



CERTIFICATE COURSE ON ULTRASONIC TESTING

Organized by

Department of Metallurgical & Materials Engineering, Visvesvaraya National Institute of Technology
Nagpur 440010, Maharashtra

About the Course:

Ultrasonic testing is a crucial technique in industry for ensuring material integrity and product quality. By detecting defects and irregularities non-destructively, it enhances safety, minimizes costly rework, and optimizes resource allocation, contributing to reliable and efficient manufacturing processes across various sectors. This course will provide a comprehensive understanding of ultrasonic testing's applications within the industrial realm. You will gain insights into how ultrasonic testing is utilized to ensure product quality, assess structural integrity, and enhance safety across various sectors. Through practical examples and theoretical knowledge, you'll explore its significance in flaw detection, material analysis, and weld inspection, fostering expertise in the implementation of this vital technique. This will help participants for acquiring UT level I/II/III certificates.

Course Instructors:



Dr. Y. Y. Mahajan
Assistant Professor,
Department of Metallurgical
and Materials Engg.,
VNIT Nagpur



Dr. Abhinav Arya
Assistant Professor,
Department of Metallurgical
and Materials Engg.,
VNIT Nagpur

VISVESVARAYA NATIONAL INSTITUTE OF TECHNOLOGY, NAGPUR

Format of submission of proposal for online courses

Type of online course: Certificate

Course title: Certificate Course on Ultrasonic Testing

Offered by: Department of Metallurgical and Material Engineering

Eligibility: XII/ITI/ Diploma & above

Note:

1. No course completion requirement of any type by the candidate, prior to registering for the course to be specified.
2. Current students of VNIT are not supposed to register for these courses. The same content needs to be offered to them through normal mechanisms (DC/DE or OC courses).

Proposed Maximum Duration: 3 months/90 Days (as per discretion of instructors)

Total contact hours: 90 hrs (Lecture: 45 hrs + Tutorial: 00 hrs + Practical: 45 hrs)

Mode of course delivery: Hybrid/online live/online recorded/ live + recorded:
Hybrid mode (as per discretion of instructors).

Course Objectives:

1. To sensitize the large population about the importance of ultrasonic testing.
2. To develop skill manpower for detection of defects, measurement of their parameters, assessment of their hazard.
3. To cater the demands of skilled NDT inspectors for absolute safety and reliability in strategic industries like atomic energy, aerospace, defence etc.
4. To prepare students to start their own NDT Business.

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Course structure (per week equivalent):

Sr. No.	Courses (Titles)	L	T	P	Cr
1	General Knowledge in NDT, Materials, Discontinuities, Defects. ;Terminology, Physical Principles and Fundamentals of Ultrasonic; Testing Techniques and their Limitations; Equipment and accessories; Calibration of the Testing System; Specific Applications; Codes, Standards, Specification and Procedures; Recording and Evaluation of Results.	45	00	00	02
2	Hand on session on Ultrasonic testing	00	00	45	02
Total		45	00	45	04

Course fee: Rs. 40,000 + 18% GST (Maximum 4 credits for certificate course x Rs 10,000 per credit = Rs 40,000)

Course Contents:

Sr. No.	Topics	Hours	
		Tutorial	Practical
1.	General Knowledge in NDT, Materials, Discontinuities, Defects.	05	00
2.	Terminology, Physical Principles and Fundamentals of Ultrasonic	05	00
3.	Testing Techniques and their Limitations, Phased array ultrasonic testing	05	00
4.	Equipment and accessories	05	00
5.	Calibration of the Testing System	05	00
6.	Specific Applications	10	00
7.	Codes, Standards, Specification and Procedures	05	00
8.	Recording and Evaluation of Results	05	00
9.	Hand-on session on Ultrasonic equipment and its accessories	00	10
10.	Hand-on session on Ultrasonic equipment handling/calibration	00	10
11.	Hand-on session on Ultrasonic Testing of pipes/plates/etc	00	10
12.	Hand-on session on Interpretation, Recording and Evaluation of Ultrasonic test results	00	15
Total Hours		45	45

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Course Outcomes:

After successful completion of this course the student will be able to:

1. Have a basic knowledge of ultrasonic testing which enables them to perform inspection of samples.
2. Calibrate the instrument and evaluate the component for imperfections.
3. Differentiate various defect types and select the appropriate NDT methods for the specimen.
4. Document a written procedure paving the way for further training in specific techniques.
5. Prepare students to start their own NDT Business.

Attendance requirement: 75% of the total designated hours

Course Evaluation plan:

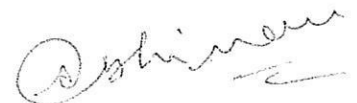
Participants' performance in knowledge exams, hands-on skill evaluations, project work, participation, and attendance will be continuously evaluated. To offer participants a clear sense of their performance levels, the following grading system will be used on a continuous evaluation basis:

<u>Grade</u>	<u>Grade Points</u>	<u>Description</u>
AA	10	Outstanding
AB	9	Excellent
BB	8	Very good
BC	7	Good
CC	6	Average
CD	5	Below average
DD	4	Marginal
FF	0	Poor/Unsatisfactory/Absec from an exam
NP	Nil	Audit Pass
NF	Nil	Audit Fail
SS	Nil	Satisfactory performance in zero credit course
ZZ	Nil	Unsatisfactory performance in zero credit course
W	Nil	Insufficient attendance

Course Coordinator(s)(Name and Sign):

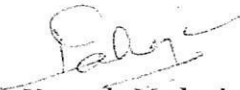


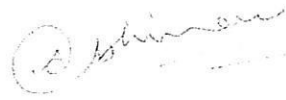
Dr. Yogesh Mahajan (MME)



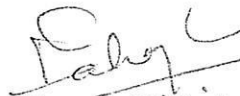
Dr. Abhinav Arya (MME)


Lab Coordinator(s)(Name and sign):


Dr. Yogesh Mahajan (MME)



Dr. Abhinav Arya (MME)

Course Execution Coordinator (Name and Sign):


Dr. Yogesh Mahajan (MME)
Asstt. Professor
Deptt. of Metallurgical & Materials Engg
V. N. I. T., Nagpur


Dr. Abhinav Arya (MME)
Asstt. Professor
Deptt. of Metallurgical & Materials Engg
V. N. I. T., Nagpur

Head of the Department/Center(Name and Sign):


विभाग प्रमुख / Head
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Dr. Jatin G. Bhatt
Prof. and Head,
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