



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 2nd Semester
Branch: Solar & Renewable Energy
Subject Name: Rooftop Solar Photovoltaic
On Job Training (Elective)
Subject Code: 1120708

Type of course: Core/Elective

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical		
				ESE (E)	PA(M)	ESE (V)	PA (I)	
0	0	15	15	0	0	100	100	200

L- Lectures; P- Practical; OJT- On Job Training; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Content:

Sr. No.	Content	Total Hrs.	Module % Weightage
1	<p>Carry out market research and prepare a cost estimate for a Rooftop Solar Photovoltaic plant</p> <p>select the right quality of solar module by identifying the key technical parameters in data specification sheets • select the right quality of inverter by identifying the key technical parameters in data specification sheets, select the right quality of mounting structure by identifying the key technical parameters in data specification sheets, select the right quality of battery by identifying the key technical parameters in data specification sheets, select the balance of system by identifying the key technical parameters,</p> <p>Identify market price of different components of solar PV system, prepare a cost estimate for a solar project, prepare a cost benefit analysis for a rooftop solar PV plant including LCOE, Payback, IRR etc., identify the policy, regulations and procedures for solar rooftop sector in the local market, identify and select the appropriate business models in solar rooftop sector</p>	60	30
2	<p>Prepare site feasibility report</p> <p>Identify optimum location of installations, Assess the site level pre-requisites for solar panel installation, Decide on the type of mounting to be constructed and place of mounting as per client requirement, Check for any shading obstacles, Prepare a site map of the location where installation has to be carried out,</p> <p>Assess the load to be run on solar PV power plant and prepare a load profile, Estimate the capacity of solar PV power plant, Decide on battery backup as per grid availability, loads and client expectation, Assess or obtain the site specific major parameters of solar resource data like GHI, DNI, Temperature and Wind,</p>	40	20



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 2nd Semester
Branch: Solar & Renewable Energy
Subject Name: Rooftop Solar Photovoltaic
On Job Training (Elective)
Subject Code: 1120708

	Perform shading analysis, Estimate the energy generated from the rooftop solar PV power plant using solar design softwares like PV*SOL®, PVsyst, etc. Identify the risks associated with the specific solar project, Prepare a site Feasibility Study Report using specialized software like PV*SOL®, PVsyst, etc.		
3	Manage Solar PV project lifecycle Read and interpret the single line diagram, civil / mechanical drawings and electrical drawings, Read and interpret the bill of material, Calculate the lifecycle cost of a rooftop solar project, Identify and mitigate various risks associated with the project, Ensure the solar PV system and structure meets the local government and regulatory requirements, Prepare action plan and coordinate the implementation of rooftop solar project, Identify the maintenance activity required for a rooftop solar PV power plant components, Prepare a preventive maintenance schedule, Ensure proper cleaning of solar panels periodically, Ensure regular inspection of the solar PV system to identify and rectify the faults	50	25
4	Entrepreneurship skills Describe the process for setting up a new venture, Identify the key ingredients of a business plan, Distinguish between fixed and working capital requirements, Describe the components of a loan application for fund raising, Demonstrate good Etiquettes and manners while communicating with the client, Demonstrate the importance of time management, Demonstrate leadership skills and effective resource management techniques, Demonstrate the use of MS word and MS excel for preparing a proposal, Prepare a workable presentation for marketing and business development, Choose the right buyer in a given situation of market parameters, Identify the challenges and risks for new entrepreneurs and the possible mitigation measures	25	15
5	Maintain Personal Health & Safety at project site Identify the requirements for safe work area; Administer first aid; Identify the personal protective equipment used for the specific purpose; Identify the hazards associated with photovoltaic installations; Identify work safety procedures and instructions for working at height; Understand Occupational health & Safety standards and regulations for installation of Solar PV system	25	10
	Total	200	100



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 2nd Semester
Branch: Solar & Renewable Energy
Subject Name: Rooftop Solar Photovoltaic
On Job Training (Elective)
Subject Code: 1120708

Course Outcomes:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Market Research and Cost Estimation	25
CO-2	Site Feasibility Assessment	30
CO-3	Solar PV Project Lifecycle Management	30
CO-4	Entrepreneurship Skills	15

Reference Books:

1. "Solar Photovoltaic Technology and Systems: A Manual for Technicians, Trainers, and Engineers" by Chetan Singh Solanki Publication: Academic Press
2. "Photovoltaic Systems Engineering" by Roger A. Messenger and Jerry Ventre Publication: CRC Press
3. "Photovoltaic Design and Installation For Dummies" by Ryan Mayfield Publication: For Dummies
4. "Solar PV Engineering and Installation: Preparation for the NABCEP PV Installation Professional Certification" by Sean White Publication: Routledge
5. "Photovoltaic Design and Installation Manual" by Solar Energy International Publication: New Society Publishers