector:** Introduction, energy sources, classification of energy, energy use in production agriculture, energy consumption in rural houses, energy scenario of Post harvest systems, electricity on farm, rural electrification, generated voltage, power transmission distribution, electric motors, A.C & D.C. motors, selection of electric motors. (Descriptive & Analytical) (10 Hrs.)
Unit-VI	:	**Remote Sensing:** Basic principles of remote sensing, energy sources & radiation principles, energy interaction in atmosphere & with earth surface features, active & passive remote sensing systems, applications of remote sensing for land & water resource management. (Descriptive & Analytical) (10 Hrs.)
Reference Books	:	1. Michael A.M & T. P. Ojha. Principles of Agricultural Engineering, Vol-I by, Jain Brothers publication, New Delhi. 2. The complete technology book on Vermiculture & Vermicompost published by National institute of industrial research Delhi-7 (India) 3. Handbook of Sericulture-by Central Institute of Sericulture Bangalore. 4. E. C. Barret and L. F. Curtis. Introduction to Environmental Remote Sensing by, John Willey and sons Inc, New York. 5. H. S. Chem. Space Remote Sensing System-An Introduction by, Academic press Inc, New York.

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the syllabus shall be divided in two equal parts i.e. 3 units respectively. Question paper shall be set having two sections A and B. Section A questions shall be set on first part and Section B questions on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
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Code No: AED421
Teaching Scheme: 2 Hrs/week
Credits: 1

Semester-VII
Title: Lab-I (Soil Conservation Structure Design)
Term Works (Marks) : 50
Practical Examination (Marks): 50

Course Objectives	:	1. To impart education of soil & water conservation structures for overall watershed management, 2. To inculcate the students for design of various conservation structures 3. To enhance knowledge of 'Agroneer' regarding design, construction and functioning of various structures.
List of Practical's (Minimum ten experiments to be performed)	:	1. Study of Soil and water conservation programmes and achievements in India 2. Design of farm pond 3. Design of earthen embankments (fill volume) 4. Design of earthen embankment (Storage capacity) 5. Design of Earthen dam 6. Design of retaining wall 7. Hydraulic design of a straight drop spillway 8. Hydraulic design of a drop inlet spillway 9. Hydraulic design of a chute spillway 10. Design of water harvesting structures 11. Study of Bed load estimation methods of reservoir 12. Cost estimation of structures 13. Visit to site of Soil and water conservation structures
List of reference Books	:	1. Manual of Soil & Water Conservation Practices by Gurmel Singh, C. Venkataramanan, G. Sastry & B. P. Joshi. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. 2. Soil & Water Conservation Engineering by R. Suresh, Standard Publisher Distridutors, New Delhi. 3. Soil & Water Conservation Engineering by G. O. Schwab, R. K. Frevert, T. W. Edminster and K. K. Barnes. 4. Land & Water Management Engineering by V. V. N. Murthy, Kalyani Pub. New Delhi.

Term Work assesment shall be done on the basis of

- Performing the experiments in the laboratory and
- Continuous assessment

Practical Examination, if applicable, shall be conducted on the syllabus and term work mentioned above.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus Final Year B. Tech. Agricultural Engineering

Semester-VII

Code No: AED422 **Title: Lab-II (Wells & Pumps)**

Teaching Scheme: 2 Hrs/week **Term Works (Marks) : 50**

Credits: 1

Course Objectives	:	1. To study various hydraulic properties of an aquifers 2. To study the drilling equipments and design aspect of wells & bore wells 3. To study different types of pumps, with specification design, operation & utilization.
List of Practicals (Minimum ten experiments to be performed)	:	1. Determination of Hydraulic properties of steady state flow to wells in unconfined aquifers 2. Determination of Hydraulic properties of steady state flow to wells in confined aquifers 3. Unsteady state flow to wells in unconfined aquifers 4. Unsteady state flow to wells in confined aquifers 5. Study of artificial recharge of ground water 6. Verification of Darcy's Law 7. Estimation of aquifer parameters by various methods 8. Study of determination of hydraulic properties of wells 9. Study of different drilling equipments 10. Estimation of specific yield and specific retention 11. Well design under confined and unconfined conditions 12. Study of radial flow and mixed flow centrifugal pumps 13. Installation and testing of centrifugal pump and study of cavitations. 14. Study of turbine and propeller pumps 15. Study of performance characteristics of hydraulic ram 16. Study and testing of submersible pump
List of reference Books	:	1. Irrigation theory and practices by A. M. Michael, Vikas publishing house, New Delhi. 2. Water, Well and Pump Engineering by A. M. Michael & S. D. Khepar, Tata Mc Graw-Hill pub. Co. Ltd, New Delhi. 3. Ground Water Hydrology by Raghunath H. M., New-Age International, 2nd Edition, 1990. 4. Preparation of Lift Irrigation Scheme, Mannual of minor irrigation project, Pub. Govt. of Maharashtra (1987-88). 5. Ground Water Hydrology by Todd D. K. & L. W. Mays, New Wiley publication, New York

Term Work assesment shall be done on the basis of

- Performing the experiments in the laboratory and
- Continuous assessment

Practical Examination, if applicable, shall be conducted on the syllabus and term work mentioned above.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
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Semester-VII

Code No: AED423
Title: Lab-III (Micro Irrigation System Design)
Teaching Scheme: 2 Hrs/week
Term Works (Marks) : 50
Credits: 1
Practical Examination (Marks) : 50

Course Objectives	:	1. Familiarization with various components of micro-irrigation systems with their functions 2. To study the design of micro-irrigation system for row, orchard, terraced crops 3. To study the repair & maintenance of components of trickle & sprinkler irrigation system of micro-irrigation
List of Practicals (Minimum ten experiments to be performed)	:	1. Study of different types of micro-irrigation systems and components 2. Field visit of micro-irrigation system 3. Study of water filtration unit; Discharge measurement study of different micro-irrigation systems. 4. Study of water distribution and uniformity coefficient. 5. Study of wetted front and moisture distribution under various sources of micro-irrigation system 6. Design of micro-irrigation system for an orchard. 7. Design of micro-irrigation system for row crops 8. Design of spray type micro-irrigation system. 9. Design of micro-irrigation system for hilly terraced land. 10. Study of automation in micro-irrigation system. 11. Study of micro-climate inside a Polyhouse. 12. Study of maintenance and cleaning of different components of various systems. 13. Design of sprinkler irrigation system; Design of landscape irrigation system.
List of reference Books	:	1. Irrigation theory and practices by A. M. Michael, Vikas publishing house, New Delhi. 2. Keller, J. and R.D. Bliesner. 1990. Sprinkle and Trickle Irrigation. Van Nostrand Reinhold. New York. 652 pages. 3. Cuenca, R.H. 1989. Irrigation system design - an engineering approach. Prentice Hall, Englewood Cliffs, NJ. 4. ASAE. 1988. Standards 2988, American Society of Agricultural Engineers, St. Joseph, Michigan. 32nd Edition. A more recent edition is available at the science reference desk. S671 A32 SciRef. 5. Natural Resource Conservation Service. National Engineering Handbook. Section 15. Chapter 2 Irrigation Water Requirements; Chapter 7 Trickle Irrigation; Chapter 11 Sprinkle Irrigation. United States Department of Agriculture

Term Work assesment shall be done on the basis of

- Performing the experiments in the laboratory and
- Continuous assessment

Practical Examination, if applicable, shall be conducted on the syllabus and term work mentioned above.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
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Syllabus **Final Year B. Tech. Agricultural Engineering**

Code No: AED424	**Semester-VII** **Title: Lab-IV (Food Processing Plant Design)**
Teaching Scheme: 2 Hrs/week **Credits: 1**	**Term Works (Marks) : 50**

Course Objectives	:	The present subject facilitate the student fulfillment of following objectives 1. To study report preparation for food plant layout and design. 2. To study the layouts & design of various food plants those are feasible and brought ease in operation.
List of Practicals (Minimum ten experiments to be performed)	:	1. Preparation of project report 2. Preparation of feasibility report 3. Layout of Food storage wares and godowns 4. Layout and design of cold storage 5. Layout of pre-processing house 6. Layout of Milk and Milk product plants 7. Design and layout of low shelf life product plant 8. Design and layout of fruits processing plants 9. Design and layout of vegetable processing plants 10. Layout of multi product and composite food plants 11. Evaluation of given layout 12. Waste treatment and management of food plant 13. Design and layout of modern rice mill 14. Design and layout of mango pulp canning industry 15. Design and layout of spices manufacturing unit 16. Design and layout of Bakery and related product plant
List of reference Books	:	1. Food Plant design by Antonio Lopez-Gomez 2. Food plant engineering systems by the unis C. Robberts, CRC Press, Washington 3. Food Plant economics by Zacharias B. Maroulis and George D. Saravacos published by Traylor and Francis Group, LLC 4. Basic Concept of industrial Hygiene, Ronald M Scott, CRC Press. 5. Safety Design criteria for industrial plants. M. Cumo & Naviglia CRC Press.

Term Work assesment shall be done on the basis of

- Performing the experiments in the laboratory and
- Continuous assessment

Practical Examination, if applicable, shall be conducted on the syllabus and term work mentioned above.

Code No.: AED425	**Semester-VII**
Teaching Scheme:	**Title: Project-II**
Practical: 06 Hrs./week	**Term Work (Marks): 100**
Credits:04	**Practical Examination (Marks): 100**

Course Objectives :

1. The practical implementation of theoretical knowledge gained during the study to till date is important for engineering education. The student should be able implement their ideas/real time industrial problem/ current application of their engineering branch which they have studied in curriculum.
2. To motivate students for creativity.
3. To create awareness regarding latest technology
4. To have common platform for interaction about emerging technology.
5. To inculcate qualities of team work.
6. To explore related information using books, research papers, journals & websites.
7. To improve presentation and communication skills.

Guidelines For Students And Faculty:

1. Students shall complete the Project-II in continuation of the work planned in third year under the course Project-I
2. Each student/group is required to-
   a. Submit a report with latest status of the project work.
   b. Give a 10 minutes presentation through OHP, PC, and Slide projector followed by a 10 minute discussion in the second week of their academic semester.
   c. Submit a report on the project topic with a list of required hardware, software or other equipment for executing the project in the third week of their academic semester.
   d. Start working on the project and submit initial development and CPM/PERT planning drawing in the fourth week of their academic semester.
   e. Preparation of PCB layout, wiring diagram, purchase of components, software demo, flowchart, algorithm, program/code, assembling, testing, etc. should be submitted by student/s within next five/Six weeks and minimum one page report should be there for each major activity.
   f. Overall assembling, wiring, code writing, testing, commissioning along with performance analysis, should be completed within next two weeks.
   g. In the last week, student/group will submit final project report to the guide.
3. Every assigned faculty/s should maintain recordof progress of each student or group.

The format and other guidelines for the purpose of the Project Submission in hard bound copies should be as follows,

REPORT STRUCTURE

Index/Contents/Intent
List of Figures
List of Tables
List of Symbols / Abbreviations
1. Introduction
2. Literature survey
3. System development
4. Performance analysis
5. Conclusions
References
Appendices

Acknowledgement

1. INTRODUCTION
   1.1 Introduction
   1.2 Necessity
   1.3 Objectives
   1.4 Theme
   1.5 Organization
2. LITERATURE SURVEY

Literature Survey

Related information available in standard Books, Journals, Transactions, Internet Websites *etc.* till date (More emphasis on last three to five years)

3. SYSTEM DEVELOPMENT

Model Development

- Mechanical / Fabricated
- Analytical
- Computational
- Experimental
- Mathematical
- Software

(out of above methods at least one method is to be used for the model development) Some mathematical treatment or related information is required to be embodied

4. PERFORMANCE ANALYSIS

- Analysis of system developed either by at least two methods depending upon depth of standard
- These methods normally used are Analytical /Computational/Statistical/Experimental/ or Mathematical
- Results at various stages may be compared with various inputs
- Output at various stages with same waveforms or signals or related information/parameters
- Comparison of above results by at least two methods and justification for the differences or error in with theory or earlier published results

5. CONCLUSIONS
   5.1 Conclusions
   5.2 Future Scope
   5.3 Applications

Contributions (if any,)

The innovative work/invention/new ideas generated from the analysis of the work which can be taken from the conclusions

REFERENCES

- Author, "Title", Name of Journal/Transactions/ Book, Edition/Volume, Publisher, Year of Publication, page to page (pp.__).

These references must be reflected in text at appropriate places in square bracket

In case of web pages complete web page address with assessing date has to be enlisted

List of references should be as per use in the text of the report

APPENDICES

Related data or specifications or referred charts, details computer code/program, *etc.*

		ACKNOWLEDGEMENTS Expression of gratitude and thankfulness for helping in completion of the said task with name& signed by the candidate
		• General Guidelines Text should be printed on front and correct side of the watermark on quality bond paper Paper size- A4. 75 to 85 gsm paper Left Margin-1.5" Right Margin-3/4" Top Margin-1" Bottom Margin-1" • Pagination First page of every chapter need not be printed but counted, second page onwards page number to printed at bottom center place. All Greek words must be italic Report Heading -ALL CAPITAL—16 Font Chapter heading -ALL CAPITAL—14 Font Subchapter –Title Case-12 Font Sub-Subchapter –First Alphabet Capital case-12 Font Page numbers for Index/Contents/Intent should be in roman All text should be in times new roman Cover page should have complete symbol of institute Suitable flap (bookmark) with name of the candidate, Department and Institute name and symbol can be used with nylon strip.
		For more information and sample of hard copy please contact the respective Head of the Department

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering & Technology)
Syllabus **Final Year B. Tech. Agricultural Engineering**

Code No.: AED471	**Semester-VIII**
Credits: 27	**Title: Inplant Training (IPT)**
	Examination Scheme
	Term work (Marks): 300
	Practical (Marks): 300

(a) Rationale:

The techniques and processes of production of goods and services do not demand only technical skills, but also a cluster or conglomerate of skills. A significant part of which is related to the total humanistic growth of the man. Such conglomerate skills technical and humanistic cannot obviously be acquired through pure academic learning of concepts in formalized and institutional courses and in isolation of the actual work situation. It, therefore, naturally follows that no technical education will be complete till it has two components, one learning of concepts vis-a vis acquiring conceptual skill and other application of the concepts in real work situation vis-a vis acquiring manipulative or practicing skills. Technical education needs to have a complement of learning of the techniques of applying the concepts within the industry and business.

(b) Objectives:

1) The students of B.Tech course shall get an opportunity to work on live problems of the industry.
2) He/She shall apply learning concepts in the real work situation.
3) He/She shall get an exposure to the industrial environment and thereby enable himself/herself to appreciate the other related aspects of industry viz. human, economic, commercial and regulatory.
4) He/She shall identify career paths taking into account their individual strengths and aptitude.
5) He/She shall contribute for the achievement of economic goals and aspirations of the industry and our country as a whole.

(c) The curriculum for B.Tech students of Final Year Course of Part-II shall consist of;

- Inplant training for a period of one full term, and the period of the term shall be as prescribed by the university from time to time.
- A project on live problems of the industry shall be undertaken by the student/group of students undergoing training in the same establishment.
- The term work shall consist of the inplant training record-daily diary, work diary, progress report, a record containing the literature survey in the field of appropriate branch of Engineering, a preliminary report related to project work etc.
- Seminars will be arranged after successful completion of period specified in the scheme of semester VIII of B.Tech. The date and times will be decided according to the convenience of guide and student.

(d) General Provisions, Rules and Regulation of Inplant Training

I. Definition

- In-plant training (IPT) means a course of training in any industry or establishment undergone in pursuance of memorandum of understanding between industry and institute and under the prescribed terms and conditions of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
- Institute means an academic Institution of higher learning associated and admitted under the privileges of university, i.e. Maharashtra Institute of Technology, Aurangabad affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
- Industry means any industry or business in which any trade, occupation or subject field in engineering or technology may be specified as a designated trade.
- Establishment includes research organizations (like IITs, NITs, National Laboratories or research center/organization as recognized by Central Govt. / State Govt. / University) or any other organization of repute with the permission of Head of the institute.
- University means any of the universities mentioned in the schedule of Maharashtra University Act, 1994 i.e. Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
- Collaboration means collaborative academic activity of the Institute with industry.
- Student means a B.Tech. Course student.

2. Memorandum of understanding:

Maharashtra Institute of Technology, Aurangabad will enter into an agreement with the industry through 'Memorandum of Understanding' for creating facilities of inplant training in the appropriate branch of Engineering according to the Course Curriculum and keep this agreement for a period of 10 years to foster a healthy industry- institute interaction for mutual benefits of both.

3. Admission to inplant training:

No student will be deputed for inplant training unless he/she produces testimonial of having kept one term for the subject under B.Tech. of final year course satisfactorily in Maharashtra Institute of Technology, Aurangabad.

4. Period of inplant training:

The period of Inplant training will be the period of one term for the subject under B.Tech. course semester-VIII, which will be notified by Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

5. Contract of Inplant Training :

- The student of Maharashtra Institute of Technology shall enter into a contract of inplant training with the employing industry.
- The inplant training shall be deemed to have commenced on the date, on which the contract of inplant training has been entered into.
- Every contract of inplant training will contain the Terms and Conditions to be agreed by both the parties.
- Every contract of inplant training shall be registered with the Maharashtra Institute of Technology within 15 days from entering into the contract.

6. Violation of contract:

Where an employer, with whom a contract for inplant training has been entered into, is for any reason, unable to fulfill his obligation under the contract, the contract end with the consent of Maharashtra Institute of Technology. It is agreed between the employer, the student and any other employer that the student shall be engaged as an "inplant trainee" under the other employer till the expiry period of the inplant training. The agreement on registration with Maharashtra Institute of Technology shall be deemed to be the contract of inplant training between the student and other employer, and from the date of such registration, the contract of inplant training with the first employer shall terminate and no obligation under that contract shall be enforceable at the instance of any party to contract against the other party thereto.

7. Termination of Contract:

The contract of inplant training shall terminate on the expiry of the period of inplant training.

Either party to the contract of inplant training make an application to Maharashtra Institute of Technology, Aurangabad for the termination of the contract.

After considering the content of the application, and objection, Maharashtra Institute of Technology by order in writing, will terminate the contract, if it is satisfied that the parties to the contract have/has failed to carry out the Terms and Conditions of the contract.

Provided that where a contract is terminated-

- For the failure on the part of the Employer, Maharashtra Institute of Technology will depute students to another Employer for providing facilities of inplant training to the remaining period of training.
- For the failure on the part of the student, the student will not be allowed to continue his/her inplant training in that term. The student shall be deputed for inplant training in the next coming term.

8. Expectation from the Employer / Industry / Establishment:

The following expectations are derived for effective inplant training.

- To provide legitimate facilities for the training and learning of all the processes.
- To guide the student for understanding a project of immense importance to industry and to help him/her for his/her career advancement.

9. Obligation of Students:

- Student must maintain a minimum attendance of 90% of total working days for the period of Inplant Training.
- To learn his/her subject field in Engineering or Technology consciously and diligently at his place of training.
- To carry out all orders of his/her Employer and the Superior in the establishment.
- To abide by the Rules and Regulations of the Industry/Establishment in all matters of conduct and discipline.

- To carry out the obligation under the contract of inplant training.
- The student shall maintain a report of his work during the period of his inplant training in a proforma (form no: 2) made available in Annexure.
- Except in case of extreme urgency, the B.Tech. student shall submit an application for all other leaves except the medical leave to the Manager/Gen. Manager (Personnel) of the concerned industry, where he is undergoing an inplant training and obtain sanction before the leave is taken. In case of Medical Leave, he shall submit an application to Maharashtra Institute of Technology, Aurangabad. The shortage in attendance will be subjected to extending the period of inplant training in which case, the student may not be allowed to appear for the test, project seminar and assessment of term work etc. which will be held immediately after successful completion of the inplant training.

10. Maintenance of Record:

Every student of B.Tech. course shall maintain a daily record of the work done by him/her relating to the inplant training in the proforma (Annexure).

11. Industry Sponsored Student Projects:

The scheme envisages working out suitable programme for B.Tech. students. They are required to complete their inplant training in a given period. During this period, they shall be familiar with the understanding of the shop process and activities. The students can be asked to solve the mini-shop problem, which will make them think and try out short experiments as an improvement in the process, tools and equipment.

The students in a group alone can undertake a project of immense importance for the benefit of the industry and also useful for the students for their advancement of career. Industry staff and Maharashtra Institute of Technology faculty can plan in advance to effectively complete the practical training with the project for preliminary studies on the floor.

The projects should aim mainly-

- Cost reduction
- Enhancing productivity
- Development/Improvement/ Effective use of Software's/ Systems
- Energy conservation measures
- Process Improvement technique
- Application Development
- Plastic and Polymer working
- Hardware/ Software
- Agro engineering and so on.

12. What will form a good project?

Through the project, it is hoped to provide the students an exciting experience in solving line problems under practical constraints. Hence it is desired that the project should be a well-defined problem, which can be completed and implemented within the project period. It may be a problem, evolving analysis, design, fabrication and / or testing.

13. Time Schedule for the Project:

The following time schedule should be planned by each student or groups of students, who undertake the project.

- Proposal to be received before specified date.
- Project acceptance before.
- Commencement of the project.
- Completion of the project.

14. Commitment on the part of the Institute:

- Providing a faculty member to supervise the project.
- Providing the Institute facilities to complete the project.
- Coordinator from industry will be invited to participate in the stage wise assessment of the students performance.

15. Assistance for completion of the Project:

All the projects undertaken by the students are time bound. Although, every attempt results may not be achieved within the period available for the student. In such cases, the services of the associated faculty members can be sought for the completion of the same on mutually agreed terms.

	16. Monitoring of Inplant Training: The B.Tech. students are expected to follow all the rules and discipline of the industry. However, because of other academic requirements and the nature of the project, the student may have to work in other places outside the industry. The faculty and Industry supervisor will work out a suitable arrangement to review the progress of the work from time to time. Maharashtra Institute of Technology, Aurangabad will monitor the progress of inplant training in association with industry authority.
	17. Conduct and Discipline: In all matters of the conduct and discipline, B.Tech. student shall be governed by the rules and regulations (applicable to employees of the corresponding category) in the Establishment, where he/she is undergoing a training.
	18. B.Tech. Students are Trainees and not Workers: • Every B.Tech. student undergoing an inplant training in the respective branch of Engineering & Technology in any Establishment shall be treated as a trainee and not a worker and- • The provision of any law with respect to labour will not apply to such a trainee.
	19. Settlement of Disputes: Any disagreement or dispute between an industry and a B.Tech. student trainee arising out of the contract of inplant training shall be resolved both by Maharashtra Institute of Technology and the industry with mutual cooperation. The decision of both Maharashtra Institute of Technology and the industry shall be final.
	20. Holding of Test and Grant of Certificate: The progress in inplant training of every student shall be assessed by the industry and Maharashtra Institute of Technology faculty from time to time. Every B.Tech. student undergoing an inplant training shall be issued a certificate of Proficiency on completion of his/her training to the satisfaction of the industry.
	21. Offer of Stipend / Other Welfare Activities and Employment: It shall not be obligatory on the part of the Employer / Industry to offer any stipend and other welfare amenities available, if any, to the students of B.Tech. courses undergoing an inplant training. However, if the industry desirous to do so will be a privilege for the students and also for Maharashtra Institute of Technology in view of the bonding of better understanding and cooperation forever.
(e)	**PRACTICAL EXAMINATION** The Practical examination will be conducted after successful completion of the inplant training for which guide will be internal examiner and external examiner will be appointed by the university. The date of practical examination will be same for the students of a branch and will be notified by the university. The assessment of the practical examination shall consist of 1. Seminar Performance 2. An oral on the project work done. 3. Assessment of the term work / report.