



List of Revised Courses

Department : Industrial and Production Engineering

Programme Name : B.Tech

Academic Year : 2024-25

List of Revised Courses

Sr. No.	Course Code	Name of the Course
01.	IPUCTT7	Theory of Machines
02.	IPUDTT3	Industrial Engineering



Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2024-25

School : School of Studies of Engineering and Technology

Department : Industrial and Production Engineering

Date and Time : Jun. 28, 2024 - 11:00 noon

Venue : Meeting room

The scheduled meeting of member of Board of Studies (BoS) of Department of Industrial and Production Engineering, School of Studies of Engineering and Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur was held to design and discuss the contents of syllabus

The following members were present in the meeting:

1. Prof. S.C. Shrivastava (HOD, Professor., Dept. of I.P.E., -cum Chairman, BOS)
2. Prof. M.K. Singh (Member BoS, Professor, Dept. of I.P.E)
3. Mr. C.P. Dewangan, (Member BoS, Associate Prof., Dept. of I.P.E)
4. Mr. Nitin Kumar Sahu, (Member BoS, Assistant Prof., Dept. of I.P.E)
5. Dr. S. C. Gajbhiye (Invited Member BoS, Associate Prof., Dept. of I.P.E)
6. Dr. Manish Oraon (Invited Member BoS, Associate Prof., Dept. of I.P.E)
7. Mrs. A. R. Choudhary (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
8. Dr. Atul Kumar Sahu (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
9. Dr. Ganesh Prasad Shukla (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
10. Mrs. Disha Dewangan (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
11. Mr. Kailash Kumar Borkar (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
12. Mr. Anurag Singh (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
13. Mr. Kawal Lal Kurrey (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
14. Mr. Somnath Singroul (Invited Member BoS, Assistant Prof., Dept. of I.P.E)
15. Prof. A. K. Thakur (Invited Member BoS, Professor, Dept. of Mathematics)
16. Mr. C. P Dhuri (Invited Member BoS, Assistant Prof., Dept. of Mathematics)

Following External members has also participated in formulating the coding, scheme and syllabus of B. Tech. III to VII Semester by email.

1. Dr. A. R. Dixit (External Expert, Professor, Mechanical Engineering Department, Indian Institute of Technology ISM, Dhanbad)
2. Mr. Bhanja Prasad Patro (External Expert, Director & Head, CIPET: CSTS - Bhubaneswar)

Following points were discussed during the meeting

1. The syllabus, scheme and coding of B. Tech. III –VIII Semester (Industrial & Production Engineering) is shared with the external experts. Moreover, several



conversations held from the external experts by the Head of the Department and Departmental BOS Coordinator and their suggestion and comments are considered in the same.

2. In the meeting, syllabus, scheme and coding of B. Tech. III –VIII Semester (Industrial & Production Engineering) was discussed in detail and incorporated. The verbal suggestions received from the external experts in the meeting are also incorporated and recommended for approval. After incorporation of all the suggestions, the final updated syllabus will be sent for their reference.
3. It is also decided that the subject code may be changed (if any, in future) as per university norms/ regulations/ ordinance/ policies from time to time.
4. Also, the open elective (name and subject code/ syllabus) may be changed in future as per the directions of the offering department in the scheme/ syllabus.
5. The syllabus, scheme and coding of B. Tech. III –VIII Semester of Department of Industrial & Production Engineering has been accepted by the B.O.S. (I.P.E.) and attached herewith for approval from the competent authority.

The committee discussed and approved the scheme and syllabi. The following courses were revised

- ❖ IPUCTT7 Theory of Machines
- ❖ IPUDTT3 Industrial Engineering

HOD
विभागाध्यक्ष / Head
औद्योगिक एवं उत्पादन अभियांत्रिकी
Industrial & Production Engineering
प्रौद्योगिकी संस्थान / Engineering & Technology
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

Signature & Seal of HoD

गुरु घासीदास विश्वविद्यालय
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
कोनी, बिलासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)
Koni, Bilaspur - 495009 (C.G.)

Scheme and Syllabus



DEPARTMENT OF INDUSTRIAL & PRODUCTION ENGINEERING, GGV, BILASPUR CG

GURU GHASIDAS VISHWAVIDYALAYA (A CENTRAL UNIVERSITY), BILASPUR, CG
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

Department of Industrial & Production Engineering

NEP 2020-Scheme of Teaching & Examination

W.E.F. Session: 2024-2025

B. TECH SECOND YEAR, III SEMESTER

SN	Course No.	Subject	Teaching Hours/ Week/ Periods			Evaluation Scheme			Credits
			Theory Lectures	Tutorials	Practical	Continuous Internal Assessment	Semester Examination Assessment	Total Marks	
			L	T	P	CIA	SEA		
1	IPUCTT4	Material Science and Metallurgy	3	-	-	40	60	100	3
2	IPUCTT5	Mechanics of Materials	3	-	-	40	60	100	3
3	IPUCTT6	Engineering Thermodynamics	3	-	-	40	60	100	3
4	IPUCTT7	Theory of Machines	3	-	-	40	60	100	3
5	IPUCTP_	Professional Elective-1/2	3	-	-	40	60	100	3
6	UCTO	Open Elective	3	-	-	40	60	100	3
Total			18	-	-	240	360	600	18
PRACTICALS									
1	IPUCLT2	Mechanics of Materials Lab	-	-	2	25	25	50	1
2	IPUCLT3	Theory of Machines Lab	-	-	2	25	25	50	1
Total			-	-	4	50	50	100	2
GRAND TOTAL			18	-	4	290	410	700	20

List of Department/ Professional Elective		
SN	Course No.	Subject
1.	IPUCTP1	Business Communication and Professional Skills
2.	IPUCTP2	Effective Technical Communication

Institute Core/ Open Elective offered by the Department			
SN	Course No.	Subject	Offering Department
1.	IPUCTO2	Introduction to Industrial Engineering	IPE

Internal Assessment: – Two class tests of 15 marks each will be conducted. Moreover, 5 marks will be for attendance and 5 marks are allocated for the Assignments, surprise test, quiz test etc.



DEPARTMENT OF INDUSTRIAL & PRODUCTION ENGINEERING, GGV, BILASPUR CG

Semester	Course No.	Subject	Teaching Hours/ Week/ Periods			Evaluation Scheme						Credits
			Theory Lectures	Tutorials	Practical	Continuous Internal Assessment				Semester Examination Assessment	Total Marks	
						L	T	P	CT-1			
B. Tech III Sem	IPUCTT7	Theory of Machines	3	-	-	15	15	5	5	60	100	3

COURSE LEARNING OBJECTIVES:

The objective of this course is to:

The objective of this course is to:

1. Impart knowledge of various types of links, mechanisms and machines and kinematics inversions.
2. Solving practical problems related to design of linkage mechanisms and cam and follower systems to generate specified output motions.
3. Learn the importance of kinematics and fundamental principles behind belt, rope and chain drives.
4. To analyze gyro-effect on moving bodies.
5. To study the types of gears and to analyze various gear trains.
6. To study the types of mechanical governors and to analyze its performance parameters

COURSE CONTENT:

Module – I

Classification of mechanisms, basic kinematic concepts and definitions, degree of freedom, mobility, Grashof's law, kinematic inversions of four bar chain and slider crank chains, limit positions, mechanical advantage, transmission angle, description of some common mechanisms, quick return mechanism, straight line generators, universal joint, rocker mechanisms.

Module –II

Classification of cams and followers, terminology and definitions, displacement diagrams, uniform velocity, parabolic, simple harmonic and cycloidal motions, derivatives of follower motions, specified contour cams, circular and tangent cams, pressure angle and undercutting, sizing of cams, graphical and analytical disc cam profile synthesis for roller and flat face followers.

Module –III

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Approved in BOS meeting held on 28.06.2024



Belt, Rope and Chain drive –types of belts and belt drives, V.R . and slip , creep, length power transmitted and ratio of tensions, centrifugal tension, maximum tension, initial tension, V –Belt drive and Rope drives and its ratio of tensions types of chain and chain drives.

Module

–IV

Involute and cycloidal gear profiles, gear parameters, fundamental law of gearing and conjugate action, spur gear contact ratio and interference/undercutting, helical, bevel, worm, rack & pinion gears, epicyclic and regular gear train kinematics, compound, reverted and epicyclic gear trains, velocity ratio of epicyclic gear trains
Module – V

Gyroscope - velocity, acceleration and effect of Gyroscope couple on aeroplane , naval ship pitching and rolling , stability of two and four wheel drive in a turning .

Governors: Characteristics of centrifugal governors, Gravity controlled governors, Porter and Proell. Spring controlled centrifugal governor: Hartung and Hartnell governor, performance parameter: sensitivity, stability, isochronisms, governor effort and power.

TEXT & REFERENCE BOOKS:

1. Theory of Machines– Thomas Bevan,CBS Publishers.
2. Mechanisms of Machines– W.L. Cleghorn, Oxford University Press, 2015.
3. Kinematics and Dynamics of Machinery– L. Norton Robert, McGraw-Hill.
4. Theory of Mechanisms and Machines – A. Ghosh, A. K. Mallik – EWP Press.
5. Theory of Machines and Mechanisms - J.Uicker, Gordon R Penstock & J.E. Shigley – Oxford International Edition.
6. Theory of Machines- by R S Khurmi, S Chand & Co Ltd.
7. Theory of Machines- by Rattan S S, McGraw Hill Education India Private Limited.

COURSE OUTCOMES:

At the end of the course the students will be able to:

- CO1: Apply knowledge of Kinematics of machine for understanding, formulating and solving engineering problems.
CO2: Construct cam profiles and analysis of their velocity and acceleration.
CO3: Understand the basic concept of belt, rope and chain drive and their practical applications.
CO4: Understand the different types of gears, gear terminology, important gear trains and their practical applications.
CO5: Understand the various types of governors and its applications.

Mapping of Course Outcomes (COs) onto Program Outcomes (POs) and Program Specific Outcomes (PSOs):

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	-	-	-	-	-	-	2	3	1	3
CO2	3	2	2	3	2	-	-	-	-	-	-	2	3	1	3
CO3	3	2	2	3	2	-	-	-	-	-	-	2	3	1	3
CO4	3	2	2	3	2	-	-	-	-	-	-	2	3	1	3
CO5	3	3	2	2	2	-	-	-	-	-	-	2	3	1	3

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)



DEPARTMENT OF INDUSTRIAL & PRODUCTION ENGINEERING, GGV, BILASPUR CG

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SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

Department of Industrial & Production Engineering

NEP 2020-Scheme of Teaching & Examination

W.E.F. Session: 2024-2025

B. TECH SECOND YEAR, IV SEMESTER

SN	Course No.	Subject	Teaching Hours/ Week/ Periods			Evaluation Scheme			Credits
			Theory Lectures	Tutorials	Practical	Continuous Internal Assessment	Semester Examination Assessment	Total Marks	
			L	T	P	CIA	SEA		
1	IPUDTT3	Industrial Engineering	3	-	-	40	60	100	3
2	IPUDTT4	Fluid Engineering	3	-	-	40	60	100	3
3	IPUDTT5	Manufacturing Process-I	3	-	-	40	60	100	3
4	IPUDTT6	Engineering Mathematics-C	3	-	-	40	60	100	3
5	IPUDTP	Professional Elective-1/2	3	-	-	40	60	100	3
6	_UDTO_	Open Elective	3	-	-	40	60	100	3
Total			18	-	-	240	360	600	18
PRACTICALS									
1	IPUDLT3	Fluid Engineering Lab	-	-	2	25	25	50	1
2	IPUDPF1	Mini Project	-	-	4	50	50	100	2
Total			-	-	6	75	75	150	3
GRAND TOTAL			18	-	6	315	435	750	21

List of Department/ Professional Elective		
SN	Course No.	Subject
1.	IPUDTP1	Material Management
2.	IPUDTP2	Safety Management and Labour Law

Institute Core/ Open Elective offered by the Department			
SN	Course No.	Subject	Offering Department
1.	IPUDTO2	Introduction to Manufacturing Processes	IPE

Internal Assessment: – Two class tests of 15 marks each will be conducted. Moreover, 5 marks will be for attendance and 5 marks are allocated for the Assignments, surprise test, quiz test etc.

Approved in BOS meeting held on 28.06.2024



DEPARTMENT OF INDUSTRIAL & PRODUCTION ENGINEERING, GGV, BILASPUR CG

Semester	Course No.	Subject	Teaching Hours/ Week/ Periods			Evaluation Scheme					Credits	
			Theory Lectures	Tutorials	Practical	Continuous Internal Assessment				Semester Examination Assessment		Total Marks
						CIA						
			L	T	P	CT-1	CT-2	Assignment, surprise test, quiz test etc	Attendance	SEA		
B. Tech IV Sem	IPUDDT3	Industrial Engineering	3	-	-	15	15	5	5	60	100	3

COURSE OBJECTIVES:

- To impart capability of successfully planning, controlling, and implementing projects.
- To apply the principles of engineering science, maths, technology and human engineering, involving industry-relevant problems.
- To contribute to the profitable growth of industrial economic sectors by using IE analytical tools, effective computational approaches and systems thinking methodologies.
- To recognize the tools of efficiency, effectiveness and productivity for the resources of the plant and facility.
- To implement the policy of wage administrations for making the labour more and higher productive in their work.

COURSE CONTENT:

Module-I

Introduction: History & development of industrial engineering. Productivity, means of increasing productivity, work study, productivity and work study, human factor in the fabrication, work of F. W. Taylor, Frank and Lillian Gilberth and their contribution.

Module-II

Method study: Definition & basic procedure, selection of jobs. Recording technique: micro motion study, Therbligs, cyclograph, chronocyclo graph, principle of motion economy, design of work place layout, analysts in the form of chart, operation chart, flow process chart, flow diagram, string diagram, man machine chart, two hand chart, Simo chart.

Module-III

Work measurement: Definition, objectives, application, number of cycles to be timed, time study equipment, performance rating, allowance, lumber of cycle to be studied, determination of standard time, predetermined motion time system, conducting work sampling study & establishing standard time.

Module-IV

Approved in BOS meeting held on 28.06.2024



Wages & incentives: Characteristics of a good wage or incentive system, method of wage payment, concept of wage & incentive schemes, financial and non-financial: Taylor's differential piece rate, Halsey premium plane, Merric's multiple piece rate system, group incentive scheme.

Ergonomics: Work space dimension, design of work place, environmental stresses & impacts on human work.

Module-V

Value engineering: Introduction, concept of value, value analysis approaches, job plan, value tests.

Industrial safety: Analysis of cost of accident, hazards in various fields like fire, electrical shocks, chemical; organization for safety, plant safety, govt. legislation for safety, safety rules.

TEXT BOOKS:

1. Introduction to work study-I.L.O., Oxford Press.
2. Motion and time study – Mundel, Prentices Hall India.
3. Motion and Time Study– Ralph M Barnes, John Wiley and sons.
4. Industrial Engineering – M. I. Khan, New Age International Publication.

COURSE OUTCOMES:

After completion of the course, student will be able to

CO1: Ability to apply mathematics and science in Industrial engineering.

CO2: Ability to design and conduct experiments, as well as to analyse and interpret data.

CO3: Ability to identify, formulate and solve engineering problems.

CO4: Ability to use the techniques, skills, and modern engineering tools necessary for industrial engineering practice.

Mapping of Course Outcomes (COs) onto Program Outcomes (POs) and Program Specific Outcomes (PSOs):

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSOs1	PSOs2	PSOs3
CO1	3	3	2	2	2	2	-	2	2	2	2	2	3	2	3
CO2	3	2	2	2	2	2	-	2	-	-	2	1	3	2	2
CO3	3	3	2	2	2	-	-	3	-	-	2	2	2	3	-
CO4	3	3	2	3	3	1	1	2	1	-	2	1	3	2	-
CO5	3	3	2	2	2	-	-	2	2	-	1	2	2	2	2

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Approved in BOS meeting held on 28.06.2024