EXPRESSION OF INTEREST
FOR IMPLEMENTATION AGENCIES FOR IMPARTING TRAINING TO YOUTH ON PAN-INDIA BASIS FOR "SURYAMITRA SKILL DEVELOPMENT PROGRAMME"
2016-17

Section 1: Background

1.1 Introduction

National Institute of Solar Energy (NISE) is an Autonomous Institute of Ministry of New and Renewable Energy, Government of India recently created by converting its erstwhile Solar Energy Centre to function as an Apex National Centre for research and technology development and related activities in the areas of Solar Energy Technologies in the Country, located at Gurgaon- Faridabad Road, Gwal Pahari, Gurgaon.

Under the skill development initiatives of the MNRE, NISE is mandated as the nodal agency for implementation of "Suryamitra Skill Development Programme (SSDP)". NISE is inviting response document to Expression of Interest (EoI) for Implementation Agencies for training of youth on pan-India basis for SSDP.

1.2 About Suryamitra Skill Development Program (SSDP)

SSDP aims to develop the skills of youth, considering the opportunities for employment in the growing Solar Energy Power project's installation, operation & maintenance in India and abroad. The SSDP is also designed to prepare the candidates to become new entrepreneurs in Solar Energy sector.

Essential Qualification: The candidate should be 10 pass with ITI (Electrician, Wireman, Electronics)

Preferable Qualification: Candidates with electrician certificate and experience shall also be preferred. Special emphasis to be given to the persons coming from rural background, unemployed youth, women, SC/ST candidates.

The candidates would be provided boarding and lodging facilities at the training center by the IA. At the end of the course, proper assessment shall be made and certificates shall be issued by NCVT. Any change in assessing body shall be informed by NISE.

Persons with higher qualifications like degree in any discipline or higher are strictly not eligible.

List of Equipment and Curriculum for SSDP is attached in Annexure 1

1.3 Schedule

S. No.	Description	Dates/ Deadlines
1.	Issue of Expression of Interest (EOI)	14.10.2016
2.	Last Date for Receiving Queries from prospective Applicants through E-mail	24.10.2016
3.	Replies to the Queries	28.10.2016
4.	EOI Due Date/ Deadline for submission of Application Document	04.11.2016
5.	Selection of Empanelled Applicants	07.11.2016
6.	Issue of Empanelment Letter	09.11.2016

NISE reserves the right to modify/change the EOI schedule. Any query to this EoI will be responded through mail until the scheduled date and time as per clause 1.3

NISE in its absolute discretion without being under any obligation to do so, could update, amend or cancel the Expression of Interest (EoI)

Section 2

2.1 Scope of work

NISE invites response document to this Expression of Interest for the selection of Implementation Agencies (IA) to implement Suryamitra Programme on PAN India basis during 2016-17 and thereafter.

2.2 Eligibility Criteria

(a) The IA will be considered based on the following:

(i) The IA must be a registered legal entity in India which must be in operations for 1 year or more as on Sept 30th , 2016

(ii) Affiliated Training Partner with National Skill Development Corporation / Sector Skill Council for at least one year as on Sept 30th , 2016

(iii) IA should have physical presence in at least five states through their established Training Centres as per Suryamitra norms for conducting skill development trainings. Out of five States, two should be from the States of Madhya Pradesh, Uttar Pradesh, Jharkhand, Rajasthan, Bihar, West Bengal & Assam.

(iv) The IA should have trained a minimum of 2,000 youth through Skill Development programmes in various Trades / Courses under National Skill Development Corporation/ Modular Employable Skills (MES) Guidelines or their equivalent Sector Skill Council (SSC) Courses.

(b) The following documentary evidence may be submitted as document to meet the eligibility criteria in the format:

(i) Certificate of Incorporation of the Legal Entity.
(ii) Copies of Local Tax Registration, TIN, PAN etc.
(iii) Audited Balance Sheet for last financial year.
(iv) NSDC/SCGJ Affiliation Certification
(v) MoU/Lease Deed/Electricity Bills of the training centers across each of the States where the IA is present
(vi) A statement certified by a Chartered Accountant to have conducted skill development programmes of minimum 2,000 youth in Sectors (as defined in Section 2.2.(a).(v))

The Technical Criteria shall be submitted in the format mentioned in the Section 3, Part A of the Submission Template.

2.3 Technical Criteria

The Technical response will be assessed on the 100 Points scale. The same is given in Table 1, Section 2.4 below. The Technical Criteria shall be submitted in the format mentioned in the Section 3, Part B of the Submission Template.

2.4 Technical Scoring Criteria & Weightage

Table below indicates the criteria for scoring for each of the activities listed.

Table 1: Technical Response Scoring Criteria – 100 marks

S. No.	Evaluation Criteria / Weightage	Maximum marks	Proof Documents required
A.	**Technical Capability**		
I	**Past Experience of the Firm (in years) – Skill Development Training in Sector (as defined in Section 2.2.(a).(v))**	**10**	Certified statement by a Chartered Accountant to have conducted skill development programmes
II	**Trainers with relevant qualification and Experience (Qualification & Experience in Sectors (as defined in Section 2.2.(a).(v)))**	**10**	List of Trainer's and their qualification to be certified by Applicant's HR Department
III	**Past Experience of the Firm (no. of candidates) – Skill Development Training in Sector (as defined in Section 2.2.(a).(v))**	**10**	Details of skilled candidates – Trade wise
IV	**Projects undertaken with Central State Governments/ PSUs in the last 1 year (as of Sept 30, 2016)**	**10**	Work Orders/ Sanction Orders of the projects undertaken

V	**Geographical Presence in number of states as mentioned in 2.2 (a) (iv)**	**25**	MoU/Lease Deed of all training centers where the IA is present
VI	**MOU/Agreement with Industry for Placement/internship of Participants**	**20**	Copy of Agreement along with Proof of candidate placed in all the mentioned companies
VII	**Training Methodology & Overall Impact in Skill Development initiatives**	**15**	Note on approach & methodology & details of applicant's impact – self certified.
	TOTAL	**100**	

2.5 General Conditions

(a) The documents with its supporting evidences should be properly bound.

(b) The response document shall be sent/submitted to:

Dr. Chandan Banerjee
Deputy Director General - SDD
National Institute of Solar Energy,
Gurgaon Faridabad Road,
Gwal Pahari Gurgaon-122003
Email: suryamitra.nise@gmail.com
Tel: 0124-2853048

(d) All response documents must be received by NISE at the address specified above not later than 5.00 pm of November 04th, 2016. The envelope should clearly be mentioned: **"Expression of Interest for Suryamitra Project"** without which the application will be rejected.

2.6 Selection Process

(a) A merit list of the IAs will be prepared based on the scores obtained in the Technical Criteria.
(b) NISE reserves the right to decide the number of shortlisted IAs from the merit list.
(c) More number of IAs may be shortlisted from the merit list later, based on the requirement of the Suryamitra project.
(d) A Letter of Empanelment to the successful IA shall be issued.

2.7 SSDP Financials and Payment terms:

The funding breakup for SSDP will be as follows-

S.No.	Particulars	Description	Amount (in Lakh)
1	Course fee to the institute	Rs 38.5/- per hour * 600 hours * 30 participants	6.93
2	Assessment Charges	Rs 800 * 30 participants	0.24
3	Boarding and Lodging (as per Classification 'X'/'Y'/'Z'/'RA')	Rs 300 * 30 * 90 days ('X' cities) Rs 250 * 30 * 90 days ('Y' cities) Rs 200 * 30 * 90 days ('Z' cities) Rs 175 * 30 * 90 days ('RA' cities)	8.10 6.75 5.40 4.72

Each program should have 30 participants. The assessment and certification will be done by Third Party agency. Any revision of fee structure shall be based on MNRE approval, which shall be communicated accordingly. The funds will be released on reimbursement basis at the end of each program upon submitting the documents - Utilization Certificate in GFR 19A, Statement of Expenditure, Attendance sheet, group photo, Assessment & Certification receipt, feedback forms, placement information, details of participants in the specified format and any other information required by NISE.

Categorization of Indian cities for Residential Training Costs

S. No.	State	Cities classified as "X"	Cities classified as "Y"
1.	Andhra Pradesh		Vijayawada [Urban Agglomeration (UA)], Visakhapatnam (UA), Guntur
2.	Assam		Guwahati (UA)
3.	Bihar		Patna (UA)
4.	Chandigarh		Chandigarh
5.	Chhattisgarh		Durg- Bhilai Nagar (UA), Raipur (UA)
6.	Delhi	Delhi NCR (UA)	
7.	Gujarat		Ahmedabad (UA), Rajkot (UA), Jamnagar (UA), Vadodara
8.	Haryana		Faridabad
9.	J & K		Srinagar (UA), Jammu (UA)
10.	Jharkhand		Jamshedpur (UA)
11.	Karnataka	Bengaluru (UA)	Belgaum (UA), Hubli-Dharwar, Mangalore (UA)

12.	Kerala		Kozhikode (UA), Kochi (UA), Thiruvanthapuram (UA)
13.	Madhya Pradesh		Gwalior (UA), Indore (UA), Bhopal (UA), Jabalpur
14.	Maharashtra	Greater Mumbai (UA)	Amravati, Nagpur (UA), Aurangabad (UA), Nasik (UA), Bhiwandi (UA), Pune (UA), Solapur, Kolhapur (UA)
15.	Orissa		Cuttack (UA), Bhubaneswar (UA)
16.	Puducherry		Puducherry (UA)
17.	Punjab		Amritsar (UA), Jalandhar
18.	Rajasthan		Bikaner, Jaipur, Jodhpur (UA), Kota
19.	Tamil Nadu	Chennai	Salem (UA), Tiruppur (UA), Coimbatore (UA), Tiruchirapalli (UA), Madurai (UA),
20.	Telangana	Hyderabad (UA)	Warangal (UA)
21.	Uttar Pradesh		Moradabad, Meerut (UA), Ghaziabad, Aligarh, Agra (UA), Bareilly (UA), Lucknow (UA), Kanpur (UA)
22	Uttarakhand		Dehradun (UA)
23.	West Bengal	Kolkata (UA)	Asansol (UA)

All other cities/towns in various States /UTs which are not covered by classification as "X" or "Y" are classified as "Z". The locations classified as "RA" are rural areas.

General Information:

(a) NISE reserves the right to allocate number of Suryamitras to IA to skill during 2016-17. This shall be based on the state wise targets to be achieved during the year.

(b) The elected IA has to submit the yearly/ quarterly action plan with starting dates of the batches and details of participants in advance in the following format-

S.No.	Duration	Name of Candidte	Father's Name & Mother's Name	Date of birth	Permanenet Address, email id, Mobile No.	Pgysically Handicapped if any	Category (Gen/SC/ST/OBC)	Aadhar No.	Mobl. No	No. of Days attended / Total no. of days of training)	Grade	Photograph

(c) State wise allocation of targets under Suryamitra project-

S.No	State/Uts	No. of Suryamitras
1	Delhi	500
2	Hayrana	1000
3	Himachal Pradesh	500
4	Jammu & Kashmir	700
5	Punjab	2000
6	Rajasthan	2500
7	Uttar Pradesh	5000
8	Uttarakhand	500
9	Chandigarh	100
10	Goa	400
11	Gujarat	2000
12	Chhattisgarh	2000
13	Madhya Pradesh	4000
14	Maharashtra	4000
15	D&N Haweli	10
16	Daman & Diu	10
17	Andhra Pradesh	4000
18	Karnataka	2500
19	Kerala	2000
20	Tamil Nadu	2500
21	Puducherry	50
22	Bihar	2500
23	Jharkhand	2000
24	Odisha	2500
25	West Bengal	2500
26	Sikkim	200
27	Assam	2500
28	Manipur	500
29	Meghalaya	250
30	Nagaland	200
31	Tripura	250
32	Arunachal Pradesh	200
33	Mizoram	200
34	Andman & Nikobar	100
35	Lakshadweep	100
	TOTAL	**50270**

The targets are from the date of start of the project. The targets of Andhra Pradesh also include the targets of Telengana.

2.7 Termination of empanelment:

The empanelment of the IA may be terminated at any point of time if any violation of norms is found during the implementation of the Suryamitra programs at its centers.

Section 3: SUBMISSION TEMPLATE

Part A- Eligibility Criteria

A. ELIGIBILITY CONDITIONS

<table>
<tr><td>A.1</td><td>Title of the Project</td><td></td></tr>
<tr><td>A.2</td><td>Total duration of the project</td><td></td></tr>
<tr><td>A.3</td><td>Name of Organisation</td><td></td></tr>
<tr><td>A.4</td><td>Address of the registered office and contact details of the Organisation</td><td>Address:
Phone:
Email:</td></tr>
<tr><td>A.5</td><td>Legal status of the Firm/ Organization</td><td>(Attach proof of Certificate of Incorporation from the competent Authority)
(Attach Copies of Local Tax Registration, TIN, PAN etc.)</td></tr>
<tr><td>A.6</td><td>Annual Turnover</td><td>
<table>
<tr><th>S.No.</th><th>FY Year</th><th>Annual Turnover (Rs. in Cr)</th><th>Net Worth (Rs. in Cr)</th></tr>
<tr><td>1</td><td>2013-2014</td><td></td><td></td></tr>
<tr><td>2</td><td>2014-2015</td><td></td><td></td></tr>
<tr><td>3</td><td>2015-2016</td><td></td><td></td></tr>
<tr><td></td><td>Total</td><td></td><td></td></tr>
</table>
Attach Audited Balance Sheet for last three years
</td></tr>
<tr><td>A.7</td><td>NSDC / SSC Affiliated Partner</td><td>Yes/No
(If yes, attach proof of NSDC Partnership)</td></tr>
<tr><td>A.8</td><td>Details of Training Centers</td><td>
<table>
<tr><td>Name of the Training Centers</td><td>Location</td><td>Full Address</td><td>Contact details</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>
Attach proof of the Training Centers – MOUs, Lease Agreements, Electricity Bills or other such documents
</td></tr>
</table>

A.9	**Total Candidates trained since incorporation**	

S.No.	**FY Year**	**Candidates Trained - Overall**	**Candidates Trained - Sectors***
1	2015-2016		
2	2014-2015		
3	2013-2014		
..	……..		
..	……..		
	Total		

*(*Attach statement certified by a Chartered Accountant to have conducted skill development programmes of minimum minimum 2,000 youth in Sectors* (as defined in Section 2.2.(a).(v) *)*

PART – B

B. TECHNICAL CRITERIA

B.1 Past experience of the firm – Skill Development Training

S.No.	**FY Year**	**Candidates Trained**	**Trades for Training**
1	2015-2016		
2	2014-2015		
3	2013-2014		
..	……..		
..	……..		
	Total		

Attach statement certified by a Chartered Accountant to have conducted skill development programmes

B.2 Past experience of the firm – Skill Development Training in Sectors (as defined in Section 2.2.(a).(v))

S.No.	**FY Year**	**Candidates Trained**	**Trades for Training**
1	2015-2016		
2	2014-2015		
3	2013-2014		
..	……..		
..	……..		
	Total		

Attach statement certified by a Chartered Accountant to have conducted skill development programmes in Sectors / Trades approved under NSDC / Modular Employable Skills (MES) Guidelines or their equivalent Sector Skill Councils (SSC)

B.3 Trainers with relevant qualification and Experience (Qualification & Experience in Sectors (as defined in Section 2.2.(a).(v)))

Name of Trainer	Areas of Expertise / Trade Name	Education/ Degree / Institution	Total Experience	No. of years of relevant experience in Industry	No. of years of relevant experience in Training

Attach certified statement by Applicant's HR Department for List of Trainer's and their qualification

B.4 Projects undertaken with Central State Governments/ PSU (as of Sept 30, 2016)

S. No.	Year	Name of the project	Source of Fund	Total Cost	Trades for training	Number of Trainees trained

Attach Work Orders/ Sanction Orders of the projects undertaken

B.5 Geographical Presence Detail of training centers

S.No.	State	District	Name	Address
..	……..	….....	…….	……
..	……..	….....	…….	……
..	……..	….....	…….	……
..	……..	….....	…….	……

Attach MOU / Lease Agreement / Electricity Bills of each mentioned training center

B.6 Placement/Partnership with reputed Industries

List the name of organizations where placement linkages is established

Name of Organization	Job Profile	Expected salary range

Attach placement letter of each organization

B7. Note on following:

Training methodology	300 words
Organisation's overall impact in Skills development initiative	150 Words

Annexure 1

GENERAL INFORMATION FOR THE MODULE-5

MODULE-5		
1.	**Name of the Module**	: Solar PV Technician
2.	**Sector**	: Renewable Energy
3.	**Code**	: RNE 805
4.	**Entry Qualification**	: 12th pass with ITI (Electrician, Wireman, Electronics) OR Diploma (Electrical, Mechanical, Electronics)
5.		Higher qualification is strictly not allowed.
6.	**Age**	: 18 Years and above
7.	**Terminal Competency**	: After completion of Course Trainees may be able to:
		d. Know the basics of Electricity & solar Electricity
		e. Operate Solar System & Maintain them
		f. Work for execution project
		g. Plan & Install Solar PV Electrical System
		h. Testing and Commissioning of Solar plant
		i. Check all equipment and part with safety
8.	**Duration**	: 600 hrs
9.	**Contents:**	

Sr. No.	Underpinning Knowledge (Theory)	Practical Competencies
1.	a. Electrical Safety Electrical safety Rules, Simple First Aid , General safety of tools and equipment PPEs , Fire extinguishers, Type of fire extinguishers b. Electricity Basics c. Introduction to Conventional & Nonconventional source of energy	Introduction of Institute, Display Room Visit, solar training yard visit, Demonstration of energy sources Tools Introduction & type of tools:- 1. Safety tools 2. Marking tools 3. Measuring tools 4. Testing tools 5. Working tools
2.	a. Fundamental of Earthling system b. PV module, Fundamental types of modules and its applications, PV components and Configuration etc. c. System components & inspection d. Site selection , suitability & Planning e. Basic understanding of protection system such as fuse, circuit breaker, relay etc. f. Basic understanding of CT, PT, LA, Switchgear, isolator, ABT meter etc.	Study of Solar photovoltaic cell & solar photovoltaic module, type and size 1 Solar Photovoltaic system 2 Types of solar photovoltaic systems 3 Grid connected Solar PV system, 4 Grid connected with battery back-up solar PV system 5 Off Grid connected Solar PV

		system 6 Standalone Solar PV
3.	a. Handling and Storage of DC components	Safe handling practices
4.	Reading of drawing and Specifications for the followings a. Civil Foundation or Ramming b. Structure Erection and Module Mounting c. Cabling from Module to Inverter Room d. Inverter and Transformer Installation and Connection e. Reading of Single Line Diagram (SLD)	Structure member, cable, cable laying, Types of cable laying-: 1. Open area cable laying 2. Underground cable laying a. Direct laying b. Laying in pipe c. Solid method Installation of inverter, LT panel Transformer, types of Transformer a. Power Transformer b. Distribution Transformer c. Auto Transformer d. Instrumentation transformer PV module Series & parallel connection & testing
5.	a. Basic knowledge about Tools & Tackles required b. for PV plant installation c. Performance analysis and troubleshooting monitoring of generation per string incoming & outgoing power at junction box & Inverter level. d. Requirement & Uses of Tools & Tackles. Basic knowledge of Ammeter Voltmeter, clamp meter, tong tester, Irradiance sensor, temperature sensors.	Use of tools and tackles and safe application practices a. Voltmeter b. Amp meter c. MultiMate d. Tong tester (AC/DC side testing)
6.	Preparation of work statement & documents for the followings: a. Foundation- P&M, Tools & Tackles b. Structure Erection- P&M, Tools & Tackles c. Module Mounting- Module Sorting, Tools & d. Tackles e. Cable Trenching & Conduit Laying- P&M, Tools & f. Tackles g. Cable Laying & Termination- Tools & Tackles, Pre h. Requisite i. Cable tray & cable laying j. SCADA & Control System k. End termination of power cable (LT/ HT) l. Junction box Installation- Basic knowledge m. Inverter Erection- Tools & Tackles n. Battery installation& maintenance	Dismantle of Module mounting structure and fixing of the same. Proper alignment and tightening. Fixing of module and its connection. Installation of balance equipment and End termination Power cable. Cable Gland- Types of Cable Gland a. Single compression Cable Gland b. Double compression Cable Gland c. Installation of Junction String testing DC Side box

	o. Installation of AC Equipment	
7.	Inspection, Testing & Commissioning Purpose for Inspection & testing Tools / Instruments Required Procedure and Work Method	Installation of electrical substation Pole Erection, Types of pole Grid Fundamental AC & DC Working AC Side Testing DC Side Testing Cable tray , types of cable tray & Cable tray Erection Battery, types of battery, Installation of battery Installation of HT & LT Control panels,
8.	Study of work method & document for the followings a. String Testing- Pre-checks b. Short Circuit Test- Work Method c. Inverter Testing- Work Method d. Check list preparation e. Pre -requirement of installation of sub-station equipment f. Basics and erection of transformers, pole erection and stringing	Fundamental of earthing system, types of earthing, Installation of earthing & earthing testing
9.	Quality: Introduction, quality Management systems Requirement	Site selection, suitability & planning, Fundament of site survey direction shadow effect.
10.	Operation & Maintenance a. Introduction and Over view of PV System b. Equipment's under AC Side & DC Side and regular maintenance c. General Safety Guidelines for O&M d. Soft & Entrepreneurship skills	Solar PV module cleaning & testing Inverter testing, Battery testing, Cell voltage testing, HT&LT Panel testing, earthing testing Cable testing, Transformer condition monitoring.

Detailed content is available on http://nise.res.in website.

Infrastructure

1. A Class room with basic teaching aids- white board, table 6'x3' and sitting arrangement with projector& screen.
2. A shadow free ground flat area, practical area 1200 sqmtr, workshop 360 sqmtr
3. Different type of PV facility for training like Fixed, Seasonal Tilt, Horizontal axis Tracker & Dual axis Tracker
4. Various type of Module like Thin Film, Crystalline and Bifacial. Total 2 kW.
5. Hostel facility to accommodate 30 participants per batch. Separate arrangements for boys and girls participants.
6. Canteen facility with daily breakfast, lunch, dinner with two times tea for the participants. The dining area and food should by hygienic; weekly menu should be fixed which includes seasonal and green vegetables.

List of Tools& Equipment for a batch of 30 trainees:

Sr. No.	Name of Tools & Instruments	Quantity (Nos.)
1.	Tool kit	As per requirements
2.	Double ended flat spanner	2 set
3.	Double ended ring spanner	2 set
4.	Combination pliers	4
5.	Side cutting pliers	4
6.	Nose pliers	4
7.	Wire stripper	4
8.	Electrician knife	10
9.	Hack saw frame with blade	4
10.	Hand crimping tools	2
11.	Cable cutter	1
12.	Screw driver	4
13.	Water level	5
14.	Measuring tape	1
15.	Centre punch	1
16.	Standard wire gauge	1
17.	Vanier caliper	1
18.	Line dori	2
19.	Chisel	1
20.	Drill m/c	2
21.	Plumb bob	2
22.	Sprit level	2
23.	Flat file	2
24.	Round file	2
25.	Triangle file	2
26.	Hand saw	2
27.	PVC mallet	2
28.	Ball pin hammer	4
29.	Fuse puller	1
30.	Safety helmet	As per requirement
31.	Safety souse	4
32.	Safety belt	As per requirement
33.	Nose mask	5
34.	Safety goggles	As per requirement
35.	Ear plug	2
36.	PVC hand glove	10
37.	Cotton hand glove	10
38.	Reflective jacket	5
39.	Tong tester AC/DC	2
40.	MULTIMETER	2
41.	Megger	2
42.	Earth tester	2
43.	Water testing instrument (TDS meter)	1
44.	Earthing Rod	1

45.	Soldering Iron & Flux	5
46.	Phase Sequence Meter	2

Demo Equipment

Sr. No.	Name of Tool & Instrument
1.	Tool kit
2.	Double ended ring spanner
3.	Combination pliers
4.	Side cutting pliers
5.	Nose pliers
6.	Wire stripper
7.	Electrician knife
8.	Hack saw frame with blade
9.	Hand crimping tools
10.	Cable cutter
11.	Screw driver
12.	Water level
13.	Measuring tape
14.	Centre punch
15.	Standard wire gauge
16.	Vanier calipash
17.	Line dori
18.	Chisel
19.	Drill m/c
20.	Plumb bob
21.	Sprit level
22.	Flat file
23.	Round file
24.	Triangle file
25.	Hand saw
26.	Pvc mallet
27.	Ball pin hammer
28.	Fuse puller
29.	Safety helmet
30.	Safety souse
31.	Safety belt
32.	Nose mask
33.	Safety goggles
34.	Ear plug
35.	PVC hand glove
36.	Cotton hand glove
37.	Reflective jacket
38.	Tong tester AC/DC
39.	MULTIMETER
40.	Megger
41.	Erath tester
42.	End termination of power cable
43.	Cable tray Erection
44.	Structure with module mounting

Safety & Protective Equipment

Sr. No.	Name of Tools & instruments	Quantity (Nos.)
1.	Safety helmet	As per requirement
2.	Safety souse	As per requirement
3.	Safety belt	As per requirement
4.	Nose mask	As per requirement
5.	Safety goggles	As per requirement
6.	Ear plug	As per requirement
7.	PVC hand glove	As per requirement
8.	Cotton hand glove	As per requirement
9.	Reflective jacket	As per requirement
10.	First aid kit	As per requirement
11.	Gum boots	As per requirement

Further information may be obtained from “Guidelines of Suryamitra Skill Development Program” available on http://nise.res.in website.

Course Module

Solar PV Technician

Sr. No.	Date		Theory (No. of Days)	Course Module	Module Number	Practical (No. of Days)	Period Hours	
	From	To					Theory	Period Hours
1.			2	Electrical Safety Electrical safety Rules, Simple First Aid , General safety of tools and equipment PPEs, Fire extinguishers, Type of fire extinguishers	S-1	2	1	7
2.			3	Electricity Basics	S-2	3	1	7
3.			2	Fundamental of earthing system	S-3	2	1	7
4.			5	PV module Fundamentals types of modules and its applications, PV components and configuration etc.	S-4	5	1	7
5.			2	Introduction to Solar Photovoltaic , Basic Principle of Photovoltaic Tech.	S-5	2	1	7
6.			3	PV System Sizing series & parallel Fundamental, temperature coefficients of current, voltage and power fundamental	S-6	3	1	7
7.			3	Performance analysis and troubleshooting monitoring of generation per string incoming & outgoing power at junction box & Inverter level.	S-7	3	1	7
8.			3	Requirement & Uses of Tools &	S-8	3	1	7

				Tackles. Basic knowledge of Ammeter Voltmeter, clamp onmeter tong tester Irradiance sensor temperature sensors				
9.			2	Cable tray & cable laying	S-9	2	1	7
10.			2	SCADA & Control System	S-10	2	1	7
11.			5	End termination of power cable (LT/ HT)	S-11	5	1	7
12.			5	Commissioning & testing	S-12	5	1	7
13.			4	Structure erection	S-13	4	1	7
14.			3	Battery installation& maintenance	S-14	3	1	7
15.			2	Check list preparation	S-15	2	1	7
16.			2	Pre -requirement of installation of sub-station equipment	S-16	2	1	7
17.			5	Basics and erection of transformers, pole erection and stringing	S-17	5	1	7
18.			5	Foundation-reinforcement& Shutting	S-18	5	1	7
19.			5	Operation & Maintenance	S-19	5	1	7
20.			12	Soft & Entrepreneurship Skills	S-20	12	1	7

Note: Any part or whole content and curriculum may be changes/ updated at any point of time based on the industry requirement under the directions of MNRE/NISE.