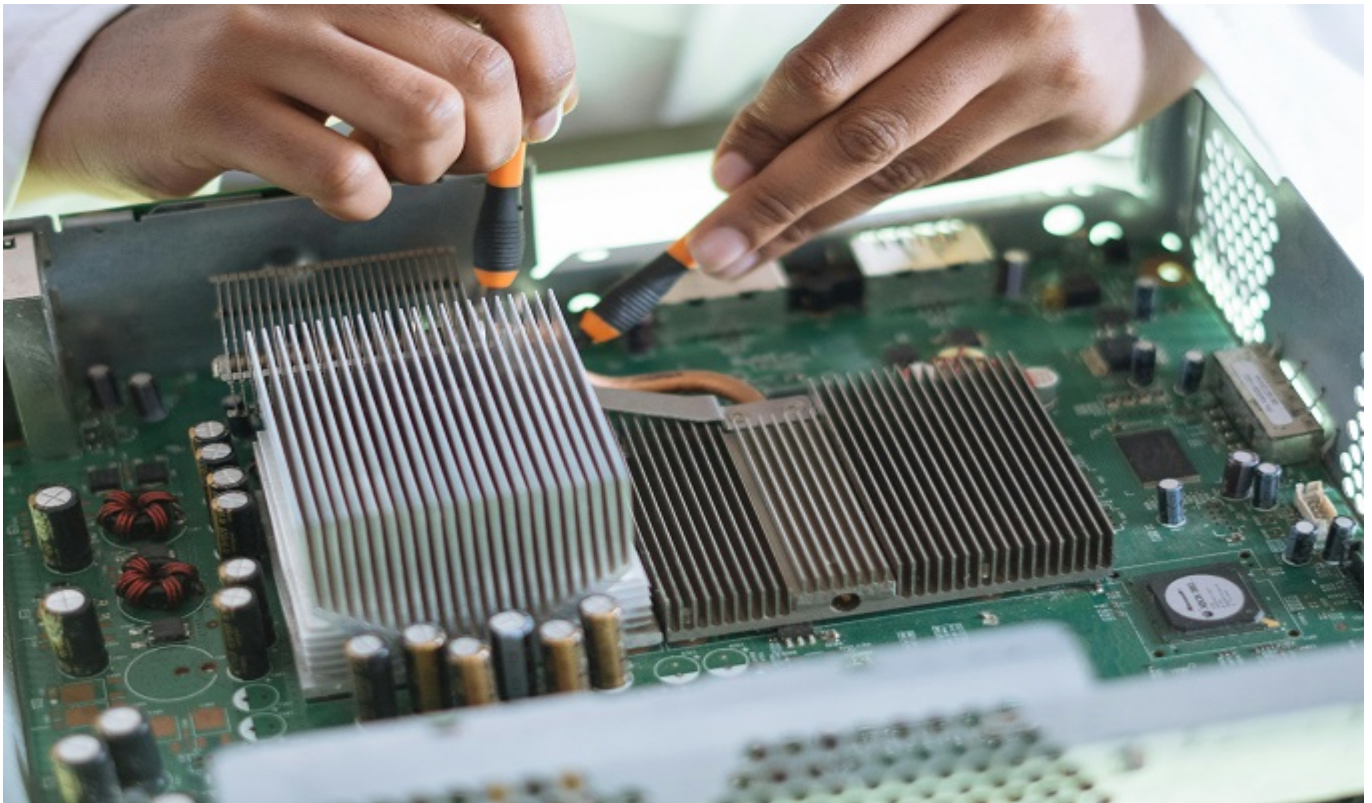


National Occupational Standards



Industrial safety for semiconductor manufacturing - Electrical

Unit Code: ELE/N1005

Version: 1.0

NSQF Level: 5

Electronics Sector Skills Council of India || 155, 2nd Floor, ESC House Okhla Industrial Area-Phase 3
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National Occupational Standards

Description

Industrial Safety in the Semiconductor Manufacturing - Electrical, plays a vital role in maintaining the safety and well-being of employees, protecting the environment, and ensuring the company's adherence to regulatory requirements. Their work helps prevent accidents, reduce risks, and create a safer and more productive work environment.

Scope

The scope covers the following :

- basic concepts/ understanding of electrical safety
- various processes in semiconductor manufacturing
- awareness about various facilities available at the semiconductor manufacturing machines
- overview of activities at semiconductor manufacturing
- tool capabilities and specification
- enhancing the technical aptitude
- assessment of the understanding the concepts taught during the lectures

Elements and Performance Criteria

General

To be competent, the user/individual on the job must be able to:

- PC1.** Basic concepts of semiconductor manufacturing
- PC2.** Awareness about facilities available at the electrical components
- PC3.** Facilities available for each process & parts
- PC4.** Capabilities for handling the various tools
- PC5.** Electric hazards in semiconductor industry
- PC6.** Use of PPE
- PC7.** First Responded Team
- PC8.** Awareness of the Electrical Safety & Process Guidelines

Safety

To be competent, the user/individual on the job must be able to:

- PC9.** Introduction to Safety
- PC10.** Overview of Electric safety program principles
- PC11.** Safety Culture/ Safety audits/ Permit to Work System
- PC12.** Awareness of Health & Safety Environment (HSE)
- PC13.** Knowledge of Occupational Health Safety Code Act 2020 (OSHA), SSHA
- PC14.** Maintenance & its Types
- PC15.** Fault Tracing and Safety audits

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** System design modules and concepts of circuit design
- KU2.** System design modules and concepts of circuit design
- KU3.** The Hardware description language (HDL) such as Verilog, VHDL
- KU4.** The basics on HDL simulation and synthesis
- KU5.** The design flow involved in design stages of various nano fabrication process
- KU6.** The circuit design, network analysis, control theory for analogue design requirement
- KU7.** The end-product application, i.e., industry for which sample is designed
- KU8.** Clean room safety and precautions
- KU9.** Basics of system-on-chip (SOC) design
- KU10.** Improving the understanding of the physics behind the semiconductor technologies
- KU11.** Understanding the importance of clean room, fabrication, characterization, and testing facilities related to nano fabrication
- KU12.** Understanding concepts, writing, and building a good patent document

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** maintain work-related notes and records
- GS2.** read the relevant literature to get the latest updates about the field of work
- GS3.** communicate politely and professionally
- GS4.** Listen attentively to understand the information being shared
- GS5.** Take quick decisions to deal with work emergencies or accidents
- GS6.** Identify possible disruptions to work and take appropriate preventive measures
- GS7.** Evaluate all possible solutions to a problem to select the best one

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>General</i>	30	-	-	-
PC1. Basic concepts of semiconductor manufacturing	3	-	-	-
PC2. Awareness about facilities available at the electrical components	3	-	-	-
PC3. Facilities available for each process & parts	3	-	-	-
PC4. Capabilities for handling the various tools	3	-	-	-
PC5. Electric hazards in semiconductor industry	5	-	-	-
PC6. Use of PPE	5	-	-	-
PC7. First Responded Team	3	-	-	-
PC8. Awareness of the Electrical Safety & Process Guidelines	5	-	-	-
<i>Safety</i>	70	-	-	-
PC9. Introduction to Safety	6	-	-	-
PC10. Overview of Electric safety program principles	12	-	-	-
PC11. Safety Culture/ Safety audits/ Permit to Work System	12	-	-	-
PC12. Awareness of Health & Safety Environment (HSE)	10	-	-	-
PC13. Knowledge of Occupational Health Safety Code Act 2020 (OSHA), SESHA	10	-	-	-
PC14. Maintenance & its Types	10	-	-	-
PC15. Fault Tracing and Safety audits	10	-	-	-
NOS Total	100	-	-	-



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National Occupational Standards (NOS) Parameters

NOS Code	ELE/N1005
NOS Name	Industrial safety for semiconductor manufacturing - Electrical
Sector	Electronics
Sub-Sector	Semiconductor & Components
Occupation	Generic - Health Safety
NSQF Level	5
Credits	2
Minimum Educational Qualification & Experience	Completed 3 year diploma after 10th (Electronics/Electrical/Mechanical) with 1 Year of experience relevant experience OR Completed 2nd year of UG (UG Diploma) ((B.Sc/B.E./B.Tech) in the relevant field - Electrical / Electronics, Mechanical) with 1 Year of experience relevant Experience OR 12th grade Pass with 2 Years of experience relevant experience OR 10th grade pass with 4 Years of experience
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024
Reference code on NQR	NG-05-EH-02093-2024-V1-ESSC
NQR Version	1.0
CCN Category	1