Lecture Plan-1

Faculty:- Mr.V.V.Narulkar Semester IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit

S. No.	**Topic :-** Syllabus.	**Time Allotted:-**
1.	Introduction Mutual Introduction with students.	5 min
2	Division of the Topic Teaching Methodology of Dronacharya College of Engineering. Need of Material Science in Engineering, Syllabus contents.	35 min
3.	Conclusion	5min
4	Question / Answer	5min

Assignment to be given:-

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta

Lecture Plan-2

Faculty:- Mr.V.V.Narulkar Semester IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:I

S. No.	**Topic :-** Crystallography	**Time Allotted:-**
1.	Introduction Introduction of the Mat. Sc.	5 min
2	Division of the Topic Application of Material Science. Crystallography	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Crystallography?	5min

Assignment to be given:- Application of Material Science.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-3

Faculty:- Mr.V.V.Narulkar Semester IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:I

S. No.	**Topic :-** crystal structure.	**Time Allotted:-**
1.	Introduction Introduction Review of crystal structure.	5 min
2	Division of the Topic Review of crystal structure. space lattice.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Review of crystal structure? Space lattice?	5min

Assignment to be given:- Discuss with neat sketch about Space lattice.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-4

Faculty:- Mr.V.V.Narulkar Semester -IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-I

S. No.	**Topic :-** Crystal planes.	**Time Allotted:-**
1.	Introduction Introduction of the Crystal planes and crystal directions.	5 min
2	Division of the Topic Crystal planes. Crystal directions. Co-ordination number.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Crystal planes and crystal directions? Co-ordination number?	5min

Assignment to be given:- Discuss with neat sketch Crystal planes and crystal directions.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta

Lecture Plan-5

Faculty:- Mr.V.V.Narulkar Semester- IV Class: M.E. Course Code:- ME-204-E

Subject: Material Science Unit:I

S. No.	**Topic :-** Atomic packing factor.	**Time Allotted:-**
1.	Introduction Introduction of the Number of atoms per unit cell.	5 min
2	Division of the Topic Number of atoms per unit cell. Atomic packing factor. Numerical.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Number of atoms per unit cell? Atomic packing factor, Numerical?	5min

Assignment to be given:- Numerical based on Atomic packing factor.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta

Lecture Plan-6

Faculty:- Mr.V.V.Narulkar Semester -IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-II

S. No.	**Topic :-** Crystal imperfection.	**Time Allotted:-**
1.	Introduction Introduction of the Crystal imperfection.	5 min
2	Division of the Topic Crystal imperfection.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Crystal imperfection? Classification?	5min

Assignment to be given:- Discuss with neat sketch Crystal imperfection.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-7

Faculty:- Mr.V.V.Narulkar Semester -IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-II

S. No.	**Topic :-** Point defects	**Time Allotted:-**
1.	Introduction Introduction of the Point defects	5 min
2	Division of the Topic Point defects. Line defects.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Point defects? Line defects?	5min

Assignment to be given:- Discuss with neat sketch Point defects.

Reference Readings:- :- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-8

Faculty:- Mr.V.V.Narulkar Semester -IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-II

S. No.	**Topic :-** Edge & screw dislocation	**Time Allotted:-**
1.	Introduction Introduction of the Edge & screw dislocation	5 min
2	Division of the Topic Edge dislocation. Screw dislocation. Surface defects.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Edge & screw dislocation? Surface defects?	5min

Assignment to be given:- Discuss with neat sketch Edge & screw dislocation.

Reference Readings:-. 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-9

Faculty:- Mr.V.V.Narulkar Semester –IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-II

S. No.	**Topic :-** imperfection on metal properties.	**Time Allotted:-**
1.	Introduction Introduction of imperfection on metal properties.	5 min
2	Division of the Topic Volume defects and effects of imperfection on metal properties.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Volume defects and effects? Imperfection on metal properties?	5min

Assignment to be given:- Discuss with neat sketch Volume defects and effects of imperfection on metal properties.

Reference Readings:-. 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-10

Faculty:- Mr.V.V.Narulkar Semester -IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-III

S. No.	**Topic :-** solid solution.	**Time Allotted:-**
1.	Introduction Introduction of the single and multiphase solid solution.	5 min
2	Division of the Topic Single and multiphase solid solution.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Single and multiphase solid solution?	5min

Assignment to be given:-

Reference Readings:-. 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-11

Faculty:- Mr.V.V.Narulkar Semester -IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-III

S. No.	**Topic :-** Types of solid solution	**Time Allotted:-**
1.	Introduction Introduction of the Types of solid solution.	5 min
2	Division of the Topic Types of solid solution.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Types of solid solution?	5min

Assignment to be given:- Types of solid solution.

Reference Readings:-. 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-12

Faculty:- Mr.V.V.Narulkar Semester – IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-III

S. No.	**Topic :-** Phase diagram	**Time Allotted:-**
1.	Introduction Introduction of the phase diagram.	5 min
2	Division of the Topic Importance and objective of a phase diagram.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Importance and objective of a phase diagram?	5min

Assignment to be given:- Importance and objective of a phase diagram.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-13

Faculty:- Mr.V.V.Narulkar Semester- IV Class: M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-III

S. No.	**Topic :-** cooling curves.	**Time Allotted:-**
1.	Introduction Introduction of cooling curves.	5 min
2	Division of the Topic System phase and structural constituents. Cooling curves.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer System phase and structural constituents? Cooling curves?	5min

Assignment to be given:- System phase and structural constituents.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-14

Faculty:- Mr.V.V.Narulkar Semester – IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-III

S. No.	**Topic :-** phase diagrams,	**Time Allotted:-**
1.	Introduction Introduction of the Unary and Binary phase diagrams.	5 min
2	Division of the Topic Unary and Binary phase diagrams. Gibb's phase rule, lever rule.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Unary and Binary phase diagrams? Gibb's phase rule, lever rule?	5min

Assignment to be given:- Gibb's phase rule, lever rule.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-15

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-III

S. No.	**Topic :-** Eutectic and eutectoid systems,	**Time Allotted:-**
1.	Introduction Introduction of the Eutectic and eutectoid systems.	5 min
2	Division of the Topic Eutectic and eutectoid systems. pesitate and peritectoid system.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Eutectic and eutectoid systems? Pesitate and peritectoid system?	5min

Assignment to be given:- Eutectic and eutectoid systems.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-16

Faculty:- Mr.V.V.Narulkar Semester - IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-III

S. No.	**Topic :-** TTT diagram.	**Time Allotted:-**
1.	Introduction Introduction of the Iron carbon Equilibrium diagram and TTT diagram.	5 min
2	Division of the Topic Iron carbon Equilibrium diagram. TTT diagram.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Iron carbon Equilibrium diagram? TTT diagram?	5min

Assignment to be given:- Iron carbon Equilibrium diagram.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-17

Faculty:- Mr.V.V.Narulkar Semester - IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-IV

S. No.	**Topic :-** Heat treatment	**Time Allotted:-**
1.	Introduction Introduction of the Heat treatment: principle. .	5 min
2	Division of the Topic Heat treatment: principle. Purpose, classification.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Heat treatment: principle? Purpose, classification?	5min

Assignment to be given:- Heat treatment: principle.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-18

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-IV

S. No.	**Topic :-** Heat treatment	**Time Allotted:-**
1.	Introduction Introduction of the Annealing, normalizing. Stress relieving, hardening.	5 min
2	Division of the Topic Annealing, normalizing, Stress relieving, hardening.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Annealing, normalizing? Stress relieving, hardening?	5min

Assignment to be given:- Stress relieving, hardening.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-19

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-IV

S. No.	**Topic :-** Tempering	**Time Allotted:-**
1.	Introduction Introduction of the Tempering carbonizing, Nitrating, cyaniding.	5 min
2	Division of the Topic Tempering carbonizing, Nitrating, cyaniding.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Tempering carbonizing? Nitrating, cyaniding?	5min

Assignment to be given:- Tempering carbonizing.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-20

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-IV

S. No.	**Topic :-** Flame and induction hardening.	**Time Allotted:-**
1.	Introduction Introduction of the Flame and induction hardening. Allotropic transformation of iron and steed.	5 min
2	Division of the Topic Flame and induction hardening, Allotropic transformation of iron and steed.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Flame and induction hardening? Allotropic transformation of iron and steed?	5min

Assignment to be given:- Flame and induction hardening.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-21

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-

S. No.	**Topic :-** Properties of astetine	**Time Allotted:-**
1.	Introduction Introduction of the Properties of astetine, ferrite, Pearlite and martensite.	5 min
2	Division of the Topic Properties of astatine, ferrite pearlite and martensite.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Properties of astatine, ferrite? pearlite and martensite?	5min

Assignment to be given:- Properties of astatine, ferrite.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-22

Faculty:- Mr.V.V.Narulkar Semester – IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-V

S. No.	**Topic :-** Elastic and Plastic deformation.	**Time Allotted:-**
1.	Introduction Introduction of the Elastic and Plastic deformation mech, plastic deformation, twinning.	5 min
2	Division of the Topic Elastic and Plastic deformation mech, plastic deformation, twinning.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Elastic and Plastic deformation? plastic deformation, twinning?	5min

Assignment to be given:- Elastic and Plastic deformation.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-23

Faculty:- Mr.V.V.Narulkar Semester - IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-V

S. No.	**Topic :-** Conventional and true stress.	**Time Allotted:-**
1.	Introduction Introduction of the Conventional and true stress.	5 min
2	Division of the Topic Conventional and true stress. Strain curves for polycrystalline materials. Yield point phenomenon, strain aging.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Strain curves for polycrystalline materials? Yield point phenomenon, strain aging?	5min

Assignment to be given:- Strain curves for polycrystalline materials.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-24

Faculty:- Mr.V.V.Narulkar Semester – IV Class: M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-V

S. No.	**Topic :-** Work hardening	**Time Allotted:-**
1.	Introduction Introduction of the Work hardening Bauschinger effect.	5 min
2	Division of the Topic Work hardening Bauschinger effect. Season cracking, recovery. Recsystallization and gain growth.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Work hardening Bauschinger effect? Season cracking, recovery? Recsystallization and gain growth?	5min

Assignment to be given:- Work hardening Bauschinger effect.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-25

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VI

S. No.	**Topic :-** Failure analysis.	**Time Allotted:-**
1.	Introduction Introduction of the Failure analysis, fracture, process of fracture, types of fracture.	5 min
2	Division of the Topic Failure analysis, Fracture, Process of fracture, types of fracture.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Failure analysis, Fracture? Process of fracture, types of fracture?	5min

Assignment to be given:- Failure analysis, Fracture.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-26

Faculty:- Mr.V.V.Narulkar Semester – IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VI

S. No.	**Topic :-** Mechanism of fracture.	**Time Allotted:-**
1.	Introduction Introduction of the Mechanism of fracture. .	5 min
2	Division of the Topic Mechanism of fracture, fatigue. Character of fatigue, fatigue limit, mechanism of fatigue.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Mechanism of fracture, fatigue? Character of fatigue, fatigue limit, mechanism of fatigue?	5min

Assignment to be given:- Mechanism of fracture, fatigue.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-27

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VI

S. No.	**Topic :-** Factors officiating fatigue.	**Time Allotted:-**
1.	Introduction Introduction of the Factors officiating fatigue.	5 min
2	Division of the Topic Factors officiating fatigue. S-N curve fatigue loading and damages.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Factors officiating fatigue? S-N curve fatigue loading and damages?	5min

Assignment to be given:- S-N curve fatigue loading and damages.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-28

Faculty:- Mr.V.V.Narulkar Semester - IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VII

S. No.	Topic :- creep	Time Allotted:-
1.	Introduction Introduction of the Definition and concept creep curve.	5 min
2	Division of the Topic Definition and concept, creep curve, mech, Creep, impact, impact of time and temp in creep, creep factor.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Definition and concept, creep curve, mech? Creep, impact, impact of time and temp in creep, creep factor?	5min

Assignment to be given:- Creep, impact, impact of time and temp in creep, creep factor.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-29

Faculty:- Mr.V.V.Narulkar Semester - IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VII

S. No.	**Topic :-** Creep testing and prevention.	**Time Allotted:-**
1.	Introduction Introduction of the Creep testing and prevention against creep.	5 min
2	Division of the Topic Greep testing and prevention against creep. Corrosion, mechanism and effect of corrosion, prevention of corrosion.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Creep testing and prevention against creep?	5min

Assignment to be given:- Creep testing and prevention against creep.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-30

Faculty:- Mr.V.V.Narulkar Semester - IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VIII

S. No.	Topic :- Polymers	Time Allotted:-
1.	Introduction Introduction of the Polymer.	5 min
2	Division of the Topic Polymers, formation of polymers. Polymer structure and crystallinity, polymers to plastics.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Polymers, formation of polymers? polymer structure and crystallinity , polymers to plastics?	5min

Assignment to be given:- polymer structure and crystallinity , polymers to plastics.

Reference Readings:- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-31

Faculty:- Mr.V.V.Narulkar Semester- IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VIII

S. No.	Topic :- Reinforced material.	Time Allotted:-
1.	Introduction Introduction of the types of reinforced material.	5 min
2	Division of the Topic Types of reinforced material, provided-strengthened and dispersion strengths composites, ceramic materials.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Types of reinforced material, provided-strengthened and dispersion? Strengths composites? Ceramic materials?	5min

Assignment to be given:- Types of reinforced material, provided-strengthened and dispersion.

Reference Readings:- :- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.

Lecture Plan-32

Faculty:- Mr.V.V.Narulkar Semester - IV Class:- M.E. Course Code:- ME-204-E

Subject: Material Science Unit:-VIII

S. No.	**Topic :-** Types of ceramics	**Time Allotted:-**
1.	Introduction Introduction of the Types of ceramics, properties of ceramics,	5 min
2	Division of the Topic Types of ceramics, properties of ceramics. Ceramic forming techniques, mechanical behavior of ceramic.	35 min
3.	Conclusion Above topics will be discussed.	5min
4	Question / Answer Types of ceramics, properties of ceramics? ceramic forming techniques, mechanical behavior of ceramic?	5min

Assignment to be given:- Types of ceramics, properties of ceramics.

Reference Readings:- :- 1)A Text Book of Material Science and Metallurgy by O.P. Khanna.
2)Elements of Material Science &Engineering by Van Vlack
3)Material Science & Engineering by V.Raghavan
4)Material Science by Narula & Gupta.