List of Competencies for On-the-Job Training (OJT)
Work-Study Diploma in Microelectronics (Process Specialisation)

S/N	List of Competencies (Standard)	Company to indicate '✓' for OJT competencies it can provide
Perform semiconductor manufacturing protocol		
1	Execute safe work practices	
2	Executive risk control measures	
3	Execute good manufacturing practices	
Perform semiconductor manufacturing technology		
4	Execute semiconductor manufacturing processes	
5	Measure process parameter with metrology technique	
6	Optimise semiconductor manufacturing processes	
Implement New Product Integration and Introduction (NPI)		
7	Analyse key process parameters	
8	Determine upper and lower process control window	
9	Evaluate process window	
Apply Quality Engineering process		
10	Analyse defect density information in the manufacturing process	
11	Analyse out-of-control and abnormal chart trends	
12	Perform failure analysis	
Review quality improvement with Data Analytics		
13	Apply quality management tools for continuous process improvement	
14	Analyse manufacturing performance	
15	Recommend parameters for manufacturing enhancement	
Implement automation system		
16	Carry out automation system operations	
17	Operate MES (manufacturing execution system)	
18	Control APC (advance process control) system	
Implement IoT system		
19	Integrate devices in IoT system	
20	Perform operational checks on application program for IoT system	

S/N	List of Competencies (Standard)	Company to indicate '✓' for OJT competencies it can provide
21	Verify IoT system performance with test result	
Develop project management plan		
22	Conduct project planning	
23	Produce technical reports	
24	Conduct technical presentation	
	Sub-total of Competencies (Standard)	
List of Competencies (Company-specific)		
1		
2		
3		
4		
5		
6		
	Sub-total of Competencies (Company-specific)	

Note:

a) Company must be able to provide OJT for at least **75%** of the List of Competencies (Standard).

b) If company is unable to meet the 75%, please propose alternate **course-related** competencies which are unique to company operations. <u>Alternate competencies are capped at 25%.</u>
[i.e. 50% of the list of competencies (standard) + 25% alternate competencies (Company-specific)].

c) All alternate competencies (Company-specific) must be reviewed and endorsed by ITE.

d) Trainees must receive OJT and be assessed for **All** competencies selected in this List.

Total no. of competencies selected by company for OJT

Total no. of competencies listed *(standard & company specific)*

Percentage of selected competencies

Completed By:

_____	_____
Name	**Company**
_____	_____
Designation	**Date**

For ITE's Completion				
Reviewed by CED / College *(For Company-specific Competencies)*			**Verified by IBT Officer**	
Name:			Name & Date:	
Designation:		Date:		

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COURSE STRUCTURE and SYNOPSIS of CORE MODULES for *WORK-STUDY DIPLOMA IN MICROELECTRONICS (PROCESS TRACK)*

S/N	Module	Hours
1	**Semiconductor Manufacturing Protocol** On completion of the module, trainees should be able to identify workplace hazard and apply proper usage of the personal protective equipment (PPE). They should also be able to execute good manufacturing practices.	100
2	**Semiconductor Technology** On completion of the module, trainees should be able to perform semiconductor manufacturing process and apply metrology methodology for semiconductor manufacturing.	100
3	**Data Analytics for Quality Improvement** On completion of the module, trainees should be able to apply data analytic skills for semiconductor manufacturing.	100
4	**Computer Programming & IoT Integration** On completion of the module, trainees should be able to write application program to integrate IoT devices into system using programming concept and language.	100
5	**Project Management & Technical Writing** On completion of the module, trainees should be able to plan, execute and monitor manufacturing process to meet project scope, schedule and cost requirements; as well as, write and present technical report, apply communication and supervision skills to build essential relationships at the workplace.	100
6	**Company Project** On completion of this module, trainees should be able to plan, supervise and execute microelectronics equipment-related projects for manufacturing process improvement.	100
7	**Process Integration** On completion of the module, trainees should be able to understand basic semiconductor process integration and analyze data to improve yield and performance.	100
8	**Quality Engineering** On completion of the module, trainees should be able to analyse defect density, perform capability analysis and monitor abnormal control charts trends in manufacturing process.	100
9	**Process Automation** On completion of the module, trainees should be able to apply robotic system and electro-mechanical control systems which includes common input/output devices, pneumatics, electro-pneumatics systems and PLC in process control system.	100

10	**On-the-Job Training** On completion of the module, trainees should be able to apply the skills and knowledge acquired at ITE College and workplace to take on the full job scope, including supervisory function, where appropriate, at the company.	3100

Training Pattern

Year	Module Title	Training Schedule	Exam Period	Training Pattern
1	Semiconductor Manufacturing Protocol#	Apr to Sep	Sep (2 exam papers)	Off-JT 2 days per week in campus OJT 3 days per week in company
	Semiconductor Technology#			
	Data Analytics for Quality Improvement #	Oct to Mar	Feb/Mar (2 exam papers)	Off-JT 2 days per week in campus OJT 3 days per week in company
	Computer Programming & IoT Integration#			
2	Equipment Maintenance Industrial Automation *OR* Process Integration Quality Engineering	Apr to Sep	Sep (2 written tests)	Off-JT 2 days per week in campus OJT 3 days per week in company
	Robotic Controls *OR* Process Automation	Oct to Mar	Feb/Mar (1 written test)	Off-JT 1 day per week in campus OJT 4 days per week in company
3	Project Management & Technical Writing	Apr to Sep	Nil (Reports and presentation in Aug)	Off-JT 2 days per week in campus OJT 3 days per week in company
	Company Project			