

R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
 At/Po: Kantapada-Apuja, Niali, Dist-Cuttack, Odisha
DEPARTMENT - MECHANICAL ENGINEERING

LESSON PLAN

Discipline: Mechanical	Semester: 3RD	Name of the Teaching faculty: <i>Nirangan Kandi</i>
Subject: Engineering Material (Th-3)	No of Days/ Week class alloted: 4	Semester from Date: <i>01.09.20</i> To Date: <i>31.12.20</i> No of weeks: <i>15</i>
Week	Class Day	Topics
1st	1st	CH.1 Engineering materials and their properties. Material classification into ferrous and non ferrous category and alloys
	2nd	Properties of Materials: Physical properties
	3rd	Properties of Materials: Chemical properties.
	4th	Properties of Materials: Mechanical properties.
2nd	1st	Properties of Materials: Mechanical properties.
	2nd	Performance requirements and Material reliability and safety
	3rd	CH.2 Ferrous materials and alloys. Characteristics and application of ferrous materials and classification of low carbon steel.
	4th	Composition and application of low carbon steel.
3rd	1st	Classification, composition and application of medium carbon steel.
	2nd	Classification, composition and application of high carbon steel.
	3rd	Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
	4th	Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo.
4th	1st	CH. 3 Iron- Carbon System. Concept of phase diagram
	2nd	Concept of phase diagram
	3rd	Concept of cooling curves
	4th	Concept of cooling curves
5th	1st	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	2nd	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	3rd	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	4th	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
6th	1st	CH. 4. Crystal Imperfections. Crystal defines, classification of crystals; ideal crystal and crystal imperfections

	2nd	Classification of imperfection: Point defects, line defects
	3rd	surface defects and volume defects
	4th	Types and causes of point defects: Vacancies, Interstitials and impurities
7th	1st	Interstitials and impurities
	2nd	Types and causes of line defects: Edge dislocation and screw dislocation.
	3rd	Effect of imperfection on material properties
	4th	Deformation by slip and twinning
8th	1st	Effect of deformation on material properties
	2nd	CLASS TEST 1
	3rd	CH. 5. Heat treatment. Purpose of Heat treatment
	4th	Process of heat treatment: Annealing, normalizing, hardening
9th	1st	Process of heat treatment: Annealing, normalizing, hardening
	2nd	Tampering, stress relieving measures
	3rd	Tampering, stress relieving measures
	4th	Surface hardening: Carburizing and Nitriding
10th	1st	Surface hardening: Carburizing and Nitriding
	2nd	Effect of heat treatment on properties of steel
	3rd	Effect of heat treatment on properties of steel
	4th	Hardenability of steel
11th	1st	CH. 6. Non-ferrous alloys. Aluminum alloys: Composition, property and usage of Duralmin, γ - alloy
	2nd	Copper alloys: Composition, property and usage of CopperAluminum, Copper-Tin alloy.
	3rd	Copper alloys: Babbitt, Phosphorous bronze, brass, Copper- Nickel alloy.
	4th	Predominating elements of lead alloys, Zinc alloys and Nickel alloys.
12th	1st	Low alloy materials like P-91, P-22 for power plants and other high temperature services.
	2nd	High alloy materials like stainless steel grades of duplex, super duplex materials etc.
	3rd	CH. 7. Bearing Material. Classification, composition, properties and uses of Copper base, Tin Base bearing material.
	4th	Classification, composition, properties and uses of Lead base, Cadmium base bearing materials.
13th	1st	CH. 8. Spring materials: Classification, composition, properties and uses of Iron base spring material.
	2nd	Classification, composition, properties and uses of Copper base spring material
	3rd	CH. 9. Polymers : Properties and application of thermosetting polymers.

	4th	Polymers :Properties and application thermoplastic polymers and properies of elastomers.
14th	1st	CH. 10. Composites and Ceramics. Classification, composition, properties and uses of particulate based composites
	2nd	Classification, composition, properties and uses of fiber reinforced composites
	3rd	Classification and uses of ceramics
	4th	Classification and uses of ceramics.
15th	1st	previous year question discussion.
	2nd	previous year question discussion.
	3rd	previous year question discussion.
	4th	CLASS TEST 2

Signature of Faculty

R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
At/Po: Kantapada-Apuja, Niali, Dist-Cuttack, Odisha
DEPARTMENT - MECHANICAL ENGINEERING

LESSON PLAN

Discipline: Mechanical	Semester: 3RD	Name of the Teaching faculty: <i>Niranjana Kandi</i>
Subject: Engineering Material (Th-3)	No of Days/ Week class allotted: 4	Semester from Date: <i>01/10/21</i> To Date: <i>08/01/22</i> No of weeks: <i>15</i>
Week	Class Day	Topics
1st	1st	CH.1 Engineering materials and their properties. Material classification into ferrous and non ferrous category and alloys
	2nd	Properties of Materials: Physical properties
	3rd	Properties of Materials: Chemical properties.
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2nd	1st	Properties of Materials: Mechanical properties.
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	3rd	CH.2 Ferrous materials and alloys. Characteristics and application of ferrous materials and classification of low carbon steel.
	4th	Composition and application of low carbon steel.
3rd	1st	Classification, composition and application of medium carbon steel.
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	3rd	Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
	4th	Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo.
4th	1st	CH. 3 Iron- Carbon System. Concept of phase diagram
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	4th	Process of heat treatment: Annealing, normalizing, hardening
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	2nd	High alloy materials like stainless steel grades of duplex, super duplex materials etc.
	3rd	CH. 7. Bearing Material. Classification, composition, properties and uses of Copper base, Tin Base bearing material.
	4th	Classification, composition, properties and uses of Lead base, Cadmium base bearing materials.
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	3rd	CH. 9. Polymers : Properties and application of thermosetting polymers.

	4th	Polymers :Properties and application thermoplastic polymers and properties of elastomers.
14th	1st	CH. 10. Composites and Ceramics. Classification, composition, properties and uses of particulate based composites.
	2nd	Classification, composition, properties and uses of fiber reinforced composites.
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15th	1st	previous year question discussion.
	2nd	previous year question discussion.
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	4th	CLASS TEST 2

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At/Po: Kantapada-Apuja, Niali, Dist-Cuttack, Odisha
DEPARTMENT - MECHANICAL ENGINEERING

LESSON PLAN

Discipline: Mechanical	Semester: 3RD	Name of the Teaching faculty: <i>Niranjan Kandi</i>
Subject: Engineering Material (Th-3)	No of Days/ Week class alloted: 4	Semester from Date: <i>15.09.22</i> To Date: <i>21.01.23</i> No of weeks: <i>15</i> <i>Semester: 3rd</i>
Week	Class Day	Topics
1st	1st	CH.1 Engineering materials and their properties. Material classification into ferrous and non ferrous category and alloys
	2nd	Properties of Materials: Physical properties
	3rd	Properties of Materials: Chemical properties.
	4th	Properties of Materials: Mechanical properties.
2nd	1st	Properties of Materials: Mechanical properties.
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15th	1st	previous year question discussion.
	2nd	previous year question discussion.
	3rd	previous year question discussion.
	4th	CLASS TEST 2

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N. Khandu
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At/Po:Kantapada-Apuja, Niali,Dist-Cuttack,Odisha
DEPARTMENT - MECHANICAL ENGINEERING

LESSON PLAN

Discipline :	Semester: 3 rd	Name of the Teaching Faculty : <i>Monoranjan Samal</i>
Subject : Environmental Studies	No. of Days / per week <i>04</i>	Semester From date : <i>01-09-20</i> To Date : <i>31-12-20</i>
Week	Class Day	Topics
1 ST	1st	1. The Multidisciplinary nature of environmental studies: Definition,
	2nd	scope
	3rd	and importance.
	4th	1.2 Need for public awareness.
2 ND	1st	2. Natural Resources: Renewable and non renewable resources: Natural resources and associated problems.
	2nd	2.1.1. Forest resources: Use and over-exploitation, deforestation, case studies,
	3rd	Timber extraction mining, dams and their effects on forests and tribal people
	4th	2.1.2. Water resources: Use and over-utilization of surface and ground water, floods,
3 RD	1st	Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources. Food Resources: World food problems, changes caused by agriculture and over grazing
	2nd	effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity,
	3rd	2.1.5. Energy Resources: Growing energy need, renewable and non-renewable energy sources,
	4th	2.1.6. Land Resources: Land as a resource, land degradation, man induces landslides,
4 TH	1st	2.2 Role of individual in conservation of natural resources.
	2nd	2.3 Equitable use of resources for sustainable life styles.
	3rd	3. Systems: Concept of an eco system.
	4th	3.2. Structure and function of an eco system.
5 TH	1st	3.3. Producers, consumers, decomposers.
	2nd	3.4. Energy flow in the eco systems.
	3rd	3.5. Ecological succession.
	4th	3.6. Food chains, food webs and ecological pyramids.
6 TH	1st	3.7. Introduction, types, characteristic-features, structure and function of the following eco system:
	2nd	Forest ecosystem: Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries)
	3rd	4 Biodiversity and It's Conservation: Introduction
	4th	Definition: genetics, species and ecosystem diversity.
7 TH	1st	Value of biodiversity: consumptive use, productive use,
	2nd	social ethical, aesthetic and option values.
	3rd	Biodiversity at global, national and local level.
	4th	Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.
	1st	Unit 5: Environmental Pollution. Definition Causes, effects and control measures of: a) Air pollution. b) Water pollution.

8TH	2nd	c) Soil pollution d) Marine pollution e) Noise pollution.
	3rd	f) Thermal pollution g) Nuclear hazards Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
	4th	Role of an individual in prevention of pollution. Disaster management: Flood, earthquake, cyclone and landslides.
9th	1st	Disaster management: Floods, earthquake, cyclone and landslides.
	2nd	Unit 6: Social issues and the Environment Form unsustainable to sustainable development. Value of biodiversity: consumptive use, productive use,
	3rd	Water conservation, rain water harvesting, water shed management. Resettlement and rehabilitation of people; its problems and concern.
	4th	Environmental ethics: issue and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.
10TH	1st	Air (prevention and control of pollution) Act. Water (prevention and control of pollution) Act. Public awareness.
	2nd	Unit 7: Human population and the environment Population growth and variation among nations. Population explosion- family welfare program.
	3rd	Environment and human health.
	4th	Human rights. Value education. Role of information technology in environment and human health.

Mamunur Samad
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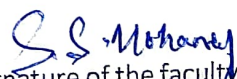
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DEPARTMENT - MECHANICAL ENGINEERING

LESSON PLAN

Discipline : <u>Mech</u>	Semester: <u>3rd</u>	Name of the Teaching Faculty : <u>Sivani Sasikanta Mohanty</u>
Subject : <u>Environmental Studies</u>	No. of Days / per week	Semester From date : <u>01/10/21</u> To Date : <u>8/0/22</u>
Week	Class Day	Topics
1ST	1st	1. The Multidisciplinary nature of environmental studies: Definition,
	2nd	scope
	3rd	and importance.
	4th	1.2 Need for public awareness.
2ND	1st	2. Natural Resources: Renewable and non renewable resources: Natural resources and associated problems.
	2nd	2.1.1. Forest resources: Use and over-exploitation, deforestation, case studies,
	3rd	Timber extraction mining, dams and their effects on forests and tribal people.
	4th	2.1.2. Water resources. Use and over-utilization of surface and ground water, floods,
3RD	1st	Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources. Food Resources: World food problems, changes caused by agriculture and over grazing
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	3rd	2.1.5. Energy Resources: Growing energy need, renewable and non-renewable energy sources,
	4th	2.1.6. Land Resources: Land as a resource, land degradation, man induces landslides,
4TH	1st	2.2 Role of individual in conservation of natural resources.
	2nd	2.3 Equitable use of resources for sustainable life styles.
	3rd	3. Systems: Concept of an eco system.
	4th	3.2. Structure and function of an eco system.
5TH	1st	3.3. Producers, consumers, decomposers.
	2nd	3.4. Energy flow in the eco systems.
	3rd	3.5. Ecological succession.
	4th	3.6. Food chains, food webs and ecological pyramids.
6TH	1st	3.7. Introduction, types, characteristic features, structure and function of the following eco system:
	2nd	Forest ecosystem: Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries)
	3rd	4 Biodiversity and it's Conservation: Introduction
	4th	Definition: genetics, species and ecosystem diversity
7TH	1st	Value of biodiversity: consumptive use, productive use,
	2nd	social ethical, aesthetic and optin values.
	3rd	Biodiversity at global, national and local level.
	4th	Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.
	1st	Unit 5: Environmental Pollution. Definition Causes, effects and control measures of: a) Air pollution. b) Water pollution.

8TH	2nd	c) Soil pollution d) Marine pollution e) Noise pollution.
	3rd	f) Thermal pollution g) Nuclear hazards Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
	4th	Role of an individual in prevention of pollution. Disaster management: Flood, earthquake, cyclone and landslides.
9th	1st	Disaster management: Floods, earthquake, cyclone and landslides.
	2nd	Unit 6: Social issues and the Environment Form unsustainable to sustainable development. Value of biodiversity: consumptive use, productive use,
	3rd	Water conservation, rain water harvesting, water shed management. Resettlement and rehabilitation of people; its problems and concern.
	4th	Environmental ethics: issue and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.
10TH	1st	Air (prevention and control of pollution) Act. Water (prevention and control of pollution) Act. Public awareness.
	2nd	Unit 7: Human population and the environment Population growth and variation among nations. Population explosion- family welfare program.
	3rd	Environment and human health.
	4th	Human rights. Value education. Role of information technology in environment and human health.


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At/Po:Kantapada-Apuja, Niali,Dist-Cuttack,Odisha

DEPARTMENT - MECHANICAL ENGINEERING

LESSON PLAN

Discipline : <u>mech</u>	Semester: <u>3rd</u>	Name of the Teaching Faculty : <u>Girani Sakantika Mohanty</u>
Subject : <u>Environmental Studies</u>	No. of Days / per week <u>54</u>	Semester From date : <u>16.09.22</u> To Date : <u>21.01.23</u>
Week	Class Day	Topics
1ST	1st	1. The Multidisciplinary nature of environmental studies: Definition,
	2nd	scope
	3rd	and importance.
	4th	1.2 Need for public awareness.
2ND	1st	2. Natural Resources: Renewable and non renewable resources: Natural resources and associated problems.
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4TH	1st	2.1.6. Land Resources: Land as a resource, land degradation, man induces landslides,
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8TH	2nd	c) Soil pollution d) Marine pollution e) Noise pollution.
	3rd	f) Thermal pollution g) Nuclear hazards Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
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10TH	1st	Air (prevention and control of pollution) Act. Water (prevention and control of pollution) Act. Public awareness.
	2nd	Unit 7: Human population and the environment Population growth and variation among nations. Population explosion- family welfare program.
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	4th	Human rights. Value education. Role of information technology in environment and human health.

S. S. Mohan
Signature of the faculty

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DEPARTMENT OF MECHANICAL ENGINEERING

-:LESSON PLAN:-

Discipline: Mechanical	Semester: 3rd	Name of the Teaching faculty: Debadatta Samant <i>Debadatta Samant</i>
Subject: Production Technology	No of Days/Week class allotted: 3	Semester from Date: <i>01/09/20</i> To Date: <i>31/12/20</i> No of weeks: 16
Week	Class Day	Topics
1st	1st	i) introduction to Production technology
		ii) importance of this subjects, Cos
		iii) syllabus description of each module
		iv) Extrusion process
	2nd	i) Classification of extrusion processes
		ii) direct extrusion process
	3rd	i) indirect extrusion
		ii) impact extrusion
2nd	4th	i) rolling process
		ii) classification of rolling process
	1st	i) hot working and cold working process
		ii) cold rolling and hot rolling process.
	2nd	i) different types of rolling mills used in Rolling process.
		ii) welding and classification of various welding processes.
3rd	4th	i) function of fluxes used in welding
		ii) tools and equipments
	1st	i) Oxy-acetylene welding process parameters
		ii) safety measures
	2nd	i) various types of flames used in Oxy-acetylene welding
		ii) classification
4th	3rd	i) Arc welding process
		ii) tools and equipments
	4th	i) Arc welding process parameters
		ii) safety measures
5th	1st	i) Specification of an arc welding electrodes
		ii) resistance welding principles
	2nd	i) butt welding
		ii) flash welding
	3rd	i) projection welding
		ii) seam welding

5th		iii) percutaion welding
	3rd	i) TIG welding process ii) equipments
	4th	i) MIG welding process ii) equipments
6th	1st	i) differences between TIG and MIG welding process
	2nd	i) welding defects ii) causes and remedies
	3rd	i) welding defects ii) causes and remedies
	4th	CLASS TEST 1, Previous year questions, quiz test
7th	1st	i) defination of casting ii) classification of casting process
	2nd	i) procedure of Sand mould casting.
	3rd	i) different types of molding sands with their composition
	4th	i) molding sand properties
8th	1st	i) different types of pattern
	2nd	i) various pattern allowances
	3rd	i) Classification of core
	4th	i) construction and working of cupolz furnace
9th	1st	i) construction and working of cupola furnace
	2nd	i) construction and working of crucible furnace
	3rd	i) die casting methods and principles
	4th	i) centrifugal casting process ii) centrifugal casting
10th	1st	i) centrifuging ii) advantages
	2nd	i) limitation and area of application
	3rd	i) various casting defects with their causes and remedies.
	4th	i) various casting defects with their causes and remedies.
11th	1st	i) Define powder metallurgy process, why powder metallurgy?
	2nd	ii) advantages of powder metallurgy technology technique
	3rd	i) methods of producing powder from materials
	4th	i) methods of powder metallurgy technique
12th	1st	i) methods of powder metallurgy technique.
	2nd	i) sintering process and secondary processes
	3rd	i) Economics of powder metallurgy
	4th	CLASS TEST 2, Previous year questions, quiz
	1st	i) press work process and process parameters

13th	2nd	i) blanking operation
		ii) punching
		iii) trimming
	3rd	i) various types of punch
14th	1st	i) press work on simple dies
		ii) advantages, disadvantages
		iii) applications
	2nd	i) press work on compound dies
		ii) advantages, disadvantages
		iii) applications
	3rd	i) press work on progressive dies
		ii) advantages, disadvantages
		iii) applications
	4th	i) definitions of jigs and fixture
15th	1st	i) advantages of using jigs and fixtures
	2nd	i) principle of locations
	3rd	i) methods of location with respect to 3-2-1 point location of rectangular jig
	4th	i) methods of location with respect to 3-2-1 point location of rectangular jig
16th	1st	i) various types of jig and fixtures
	2nd	i) various types of jig and fixtures
	3rd	previous year question discussion
	4th	CLASS TEST 3, Previous year questions, quiz

LEARNING RESOURCES

Sl. No.	Author	Title of the book
1	O.P. Khanna	Production Technology, Vol- I & II
2	B.S Raghuwanshi	Workshop technology, Vol- I & II
3	P.N. Rao	Manufacturing technology, Vol- I & II
4	P.C.Sharma	Manufacturing technology, Vol- I

PRINCIPAL
R.K Institute of Engg & Tech
Kantapada, Niali, Cuttack

Wishu
1.10.21
M.K Mishra
Signature of Faculty
(lect, mech)

R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
At/Po:Kantapada-Apuja, Niali, Dist-Cuttack, Odisha
DEPARTMENT OF MECHANICAL ENGINEERING

-:LESSON PLAN:-

Discipline: Mechanical	Semester: 3rd	Name of the Teaching faculty: <i>Debadatta Samantary</i>
Subject: Production Technology	No of Days/Week class allotted: 3	Semester from Date: 4/10/21 To Date: 31/01/22 No of weeks: 16 <i>3rd Semester</i>
Week	Class Day	Topics
1st	1st	i) introduction to Production technology
		ii) importance of this subjects, Cos
		iii) syllabus description of each module
		iv) Extrusion process
	2nd	i) Classification of extrusion processes
		ii) direct extrusion process
	3rd	i) indirect extrusion
		ii) impact extrusion
2nd	4th	i) rolling process
		ii) classification of rolling process
	1st	i) hot working and cold working process
		ii) cold rolling and hot rolling process.
	2nd	i) different types of rolling mills used in Rolling process.
		ii) welding and classification of various welding processes.
	3rd	i) function of fluxes used in welding
		ii) Oxy-acetylene welding process
3rd	4th	i) tools and equipments
		ii) safety measures
	1st	i) Oxy-acetylene welding process parameters
		ii) various types of flames used in Oxy-acetylene welding
	2nd	i) Arc welding process
		ii) tools and equipments
	3rd	i) Arc welding process parameters
		ii) safety measures
4th	4th	i) Specification of an arc welding electrodes.
		ii) resistance welding principles
	1st	i) classification
		ii) butt welding
	2nd	i) flash welding
		ii) projection welding
	3rd	i) seam welding
		ii) seam welding

5th		iii) percutaion welding
	3rd	i) TIG welding process
		ii) equipments
	4th	i) MIG welding process
		ii) equipments
6th	1st	i) differences between TIG and MIG welding process
	2nd	i) welding defects
		ii) causes and remedies
	3rd	i) welding defects
		ii) causes and remedies
	4th	CLASS TEST 1, Previous year questions, quiz test
7th	1st	i) defination of casting
		ii) classification of casting process
	2nd	i) procedure of Sand mould casting.
	3rd	i) different types of molding sands with their composition
8th	4th	i) molding sand properties
	1st	i) different types of pattern
	2nd	i) various pattern allowances
	3rd	i) Classification of core
9th	4th	i) construction and working of cupola furnace
	1st	i) construction and working of cupola furnace
	2nd	i) construction and working of crucible furnace
	3rd	i) die casting methods and principles
10th	4th	i) centrifugal casting process
		ii) centrifugal casting
	1st	i) centrifuging
		ii) advantages
11th	2nd	i) limitation and area of application
	3rd	i) various casting defects with their causes and remedies.
	4th	i) various casting defects with their causes and remedies.
	1st	i) Define powder metallurgy process, why powder metallurgy?
12th	2nd	ii) advantages of powder metallurgy technology technique
	3rd	i) methods of producing powder from materials
	4th	i) methods of powder metallurgy technique.
	1st	i) methods of powder metallurgy technique.
	2nd	i) sintering process and secondary processes
	3rd	i) Economics of powder metallurgy
	4th	CLASS TEST 2, Previous year questions, quiz
	1st	i) press work process and process parameters

13th	2nd	i) blanking operation
		ii) punching
		iii) trimming
	3rd	i) various types of punch
14th	1st	i) press work on simple dies
		ii) advantages, disadvantages
		iii) applications
	2nd	i) press work on compound dies
		ii) advantages, disadvantages
		iii) applications
	3rd	i) press work on progressive dies
		ii) advantages, disadvantages
		iii) applications
	4th	i) definitions of jigs and fixture
15th	1st	i) advantages of using jigs and fixtures
	2nd	i) principle of locations
	3rd	i) methods of location with respect to 3-2-1 point location of rectangular jig
	4th	i) methods of location with respect to 3-2-1 point location of rectangular jig
16th	1st	i) various types of jig and fixtures
	2nd	i) various types of jig and fixtures
	3rd	previous year question discussion
	4th	CLASS TEST 3, Previous year questions, quiz

LEARNING RESOURCES

Sl. No.	Author	Title of the book
1	O.P. Khanna	Production Technology, Vol- I& II
2	B.S Raghuwanshi	Workshop technology, Vol- I& II
3	P.N. Rao	Manufacturing technology, Vol- I& II
4	P.C.Sharma	Manufacturing technology, Vol- I

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R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
At/Po:Kantapada-Apuja, Niali, Dist-Cuttack, Odisha
DEPARTMENT OF MECHANICAL ENGINEERING

-:LESSON PLAN:-

Discipline: Mechanical	Semester: 3rd	Name of the Teaching faculty: <i>Debadatta SamantRay</i>
Subject: Production Technology	No of Days/Week class allotted: 3	Semester from Date: <i>18/09/22</i> To Date: <i>31/01/23</i> No of weeks: 16
Week	Class Day	Topics
1st	1st	i) introduction to Production technology
		ii) importance of this subjects, Cos
		iii) syllabus description of each module
		iv) Extrusion process
	2nd	i) Classification of extrusion processes
		ii) direct extrusion process
	3rd	i) indirect extrusion
		ii) impact extrusion
4th	i) rolling process	
	ii) classification of rolling process	
2nd	1st	i) hot working and cold working process
	2nd	i) cold rolling and hot rolling process.
	3rd	i) different types of rolling mills used in Rolling process.
	4th	i) welding and classification of various welding processes.
3rd	1st	i) function of fluxes used in welding
	2nd	i) Oxy-acetylene welding process
		ii) tools and equipments
	3rd	i) Oxy-acetylene welding process parameters
ii) safety measures		
4th	4th	i) various types of flames used in Oxy-acetylene welding
	1st	i) Arc welding process
		ii) tools and equipments
	2nd	i) Arc welding process parameters
ii) safety measures		
3rd	3rd	i) Specification of an arc welding electrodes
	4th	i) resistance welding principles
ii) classification		
4th	1st	i) butt welding
		ii) flash welding
	2nd	i) projection welding
		ii) seam welding

5th		iii) percutaion welding
	3rd	i) TIG welding process ii) equipments
	4th	i) MIG welding process ii) equipments
6th	1st	i) differences between TIG and MIG welding process
	2nd	i) welding defects ii) causes and remedies
	3rd	i) welding defects ii) causes and remedies
	4th	CLASS TEST 1, Previous year questions, quiz test
7th	1st	i) defination of casting ii) classification of casting process
	2nd	i) procedure of Sand mould casting.
	3rd	i) different types of molding sands with their composition
	4th	i) molding sand properties
8th	1st	i) different types of pattern
	2nd	i) various pattern allowances
	3rd	i) Classification of core
	4th	i) construction and working of cupola furnace
9th	1st	i) construction and working of cupola furnace
	2nd	i) construction and working of crucible furnace
	3rd	i) die casting methods and principles
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11th	1st	i) Define powder metallurgy process, why powder metallurgy?
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	3rd	i) methods of producing powder from materials
	4th	i) methods of powder metallurgy technique.
12th	1st	i) methods of powder metallurgy technique.
	2nd	i) sintering process and secondary processes
	3rd	i) Economics of powder metallurgy
	4th	CLASS TEST 2, Previous year questions, quiz
	1st	i) press work process and process parameters

13th	2nd	i) blanking operation
		ii) punching
		iii) trimming
	3rd	i) various types of punch
14th	4th	i) various types of dies
	1st	i) press work on simple dies
		ii) advantages, disadvantages
		iii) applications
	2nd	i) press work on compound dies
		ii) advantages, disadvantages
		iii) applications
	3rd	i) press work on progressive dies
		ii) advantages, disadvantages
		iii) applications
	4th	i) definitions of jigs and fixture
15th	1st	i) advantages of using jigs and fixtures
	2nd	i) principle of locations
	3rd	i) methods of location with respect to 3-2-1 point location of rectangular jig
	4th	i) methods of location with respect to 3-2-1 point location of rectangular jig
16th	1st	i) various types of jig and fixtures
	2nd	i) various types of jig and fixtures
	3rd	previous year question discussion
	4th	CLASS TEST 3, Previous year questions, quiz

LEARNING RESOURCES

Sl. No.	Author	Title of the book
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2	B.S Raghuwanshi	Workshop technology, Vol- I& II
3	P.N. Rao	Manufacturing technology, Vol- I&II
4	P.C.Sharma	Manufacturing technology, Vol- I

PRINCIPAL
R.K Institute of Engg & Tech
Kantapada, Niali, Cuttack

Wishu
 1.10.21
M.K Mishra
 Signature of Faculty
 (Tech, Mech)

R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
At/Po:Kantapada-Apuja,Niali,Dist-Cuttack,Odisha
DEPARTMENT OF MECHANICAL ENGINEERING

-:LESSON PLAN:-

Discipline:- M.E	Semester: 3rd	Name of the teaching faculty:- Mukti Kanta Mohapatra	
Subject. SOM	No. Of days / per week class allotted:- 04	Semester 3 rd from date: 01.09.20 To Date: 31.12.20 No. Of weeks:- 15	
Week	Class day	TOPICS	
1 ST	1st	Types of load, stresses & strains	
	2nd	strains,(Axial and tangential) Hooke's law, Young's modulus	
	3rd	bulk modulus, modulus of rigidity, Poisson's ratio,	
	4th	derive the relation between three elastic constants,	
2 ND	1st	Principle of super position, stresses in composite section	
	2nd	Temperature stress, determine the temperature stress in composite bar (single core)	
	3rd	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load	
	4th	Simple problems on above.	
3 RD	1st	Definition of hoop and longitudinal stress, strain	
	2nd	Derivation of hoop stress, longitudinal stress	
	3rd	hoop strain, longitudinal strain and volumetric strain	
	4th	Computation of the change in length, diameter and volume	
4 TH	1st	Simple problems on above	
	2nd	Simple problems on above	
	3rd	Simple problems on above	
	4th	Simple problems on above	
	1st	Determination of normal stress	

5 TH	2nd	shear stress and resultant stress on oblique plane	
	3rd	Location of principal plane and computation of principal stress	
	4th	Location of principal plane and computation of principal stress	
6 TH	1st	Maximum shear stress using Mohr's circle	
	2nd	Types of beam and load	
	3rd	Concepts of Shear force and bending moment	
	4th	Shear Force and Bending moment diagram	
7 TH	1st	its salient features illustration in cantilever beam	
	2nd	simply supported beam and over hanging beam under point load and uniformly distributed load	
	3rd	Assumptions in the theory of bending,	
	4th	Bending equation	
8 TH	1st	Moment of resistance	
	2nd	Section modulus & neutral axis	
	3rd	Solve simple problems	
	4th	Solve simple problems	
9 TH	1st	Define column	
	2nd	Axial load, Eccentric load on column	
	3rd	Direct stresses	
	4th	Bending stresses	
10 TH	1st	Maximum & Minimum stresses	
	2nd	Numerical problems on above	
	3rd	Numerical problems on above	
	4th	Numerical problems on above	
11 TH	1st	Buckling load computation using Euler's formula (no derivation) in Columns	
	2nd	Buckling load computation using Euler's formula (no derivation) in Columns	
	3rd	Assumption of pure torsion	
	4th	Assumption of pure torsion	

12 TH	1st	The torsion equation for solid and hollow circular shaft	
	2nd	Comparison between solid and hollow shaft subjected to pure torsion	
	3rd	Numerical problems PRACTISE	
	4th	Numerical problems PRACTISE	
13 TH	1st	Numerical problems PRACTISE	
	2nd	Numerical problems PRACTISE	
	3rd	Numerical problems PRACTISE	
	4th	Numerical problems PRACTISE	
14 TH	1st	Numerical problems PRACTISE	
	2nd	Numerical problems PRACTISE	
	3rd	Numerical problems PRACTISE	
	4th	REVISION	
15 TH	1st	REVISION	
	2nd	REVISION	
	3rd	REVISION	
	4th	REVISION	

SINo.	Author Name	Name of the Book
1		
2		
3		

R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
At/Po:Kantapada-Apuja,Niali,Dist-Cuttack,Odisha
DEPARTMENT OF MECHANICAL ENGINEERING

-:LESSON PLAN:-

Discipline:- M.E	Semester: 3 rd	Name of the teaching faculty:-	
Subject. SOM	No. Of days / per week class allotted:- 04	Semester 3 rd from date: 01.10.21 No. Of weeks:- 15	To Date: 8/11/22
Week	Class day	TOPICS	
1 ST	1st	Types of load, stresses & strains	
	2nd	strains,(Axial and tangential) Hooke's law, Young's modulus	
	3rd	bulk modulus, modulus of rigidity, Poisson's ratio,	
	4th	derive the relation between three elastic constants,	
2 ND	1st	Principle of super position, stresses in composite section	
	2nd	Temperature stress, determine the temperature stress in composite bar (single core)	
	3rd	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load	
	4th	Simple problems on above.	
3 RD	1st	Definition of hoop and longitudinal stress, strain	
	2nd	Derivation of hoop stress, longitudinal stress	
	3rd	hoop strain, longitudinal strain and volumetric strain	
	4th	Computation of the change in length, diameter and volume	
4 TH	1st	Simple problems on above	
	2nd	Simple problems on above	
	3rd	Simple problems on above	
	4th	Simple problems on above	
	1st	Determination of normal stress	

6 TH	2nd	shear stress and resultant stress on oblique plane	
	3rd	Location of principal plane and computation of principal stress	
	4th	Location of principal plane and computation of principal stress	
	1st	Maximum shear stress using Mohr's circle	
7 TH	2nd	Types of beam and load	
	3rd	Concepts of Shear force and bending moment	
	4th	Shear Force and Bending moment diagram	
	1st	its salient features illustration in cantilever beam	
8 TH	2nd	simply supported beam and over hanging beam under point load and uniformly distributed load	
	3rd	Assumptions in the theory of bending,	
	4th	Bending equation	
	1st	Moment of resistance	
9 TH	2nd	Section modulus & neutral axis	
	3rd	Solve simple problems	
	4th	Solve simple problems	
	1st	Define column	
10 TH	2nd	Axial load, Eccentric load on column	
	3rd	Direct stresses	
	4th	Bending stresses	
	1st	Maximum & Minimum stresses	
11 TH	2nd	Numerical problems on above	
	3rd	Numerical problems on above	
	4th	Numerical problems on above	
	1st	Buckling load computation using Euler's formula (no derivation) in Columns	
	2nd	Buckling load computation using Euler's formula (no derivation) in Columns	
	3rd	Assumption of pure torsion	
	4th	Assumption of pure torsion	

12 TH	1st	The torsion equation for solid and hollow circular shaft	
	2nd		
	3rd		
	4th		
13 TH	1st	Numerical problems PRACTISE	
	2nd	Numerical problems PRACTISE	
	3rd	Numerical problems PRACTISE	
	4th	Numerical problems PRACTISE	
14 TH	1st	Numerical problems PRACTISE	
	2nd	Numerical problems PRACTISE	
	3rd	Numerical problems PRACTISE	
	4th	REVISION	
15 TH	1st	REVISION	
	2nd	REVISION	
	3rd	REVISION	
	4th	REVISION	

SINo.	Author Name	Name of the Book
1		
2		
3		

R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
At/Po:Kantapada-Apuja,Niali,Dist-Cuttack,Odisha
DEPARTMENT OF MECHANICAL ENGINEERING

-:LESSON PLAN:-

Discipline:- M.E	Semester: 3 rd	Name of the teaching faculty:-	
Subject. SOM	No. Of days / per week class allotted:- 4	Semester 3 rd from date: 15.09.22 To Date: 21.01.23 No. Of weeks:- 15	
Week	Class day	TOPICS	
1 ST	1st	Types of load, stresses & strains	
	2nd	strains,(Axial and tangential) Hooke's law, Young's modulus	
	3rd	bulk modulus, modulus of rigidity, Poisson's ratio,	
	4th	derive the relation between three elastic constants,	
2 ND	1st	Principle of super position, stresses in composite section	
	2nd	Temperature stress, determine the temperature stress in composite bar (single core)	
	3rd	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load	
	4th	Simple problems on above.	
3 RD	1st	Definition of hoop and longitudinal stress, strain	
	2nd	Derivation of hoop stress, longitudinal stress	
	3rd	hoop strain, longitudinal strain and volumetric strain	
	4th	Computation of the change in length, diameter and volume	
4 TH	1st	Simple problems on above	
	2nd	Simple problems on above	
	3rd	Simple problems on above	
	4th	Simple problems on above	
	1st	Determination of normal stress	

5 TH	2nd	shear stress and resultant stress on oblique plane	
	3rd	Location of principal plane and computation of principal stress	
	4th	Location of principal plane and computation of principal stress	
6 TH	1st	Maximum shear stress using Mohr's circle	
	2nd	Types of beam and load	
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	4th	Shear Force and Bending moment diagram	
7 TH	1st	its salient features illustration in cantilever beam	
	2nd	simply supported beam and over hanging beam under point load and uniformly distributed load	
	3rd	Assumptions in the theory of bending,	
	4th	Bending equation	
8 TH	1st	Moment of resistance	
	2nd	Section modulus & neutral axis	
	3rd	Solve simple problems	
	4th	Solve simple problems	
9 TH	1st	Define column	
	2nd	Axial load, Eccentric load on column	
	3rd	Direct stresses	
	4th	Bending stresses	
10 TH	1st	Maximum & Minimum stresses	
	2nd	Numerical problems on above	
	3rd	Numerical problems on above	
	4th	Numerical problems on above	
11 TH	1st	Buckling load computation using Euler's formula (no derivation) in Columns	
	2nd	Buckling load computation using Euler's formula (no derivation) in Columns	
	3rd	Assumption of pure torsion	
	4th	Assumption of pure torsion	

12 TH	1st	The torsion equation for solid and hollow circular shaft	
	2nd	Comparison between solid and hollow shaft subjected to pure torsion	
	3rd	Numerical problems PRACTISE	
	4th	Numerical problems PRACTISE	
13 TH	1st	Numerical problems PRACTISE	
	2nd	Numerical problems PRACTISE	
	3rd	Numerical problems PRACTISE	
	4th	Numerical problems PRACTISE	
14 TH	1st	Numerical problems PRACTISE	
	2nd	Numerical problems PRACTISE	
	3rd	Numerical problems PRACTISE	
	4th	REVISION	
15 TH	1st	REVISION	
	2nd	REVISION	
	3rd	REVISION	
	4th	REVISION	

SINo.	Author Name	Name of the Book
1		
2		
3		