

Report of AICTE –GTU Sponsored one week Online Faculty Development Program on Metallurgy for All

1. Name of the event :

AICTE- GTU sponsored one week Online Faculty Development program on “Metallurgy For All”

2. Date of the event: 1 Feb 2021 to 6th Feb 2021

3. Venue of the event:

Government Engineering College, Sector 28, Gandhinagar

4. Objective and Outcome of the Event:

Objective:

- The objective of the faculty development program was to make participants abreast about comprehensive overview of metallurgy and fulfill multidisciplinary approach for research and industrial challenges
- The other objective is also to make people aware about the importance of Metallurgy and material science in our daily busy modern life .

Every innovation is completed by the proper material selection and design where there is need of knowledge of metallurgy and material science. To fulfill the honorable prime minister’s vision of “Aatmnirbhar Bharat” thorough knowledge of manufacturing process and materials play vital role.

By keeping this idea in mind, faculty development program “Metallurgy for All” was conceived. The objective of the faculty development program was to make participants abreast about comprehensive overview of metallurgy and fulfill multidisciplinary approach for research and industrial challenges. There were 31 participants selected out of 105 entries from different institutes. This program has made participants aware about the importance of metals and materials in our busy daily life and different recent advances in the field of metallurgy and material science.

In the Inauguration ceremony, Mr Amish Panchal, (Owner) Kastwel industries, IIF (Ex . Chairman) was invited as a guest for motivation speech. He had nicely shown the use of metals and alloys by human being by 24X 7.

The participant had complete exposure of manufacturing process and materials in this six days having different 22 session which include the basic fundamentals of the metallurgy and material science, iron and steel making, advance technology in the field of plasma, welding technology and advance solid state process, metal working process, corrosion engineering, surface

engineering, foundry technology, Nondestructive testing, failure analysis and characterization, etc. We received very good interaction between experts and participants.

Sr No	Date and Day	Expert	Session Time	Topic	Out comes
1	1/02/2021 Monday	Dr G.H.Upadhyay	12:00 - 1:15 P.M	Introduction to Metallurgy & Properties of materials,	The participants make aware about the introduction to the material science and metallurgy, Basic fundamental properties, material selection for application etc
		Dr G.H.Upadhyay	1:15 - 2:30 P.M	Material Bonds and Crystal structure	understand the basic types of bonding at atomic level in different types of material
		Dr Mrunal Chaudhari	2:30 - 3:45 P.M	Dislocation Theory: Slip and Slip Systems, Strengthening Mechanism	understand the types of dislocation, mechanism of deformation and strengthening Mechanism
2	2/02/2021	Dr Mrunal Chaudhari	10:30- 11:45	Phase Diagram	participants aware about the phase rule, different types of Phase diagram
		Dr K Santhy	11:45- 01:00	Ellingham diagram	understand the reactivity of metal with respect to temperature and free energy with help of Ellingham Diagram
		Prof D V Mahant	02:00- 03:15	Road map to iron and steel industries	Participant introduced to Ironmaking, and steelmaking recent scenario in iron and steel industries etc
		Prof D V Mahant	03:15- 04:30	Secondary steel making	AOD, VOD manufacturing process was

					explained in detail
3	03-02-2021	Mr. Ashutosh Singh	10:30-11:45	Extractive Non Ferrous Metallurgy	extractive metallurgy for non Ferrous metals were explained in detail
		Dr V J Rao	11:45-01:00	Composite and its applications	participants were introduce to new field of Materials(composite Material) and its application
		Dr. Nirav Jamanapara	02:00-03:15	Overview of Plasma Technology applications in Metallurgy & Materials Science	participants were introduce to use of plasma technology as emerging technology used for various advance applications in metallurgy and material science
		Dr Mukesh Ranjan	03:15-04:30	Nanomaterials and its applications	how the nano technology is used as advance trend in field of metallurgy and material science was introduced rto participants
4	04-02-2021	Dr V J Badheka	10:30-11:45	Welding: Conventional Arc Welding and its Applications	The participant were made aware about the basic arc welding techniques
		Dr V J Badheka	11:45-01:00	Special and Advanced Welding Processes	were made aware about the various new welding techniques ,Additive manufacturing process, friction welding,FSW etc
		Dr Mahesh K Chadusama	02:00-03:15	Metal Working (Rolling,forging,extrusion)	The partaicipants introduce to Rolling Forging Extrusion process with its types , principles, application etc
		Dr Mahesh K Chadusama	03:15-04:30	Metal Working (Deep drawing,coining, etc)	The partaicipants introduce to Deep

					Drawing,coining process with its , principles, application etc
5	05-02-2021	Dr V B Patel	10:30-11:45	Foundry: Introduction & Basics, Casting Processes, Advancement in Al Si Alloy casting	,the participants understand the fundamentals to casting process , and particular the casting of Al Si Alloys
		Dr I B Dave	11:45-01:00	Heat Treatment Principles & Processes	The participants made aware about the importance of heat treatment for improving the Mechanical properties of component, TTT, CCT diagram ,FE FE3C diagram etc
		Dr D G Sharma	02:00-03:15	Corrosion Principles, Types, Protection and Testing	The participant made aware about the different 8 forms of corrosion its causes and prevention method
		Dr Jyoti Meghani	03:15-04:30	Surface Engineering	The participants introduced to various surface modification treatment and surface coating techniques to prevent corrosion of component
6	06-02-2021	Mr Krutik Shah	10:30-11:45	NDT Principles, Testing Methods(VT,DPT,MPT)	The participants had given the exposure to various non Destructive testing techniques (VT,DPT,MPT) to identify the defect in object.
		Mr Krutik Shah	11:45-01:00	NDT Principles, Testing Methods(UT,ECT)	The participants had given the

					exposure to various non-Destructive testing techniques (UT,ECT) to identify the defect in object
		Dr Sujoy Chaudhary	02:00-03:15	Failure Analysis" How a component fails?" and Material Characterization	The participants are introduced to failure of Turbochargers in Automobile application,remidies etc
			03:15-04:30	Test and Valedictory	Multipl;e choice question

At the last day, Shri G. T. Pandya sir, Director of Technical Education, Government of Gujarat presided the valedictory function.

We received very good feedback from the participants at the end of the FDP in terms of content, time management experts, knowledge sharing and cooperation of co coordinators.

REC **M** Mrunalkumar Chaudhari is presenting **Jainesh Patel and 8 more** **19** **10:37 AM** **You**

AICTE-GTU Sponsored FDP on "Metallurgy for All"

Phase Diagrams

Dr. Mrunalkumar Chaudhari
Assistant Professor (Metallurgy),
Mechanical Engineering Department,
L. D. College of Engineering, Ahmedabad.
Email: mrunalkumarc@gmail.com

- Mrunalkum...
- Vipul Goti
- Muhammad...
- Dignesh The...
- Ghanshyam ...
- Principal GE...
- Vaibhav Rah...
- Pratik Rama...

Day 2 Joint AICTE-... **Raise hand** **Turn on captions** **Mrunalkumar Chaudhari is presenting**

REC M Mrunalkumar Chaudhari is presenting

Devang Mahant and 22 more

33

10:54 AM

You B

Types of Binary Phase Diagrams

- Map which shows the phases that exist in equilibrium at any temp and alloy composition
- Depending on the nature of two elements involved, several type of binary equilibria can occur
- Two components completely soluble in the liquid state and
 - Type I - completely soluble in solid state (Isomorphous System/Solid Solutions, Cu-Ni)
 - Type II - completely insoluble in solid state (Eutectic System, Bi-Cd)
 - Type III - partially soluble in solid state (Eutectic System, Pb-Sn)
 - Type IV - partially soluble in solid state with $\Delta T_{mp} >> 0$ (Peritectic System, Fe-C)
- Two components partially soluble in the liquid state (Monotectic System, Cu-Pb)
- Two components partially soluble in liquid but soluble in solid state (Syntectic System, Na-Zn)
- Two components are insoluble in liquid as well as solid state
 - Eutectoid reaction
 - Peritectoid reaction

Oil-Water

Mrunalkum...

Vipul Goti

Muhammad...

Dignesh The...

Ghanshyam ...

Pratik Thaw...

jaimin rajya...

Dixit Patel

Day 2 Joint AICTE-...

Raise hand

Turn on captions

Mrunalkumar Chaudhari is presenting

REC

Dixit Patel and 11 more

22 11:48 AM You

Principal GEC-Gandhinagar

milan patel

Muhammad Muhsin Ali H

Ghanshyam Patel

Nayak Nikhil

Santhy K

Abhishek Gond

YASHODIP HIRE

jaimin rajyaguru

Day 2 Joint AICTE-G... ^

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Present now

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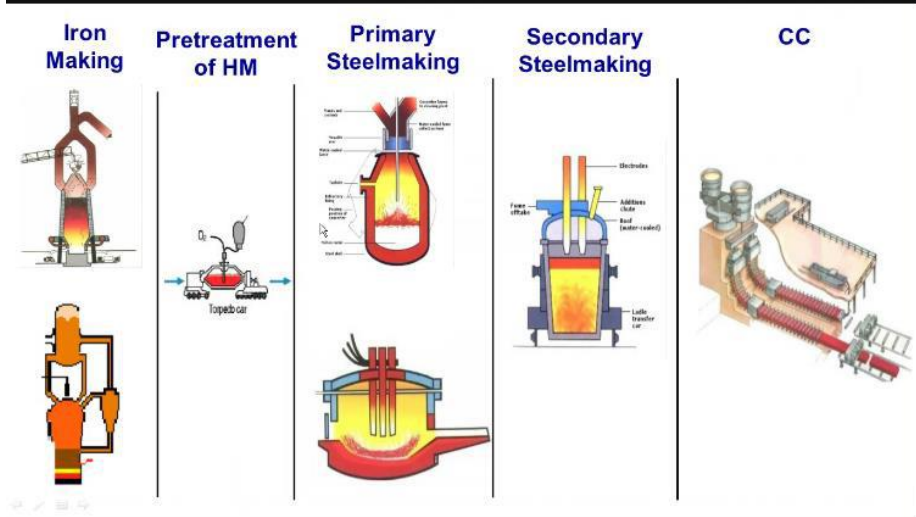
**ROAD MAP TO
IRON & STEEL INDUSTRIES**

**AICTE – GTU sponsored FDP
on
Metallurgy for All**

Prof. Devang V. Mahant
Asst. Prof. (Metallurgy)

2-Feb-21 Government Engineering College, Sec- 28, Gandhinagar

- Devang Mah...
- Principal GE...
- Devang Mah...
- Pradip Patel
- milan patel
- Mayur Modi
- Dr. Daulat S...
- Patel Sweta



Participant list:

- Devang Mahant (muted)
- milan patel (muted)
- Devang Mahant (muted)
- Sandeepsin... (muted)
- Ghanshyam ... (muted)
- JATIN VAID... (muted)
- Steny Christ... (muted)
- Principal GE... (muted)

Day 2 Joint AICT... Raise hand Turn on captions Devang Mahant is presenting

Training Assignment for G...pdf Assignment for G...pdf Show all

REC

Anil Mangukiya | Hardik Ghodadara | Devang Mahant
Raj Kumar | Ghanshyam Patel | Vandana.J. Rao
Principal GEC-Gandhinagar | Viraj Pithwa | Manish Bhatt

Meeting details

People (24) | Chat

- Patel Sweta
- Pradip Patel
- Principal GEC-Gandhin...
- Purvesh Shah
- Raj Kumar
- Shivanshi Desai
- Vandana.J. Rao
- Vipul Goti

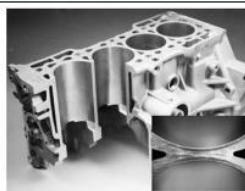
Meeting details ^

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REC V Vandana.J. Rao is presenting Shivanshi Desai and 11 more 22 12:48 PM You

ALUMINUM ALLOY MMC APPLICATION

Aluminum-based MMCs offer a very useful combination of properties for brake system applications in replacement of cast iron



Aluminum MMC cylinder liners have been in mass production since 1990 in the Honda Prelude 2.3 liter engine



Use of aluminum MMCs in the driveshaft takes advantage of the increased specific stiffness obtained in these materials.

Other Field of Application

- Aeronautical Application
- Space Application
- Engine Application

Participant list:

- Principal GE...
- Vandana.J. ...
- Devang Mah...
- Manish Bhatt
- Ghanshyam ...
- milan patel
- Anil Manguk...
- Aparna Shri...


Meeting details ^ [Microphone] [End Call] [Close] Low Disk Space You are running out of disk space on no (F:). Click here to see if you can free space on this drive. Vandana.J. Rao is presenting

REC | Nirav Jamnapara is presenting | M Mayur Modi and 10 more | 21 | 2:09 PM | You

Invited Talk on
METALLURGY FOR ALL
01 - 06 February, 2021, GEC Gandhinagar

Overview of Plasma Technology Applications in Metallurgy & Materials Science

Dr. Nirav Jamnapara
Institute for Plasma Research



nirav@ipr.res.in | 03rd Feb, 2021 | 14:00 – 15:15 hrs

Nirav Jamn...
Principal GE...

Aparna Shri...
Devang Mah...

m
milan patel
Ghanshyam ...

Viraj Pithwa
Apurva Cha...

Meeting details ^ | [Microphone] [Camera] [Screen Share] | Low Disk Space: You are running out of disk space on no (F:). Click here to see if you can free space on this drive. | Nirav Jamnapara is presenting

IIW INDIA
DWE EKAM Manufacturing Technology

- Joining Processes : Welding
Brazing
Soldering
- Casting
- Metal forming

Dr. VISHVESH J. BADHEKA,
Professor & Head,
Mechanical Engineering Dept
School of Technology,
Pandit Deendayal Petroleum University

Participant list:

- Principal GE...
- Ghanshyam ...
- Viraj Pithwa
- jeet padhiyar
- Yuvrajsinh G...
- Manish Bhatt
- Jaymil patel
- vishvesh ba...

Meeting details ^ [Mute] [Unmute] [Raise hand] Turn on captions vishvesh badheka is presenting

Welding processes

- Fusion welding
 - The metal is heated to its melting temperatures and let it solidify to form the joint. The melting and solidification causes poor properties
 - The disadvantages also include porosity, oxidation, micro segregation, hot cracking and other micro structural defects in the joint.
 - The process also limits the combination of the metals that can be joined because of the different thermal coefficients of expansion
- Solid state welding
 - The metal is heated temperatures below the melting temperatures of the base metal without any need for the filler material or any inert ambience in many cases.
 - As the metal in solid state welding does not reach its melting temperatures, there are fewer defects caused due to the lower heat input which is below the melting temperature and solidification of the metal.
 - Suitable for different metal combinations

Participant list:

- Principal GE...
- Vipul Goti
- jemish Bhay...
- vishvesh ba...
- Viren Lakhani
- Paras Patel
- Anil Manguk...
- Mayur Modi

Meeting details ^

Buttons: Mute, Unmute, Video Off, Video On, Raise hand, Turn on captions, vishvesh badheka is presenting

REC Mahesh Chudasama is presenting

Direct Compression in Plane Strain

Force balance in a slab.

Vipul Goti | Principal GEC-Ga... | Manish Bhatt | Mahesh Chudas...

Meeting details

People (14) Chat

- Manish Bhatt
- Mayur Modi
- Muhammad Muhsin Ali H
- Pradip Patel
- Principal GEC-Gandhin...
- Sandeepsinh Vala
- Vipul Goti

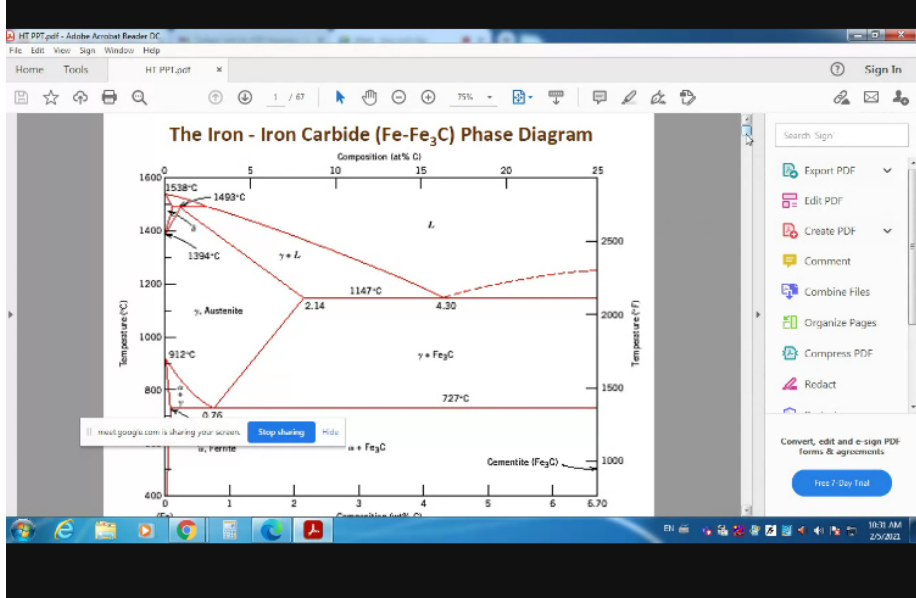
Meeting details ^

Microphone icon | End call icon | Screen share icon

Raise hand | Turn on captions | Mahesh Chudasama is presenting

RM-Assignment-1....pdf | RM-Assignment-....docx | DTE G.T Pandya....docx | Show all

Indravadan Dave is presenting
Ghanshyam Patel and 8 more
19
10:32 AM
You



Participant list:

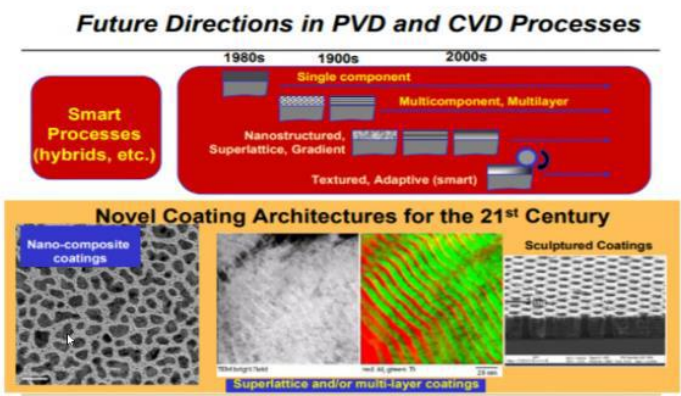
- Indravadan ...
- Principal GE...
- Harshad Pat...
- The Thief Of...
- Siddharth S...
- Anil Manguk...
- Ghanshyam ...
- Dinesh Mev...

Meeting details ^

Buttons: Mute, Video Off, Screen Share Off

Meeting controls: Raise hand, Turn on captions, Indravadan Dave is presenting

REC Ms. Jyoti V. Menghani SVNIT is presenting Manish Bhatt and 13 more 24 12:02 PM You



Harshit Bha... Devang Mah...
Principal GE... JATIN VAID...
Abhishek G... Patel Sweta
Dr. Daulat S... Ms. Jyoti V. ...

Meeting details ^ Raise hand Turn on captions Ms. Jyoti V. Menghani SVNIT is presenting



CORROSION PRINCIPLES, TYPES, PROTECTION AND ITS TESTING...



2/5/2021

One-Week AICTE-GTU Sponsored FDP on
"Metallurgy for All"
Metallurgy Engineering Department,
Government Engineering College, Gandhinagar

FEBRUARY 01-06, 2021

Dr. D. G. Sharma
Metallurgy Engineering Department
Government Engineering College, Gandhinagar

DCS.....GEC- Gnr

- P Principal GE... | Dr. Daulat S...
- M Mayur Modi | Paras Patel
- YASHODIP ... | Ghanshyam ...
- A Anil Manguk... | Ghanshyam ...

REC Vikram Patel is presenting

Sand Mould

The diagram illustrates a sand moulding setup. It shows a cross-section of a flask containing sand. On the left is the cope and on the right is the drag. A central sprue leads to a runner, which then branches into a choke and a mold cavity. A pouring basin (cup) is at the top right. Other features include an open riser, a vent, and a core of sand within the mold cavity. Labels include: Open Riser, Vent, Pouring Basin (cup), Cope, Drag, Core (sand), Mold Cavity, Sprue, Runner, Choke, Sand, Parting Line, and Flask.

Meeting details

People (19)

- Pradip Patel
- JATIN VAIDYA
- Manish Bhatt
- Mayur Modi
- Muhammad Muhsin Ali H
- Nisarg Barad
- Paras Patel
- patel nilam
- Pradip Patel

Chat

Participant avatars: P (Principal GEC-Ga...), V (Vikram Patel), Dr. Daulat Sharma, Vipul Goti

Meeting controls: Mute, Unmute, Video Off, Video On, Screen Share, Stop sharing

Meeting details ^

Low Disk Space
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Vikram Patel is presenting

15:36 05-02-2021

REC KRUTIK SHAH is presenting

ULTRASONIC INSTRUMENT

PULSE ECHO TECHNIQUE (continued)

Ultrasonic Pulse

X Plate

Y Plate

Electron beam

CRT SCREEN

Probe

Test specimen

Amplifier

Horizontal sweep

Clock

pulser

Usually electrons are colourless. They emit visible light only after striking the CRT screen. In order to make the animation clear we have given green colour to the electron beam.

Home Mute Next Back

Meeting details

People (26) Chat

Add people

IN CALL

- 19999921504 GTU (You)
- Anil Mangukiya
- Bhavesh Rana
- Dr.Jignesh Patel
- Ghanshyam Patel

Meeting controls: Mute, Unmute, Stop video, Raise hand, Turn on captions, KRUTIK SHAH is presenting

Image thumbnails: image (9).png, image (8).png, image (7).png. Show all

Windows taskbar: File Explorer, Google Chrome, Microsoft Excel, System tray (12:00, 06-02-2021)

REC Sujoy Chaudhury is presenting

Working Principle of Turbochargers

Benefits: ↑ Engine efficiency, better torque characteristics, ↓ engine noise, ↓ emission, ↓ weight and a smaller engine package, reduced power loss at elevated altitude

Participant avatars: M (Mayur Modi), S (Sujoy Chaudhury), P (Principal GEC-Ga...), V (Vipul Goti)

Day 6 Joint AICTE-GTU sponsore...

People (26) Chat

	Sandeeptsinh Vala		
	Sujoy Chaudhury		
	Sujoy Chaudhury Presentation		
	Vijay Modi		
	Vipul Gondaliya		
	Vipul Goti		
	Yatin Patel		

Day 6 Joint AIC...

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