

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: INDUSTRIAL TRAINING
(COURSE CODE: 3362101)

Diploma Programme in which this course is offered	Semester in which offered
Metallurgy Engineering	SIXTH

1. RATIONALE

The diploma engineers are required to work in industry to manufacture and test Semi finished/Finished Products, and in foundries, heat treatment shops, steel making shops etc for diagnose problems and technical resolutions. The students need to have industry and workshop exposure, where they can experience real life equipment, materials, instruments and various kinds of Metallurgical Process & related Equipments. This course has been designed for the students to have real life experiences to help them prepare for their career. The Metallurgical sector needs skilled and managerial personnel who have technical expertise as well as entrepreneurial qualities to manage the growing Metallurgy industry.

2. LIST OF COMPETENCIES

The course design and implemented with the aim to develop different types of skills leading to the achievement of the following competencies.....

“Work in industry to manufacture/test metal/non metals.

And/or

“Work in laboratory/filed to identify the fault, resolve the fault, test the Various Metals/Alloys/Composites and find source of fault.”

3. COURSE OUTCOMES

Students should work in the industry/laboratories as trainees so that they are able to acquire different learning out comes to demonstrate following course outcomes.(Students should be able to demonstrate these skills on the type of metallurgical process or parameters affecting, the following list is suggestive only, some more skills may be acquired by student depending upon the opportunities they get and in some cases some of the following skills may not be applicable on which they have undergone training)

COMPETENCY

1. Apply knowledge of mathematics, science, and engineering with applied engineering procedures, and processes, to the solution of engineering broadly defined problems of metals extraction and Metals and alloys shaping.
2. Apply ethical principles and commit to responsibilities and norms of engineering practice.
3. Explain composition, properties, and applications of various ferrous and non ferrous alloys. Analyse problems pertaining to requirement of material , provide solutions based on development of requisite property of material/alloy using modern tools and solutions be based on societal, health, safety, legal and cultural considerations.
4. Imbibe the process of extraction of iron and other metals from the raw materials.

5. Use the knowledge of various joining process, their characteristics to supervise productively on the shop floor. Perform various destructive and non-destructive tests to check welds and its quality. Select suitable process for joining
6. Use mineral dressing, metal extraction and refining processes for production of various metals.
7. Explain characteristic of different fuels used in various furnaces and their testing procedure .Construction and working of different types of furnaces, refractory materials with properties and testing methods.
8. Use the metallurgical principles of various metal working processes and powder metallurgy, along with the understanding of machinery for production of various components.
9. Integrate knowledge of different ferrous and non ferrous metals and alloys with respect to their composition, properties and applications. Identify different phases in microstructure and calculate their proportions.
10. Select and supervise different heat treatment procedures.

4. TEACHING AND EXAMINATION SCHEME

Course Code	Course Title	Teaching Scheme (In Hours) L	Total Credits (Industrial Training) T	P	C	Examination Scheme				(3 Hrs)
						Theory		Practical		Total
						Marks		Marks		Marks
						ESE	PA	ESE	PA	
3362101	INDUSTRIAL TRAINING	-	-	-	33**	0	0	300	500	800
		-	-	-	33**	0	0	300	500	800

****Indicate load of teaching faculty per week per division, for placing the Students in training, follow up of students at training (minimum 1 times per month), conduct the presentation with PPT / speak out (minimum 1 times per month at institute).**

Evaluation Pattern:

- ⌚ Progressive Assessment will be done by the internal examiner during monthly visits of teacher to industry and visit of student to institute and at the time of final internal presentation of report at institute level. (Max. Marks=500)
- ⌚ End Semester External Exam would be conducted by external examiner (Max. Marks= 300)

Progressive Assessment

Internal Faculty should evaluate training on following criteria and marks-(Max. Marks=500)

1. Monthly Presentation with PPT / speak out-(Maximum 150 Marks: Three monthly presentations of 50 marks each) during monthly visits of student to institute
 2. Review of Log Book, Weekly Report (FORM-3) & Monthly Report (FORM-4) (Maximum 150 Marks: 50 marks for each monthly review during visit of teacher to industry (three visits)
 3. Final project report at the end of training by Internal Faculty-(Maximum 100 Marks)
 4. Internal presentation and viva by internal Faculty (Maximum 100 Marks) at the end of the semester.
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End Semester External Examination

Evaluation of ESE will be done by the External exam for practical (20 students per day (six hours) will be examined by external examiner.) External examiner should evaluate training on following criteria and marks-(Max. Marks=300)

1. Presentation with viva - (Maximum 100 Marks)
2. Practical Skills Exam- (Maximum 100 Marks)
3 to 4 basic/core practical skills out of the total skills which students are supposed to have learnt during their industrial training should be examined depending upon available equipments/instruments at Institute level.
3. Review of Record and Training Report- (Maximum 100 Marks) such as log book, weekly reports, monthly reports, final training report including review of some critical/special experiences student has undergone (and mentioned in his report) at industry.

5. SUGGESTED WORK LOAD

- ⌚ **Load of guiding and monitoring industrial training per week per division:** for placing the students in training, visit industry/ follow up the students at training at least once in a month for evaluating student's activity and their progress. Also conduct the presentation with PPT / speak out at least once in a month at their parent college per batch for evaluating student's activity and their progress. Total 33 hrs load per week per division may be considered. Institute has to prepare time table for the teachers in such a manner that the concerned teachers remain free for one day (may be different days for different teachers) in each week for industrial visits and conducting the presentation at their parent college.

6. GUIDELINES FOR INDUSTRIAL TRAINING OF DIPLOMA IN METALLURGY ENGINEERING

- ⌚ Total no. of trainings during the curriculum: once in 6th semester.
 - ⌚ Duration of the training: One full semester.
 - ⌚ Eligibility: As per GTU detention norms at the time of training. Student can be sent for training subject to eligibility.
 - ⌚ Training Area: Students can be trained in Ferrous and non ferrous production units, forging/rolling plants, Foundries, heat treatment shops, authorized Testing Laboratories workshop /Research institutes /Technical Consultant etc.
- Role of Department:**
- ⌚ Department have to send training request letter to various industries well in advance before commencement of training.
 - ⌚ After getting sufficient number of seats from the industries/ students will be placed in different industries for their 6th semester training.
 - ⌚ Students will have to fill up training form.(attached here with form-1)
 - ⌚ Department will issue an order letter to industry for the said training mentioning the name and registration number of students.
 - ⌚ All above activities have to be carried out in vacation / in advance of previous semester as plan out of placement in consultation with students. The students would normally be placed as per their choices, in case of more demand for a particular industry/service centre students would be allocated place based on their relative merit (based on fourth semester results)

- ⌚ During the training period, the head of the department will maintain a schedule for follow – up of industrial training and according to it he/she will send the faculty members to various industries.
- ⌚ The faculty member during the monthly visit to industry will check the progress of the student in the training, his/ her attendance, discipline and project report preparation.
- ⌚ Department would prepare the schedule of the students monthly visits to institute and would assess their training based on their presentation
- ⌚ The department has to keep record of above progressive assessment during monthly visits of teachers to industry and students to institute.
- ⌚ At the end of the training internal faculty member will assess the work done by student based on his presentation at the institute and training report.

Role of Industry:

- ⌚ Industry will give effective training to the students for improving their practical skills.
- ⌚ Industry is expected to assign group of the students under training to some middle management level person for supervision and guidance (Training-in-charge).
- ⌚ Training in-charge has to sign weekly diary (To certify the work done by students) with appropriate remarks.
- ⌚ Industry may allot project to individual or group of students under training and students has to prepare report on the same project.
- ⌚ Training in-charge are requested to guide students for preparing their project report.
- ⌚ Industry is expected to maintain attendance for the student under training and report any irregularity of the students to their parent college.
- ⌚ Industry is also expected to issue a certificate of attending training on their letter head with comments if any for student's record and motivation.

7. GUIDE LINE FOR STUDENTS

- ⌚ Students would interact with the identified faculty of the department to suggest his choices for suitable industry/service centre
- ⌚ Students have to fill the forms duly sealed and signed by authorities along with training order letter and submit it to training officer in the industry on the first day of training. (attached here with form-2)
- ⌚ Student would carry with him/her the Identity card issued by institute during training period
- ⌚ He/she will have to get all the necessary information from the training officer regarding schedule of the training, rules and regulations of the industry. Student is expected to follow these rules, regulations, procedures etc obediently.
- ⌚ During the training period students has to keep record of all the useful information in Log book and maintain the weekly diary (attached here with form-3).
- ⌚ He/she has to prepare a detailed report and presentations for each monthly visit to institute
- ⌚ Prepare final report about the whole training for submitting to the department at the time of final presentation and viva

The training report may contain

- Title page
- Certificate
- Abstract
- Acknowledgement
- Index
- Introduction of industry

- Industry/manufacturing plant lay out and modify modern melting shops layout (at training place)
- Hierarchy of industry/organization chart.
- Types of major equipments/instruments/machines used in industry with their specification, approximate cost and specific use.
- Particulars of Practical Experiences in industry/Metal testing Laboratories- Production/ Assembly/ Testing of micro-structure/bars of the relative produced metal/alloy, Faults and remedies of furnace malfunctioning/rolling mills, Calibration of testing equipments.
- Stringent Quality of Cast/Rolled/Forged/joined Products by using software for Manufacturing Process and fully or Partially Automatic Equipments
- Special/challenging experiences encountered during training if any
- My liking & disliking of work places-
- References
- Bibliography

🕒 It is mandatory for students to maintain and fulfill criteria for attendance framed by Gujarat Technological University for the term to be granted.

8. SUGGESTED LEARNING RESOURCES

Students may visit websites related to Manufacturing/Testing Units being as their learning tool during industrial visit. Source of learning websites are already given during previous semesters. Search videos, animations for preparation of PPT/ speak out as well literature for project report during the training period.

9. SPECIAL INSTRUCTIONAL STRATEGIES (If any)

- a. Visit industry/ follow up the students at training at least once in a month for evaluating student's activity and their progress.
- b. Conduct the presentation with PPT / speak out at least once in a month at their parent college per batch for evaluating student's activity and their progress.

10. COURSE CURRICULUM DEVELOPMENT COMMITTEE

1. **Prof. S L. Chauhan, (I/C) H.O.D.**, Metallurgy Dept, Government Polytechnic ., Bhuj.

2. **Prof. Vishal N Kaila, (I/C) H.O.D** Metallurgy Dept, Government Polytechnic ,Rajkot

3. **Prof. Rajesh Gaglani, (I/C) H.O.D** Metallurgy Dept, Shree N M Gopani Polytechnic Institute , Ranpur.

4 **Prof Sandeep Parmar**, Lecturer Metallurgy, Metallurgy Dept, Government Polytechnic ., Bhuj.

Coordinator & Faculties from NITTTR Bhopal

1. Prof. Sarawathe, Department of Mechanical Engineering
2. Prof Shashi Kant Gupta, Coordinator for State of Gujarat.

FORM-1

Date

Name

Enrollment No

Mobile no

Diploma Metallurgy : Semester V

Address

To,

The , H.O.D

Metallurgy Department

Subject : Regarding Industrial and
Declaration

My list of choices for Industrial is as given below

First Choice:

Second Choice:

Third Choice:

Declaration:

I affirm that I am eligible for industrial training in the 6th semester as per Gujarat Technological University(GTU) rules and regulations, and I also affirm that if GTU holds me ineligible for the said training at any point before/after or during the training period my training remains cancelled with immediate effect and I will have no right to claim this training.

Guardian's Sign

Students Sign

FORM-2

FROM: _____

To,
The Principal

Subject: Joining report of _____

As per your letter No. _____ Dated _____

I have reported for training at

On _____.

The weekly off day of the industry is _____

Thanking you

Yours faithfully

()

Signature and Stamp of Officer in-charge

(To be send immediately after joining the industry)

FORM-3

GUJARAT TECHNOLOGICAL UNIVERSITY
 (NAME OF THE INSTITUTE)
METALLURGY ENGINEERING DEPARTMENT
TRAINEES WEEKLY REPORT

Trainee Name:-

Name of Organization:-

Enrollment No:-

Dept. Sec:-

Week commencing from date _____ to date _____

Day & Date	Abstract of Work done (Details of work with details of Metallurgy)	(Remarks) Training Supervisor (if any)

Day & Date Abstract of Work done Training supervisor with

Remarks of

Sign

* Excellent / very good / good/ average / below average /poor.

* Please retain whichever is Applicable depending upon regularity, Punctuality, Sincerity, Interest taken by the student. Weekly reports must be submitted with final project report.

Sign of Student

Sign of Faculty
(at the time of monthly visit)

Sign. Of Controlling Officer
of Industry with Designation

Date _____

FORM-4
Monthly Inspection & Interactions Report

(Duration: _____ to _____)

The teacher should visit the industry once a month and after interactions with student and Industry, he should provide a feedback report.

1. Name & No of student.....
2. Sign of student.....
3. Name of industry.....
4. Sections and Departments visited.....

No.	Incidents/Activities observed	Maximum Marks	Marks Obtained	Comments on performance
a	Work performed in the duration (as per Log Book & Weekly Report) Teacher should sign logbook and weekly report on this Occasion.	30		
b	Interaction with student about work performed by him	20		

Overall Comments:.....

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Name of industry Supervisors/Engineers/Managers with whom interacted:

Comment if any (Based on interaction with industry supervisor)

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Advice to student if any:.....

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Signature of teacher

FORM-5
Evaluation Record of Monthly Presentation at Institute

Sr. No.	Name	Enrollment Number	Date of presentation	Marks obtained in each presentation (out of 50)	Total (Max Marks 150)

Signature of faculty.....
Name and Designation

(NAME OF THE INSTITUTE)

METALLURGY ENGINEERING DEPARTMENT

Course Title: INDUSTRIAL TRAINING (Code: 3362101)

Evaluation of External Examiner

SR NO	NAME OF THE STUDENT	ENROLLMENT NO.	Presentation and Viva (Maximum 100 Marks)	Practical Skills Examination (Maximum 100 Marks)	Review of Log Records and Report (Maximum 100 Marks)	TOTAL (Maximum 300)
1						
2						
3						
4						
5						
6						
7						
8						
9						
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22						

External Examiner

(NAME OF THE INSTITUTE)							
METALLURGY ENGINEERING DEPARTMENT							
Course Title: INDUSTRIAL TRAINING (Code: 3362101)							
Evaluation of Internal Examiner							
SR NO.	NAME OF THE STUDENT	ENROLLMENT NO.	Presentation on with PPT / speak out Max Marks-150	Log Book, Weekly Report & Monthly Report Max Marks-150	Final training report Max Marks-100	Internal viva Max Mark 100	TOTAL (Max Marks 500)
1							
2							
3							
4							
5							
6							
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Internal Examiner