



COLLEGE OF ENGINEERING BHUBANESWAR

Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.

[AFFILIATED TO BPUT, ODISHA]

www.coeb.ac.in

DEPARTMENT OF AUTOMOBILE ENGINEERING

ADD-ON COURSE

Course Title: **Structural System Fundamentals**
Programme : **B. Tech.**
Branch : **Automobile Engineering**
Semester : **3rd**

Learning Objective:

- ❖ To provide student with an opportunity to develop technical competency in automobile engineering.
- ❖ To provide students an understanding of vehicle design.
- ❖ To have an understanding about the transmission system in vehicles.
- ❖ To provide students a general idea about safety consideration in automobiles.

.SYLLABUS

Total Lecture Hours: 40

MODULE 1:

(14 hours)

Chassis, Body Pattern, Aerodynamics, Safety considerations in automobiles. Structural components and materials, Engine mounting- Front, Rear, Centre, Engine types- C.I, S.I, two stroke, four stroke, Vertical inline, V-type, Transmission- Necessity of transmission, principles
Clutch - Necessity, requirements of a clutch system, types of Clutches, Types of transmission- Manual, Automatic, DCT, CVT, AMT, IVT

MODULE 2:

(14 hours)

Types of transmission- Sliding mesh, constant mesh, synchromesh, Transfer gear box, Gear Selector mechanism, Types of suspension- Swing axle, sliding pillar, Macpherson strut, Double wishbone, multi-link suspension, Semi-trailing arm suspension, Swinging arm, Principle of steering, Center point steering, Steering linkages, Steering geometry and Wheel alignment, Construction, operation and maintenance of Lead acid batteries.

MODULE 3:

(12 hours)

Battery charging system, Principles and Operation of cutout and regulators, Starter motor, Battery Ignition and magneto ignition systems ignition timing, alternators, Fuel tank , Fuel pump, Fuel injection, Exhaust, Catalytic converter, Engine cooling systems, Muffler/Silencers, Power steering, Special steering systems

Course Outcome:

After completion of course the students will be able to:

- CO1: Understand the fundamentals and importance of engines, engine components, fuel parameters and advancement in technology.
- CO2: Examine the aspects of vehicle design, engine construction and system components
- CO3: Understanding about the transmission system in vehicles.
- CO4: They will able to understand the fundamental of vehicle design

Text Book:

1. Book on Automotive Systems: Principles and Practices, First Edition, G.K.Awari, V.S.Kumbhar, R.B.Tirpude, CRC press, Taylor and Francis Group.

PRINCIPAL

College of Engineering Bhubaneswar

2. Book on Modern Electric, Hybrid Electric and Fuel Cell Vehicles, Mehrdad Ehsani, Eimin Gao, Sebastien E. Gay, Ali Emadi. Power electronics and applications series, University of West Florida.
3. Book on Environmental Effects and Consumer Habits, Michael Beliveau, James Rehberger, Jonathan Rowell, Alyssa Xarras. Worcester Polytechnic Institute

Reference Text Book:

1. Bosch Automotive Handbook, Robert Bosch, 10th Edition
2. Automotive service: Inspection, Service and Repair. Tim Gilles. 6th Edition.

Online resources:

1. A Review on Hybrid Electric Vehicle Yasmeen Malik, Vikas Kumar, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering.
2. Hybrid Electric Vehicle Rushikesh Trushar Soni, Journal of Mechanical and Civil Engineering.

Evaluation Criteria

- Mandatory attendance of 75% for each student.
- Conduction of two internal assessments and students have to secure 50% marks in each assessment.
- Certificates will be awarded to each students fulfilling the above criteria.

Designed & developed by: Dr. Krishna & Prof. Pusparanjan Swain

Principal

Principal
College of Engineering Bhubaneswar

HOD, Automobile Engg.

Principal
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR

Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.

NOTICE

Department of Automobile Engineering Add On Course 2020-2021

Ref No: COEB/AE/2020/22

Date: 28.08.2020

It is hereby informed to all the students that the Department of Automobile Engineering is going to start the following Add-on courses for Academic year 2020-2021. All the students are instructed to enroll their names for the following courses on or before 10.09.2020. The classes will be commenced from 14/09/2020 in ON_LINE MODE from 5.30pm to 7.30pm. You can contact the following course co-ordinators for enrolment and any queries.

Sl No.	Name of Add-on Course	Sem	Duration in hours	Name of the course co-ordinators
1	Structural System Fundamentals	3 rd	40	Prof. S. Soumya Ranjan Baliarsingh
2	Fuels and Combustion	5 th	40	Dr. J. Hussain
3	Modern Fuels and Alternatives to IC Engines	7 th	40	Prof. Pusparanjan Swain

HOD

Automobile Engineering Department

Copy to:

1. Vice Chairman
2. Executive Director
3. Principal
4. All Notice Board.
5. A.O(Admin)
6. All HODs
7. Hostel, Security

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

DEPARTMENT OF AUTOMOBILE ENGINEERING

ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

Academic Year: 2020-21

ONLINE MODE

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester : 3rd Sem

Remarks

SI No.	Reg. No.	Name of the Students	Remarks of Course Coordinator (P-Present, A-Absent)												
			Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	
1	1901219001	ABHISEK SAHOO	P	A	P	P	P	P	A	P	P	P	P	P	P
2	1901219002	ANURAG DAS	P	P	P	P	P	P	P	P	P	P	P	P	P
3	1901219003	DEBASHISH MALLICK	P	P	P	P	P	P	P	P	P	P	P	P	P
4	1901219004	PABITRA KUMAR JENA	A	P	P	P	P	P	P	P	P	P	P	P	P
5	1901219005	PRIVABRATA PARIDA	P	P	P	P	P	P	P	P	P	P	P	P	P
6	1901219006	RAJENDRA KUMAR BAL	P	A	P	P	P	P	P	P	P	P	P	P	P
7	1901219007	SHREE SONU NAIK	A	P	P	P	P	P	P	P	P	P	P	P	P
8	1901219008	SOUBHAGYA MAHAPATRA	P	A	P	P	P	P	P	P	P	P	P	P	P
9	1901219009	SANJEET RAUTARAY	P	P	P	P	P	P	P	P	P	P	P	P	P
10	1901219156	ABHIMILAN MUTTHAMAJHI	P	P	A	P	P	P	P	P	P	P	P	P	P
11	1901219157	ANISH SUBHADARSHI	A	P	P	P	P	P	P	P	P	P	P	P	P
12	1901219158	DEEP SHANKAR	P	P	P	P	P	P	P	P	P	P	P	P	P
13	1901219159	DINESH KUMAR MOHANTY	P	P	P	P	P	P	P	P	P	P	P	P	P
14	1901219160	ISWAR CHANDRA GHADEI	P	P	P	P	P	P	P	P	P	P	P	P	P
15	1901219161	MANOJ KUMAR KISHAN	A	A	P	P	P	P	P	P	P	P	P	P	P
16	1901219162	ROHIT KUMAR RAWANI	P	P	P	P	P	P	P	P	P	P	P	P	P
17	1901219163	SATYA NARAYAN BISOIYI	P	P	P	P	P	P	P	P	P	P	P	P	P
18	1901219164	SHYAM SUNDAR SOREN	P	P	P	P	P	P	P	P	P	P	P	P	P
19	1901219165	SOUBHAGYA RANJAN	P	A	P	P	P	P	P	P	P	P	P	P	P
20	1901219166	SUNIL DAS	P	P	A	P	P	P	P	P	P	P	P	P	P

Certified that this certified course is conducted in virtual mode (ON-LINE) because of the pandemic COVID-19.

The attendance is taken with the remarks P-Present and A-Absent for the students.

Sampurna
Course Coordinator
(Signature With Seal)



S. P. Singh

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

DEPARTMENT OF AUTOMOBILE ENGINEERING

ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

Academic Year: 2020-21

Semester : 3rd Sem

ONLINE MODE

2

Programme: B Tech in AUTOMOBILE ENGINEERING

Duration:

SI No.	Reg. No.	Name of the Students	Date		Date		Date		Date		Date		Date		Remarks
			P	A	P	A	P	A	P	A	P	A	P	A	
1	1901219001	ABHISEK SAHOO	P		P		P		P		P		P		Certified that this certified course is conducted in virtual mode (ON-LINE) because of the pandemic COVID-19. The attendance is taken with the remarks P-Present and A-Absent for the students.
2	1901219002	ANURAG DAS	P		P		P		P		P		P		
3	1901219003	DEBASHISH MALLICK	P		P		P		P		P		P		
4	1901219004	PABITRA KUMAR JENA	P		P		P		P		P		P		
5	1901219005	PRIYABRATA PARIDA	P		P		P		P		P		P		
6	1901219006	RAJENDRA KUMAR BAL	P		P		P		P		P		P		
7	1901219007	SHREE SONU NAIK	P		P		P		P		P		P		
8	1901219008	SUBHAGYA MAHAPATRA	P		P		P		P		P		P		
9	1901219009	SANJEET RAUTARAY	P		P		P		P		P		P		
10	1901219156	ABHIMILAN MUTTHAMAJHI	P		P		P		P		P		P		
11	1901219157	ANISH SUBHADARSHI	P		P		P		P		P		P		
12	1901219158	DEEP SHANKAR	P		P		P		P		P		P		
13	1901219159	DINESH KUMAR MOHANTY	P		P		P		P		P		P		
14	1901219160	ISWAR CHANDRA GHADAI	P		P		P		P		P		P		
15	1901219161	MANOJ KUMAR KISHAN	P		P		P		P		P		P		
16	1901219162	ROHIT KUMAR RAWANI	P		P		P		P		P		P		
17	1901219163	SATYA NARAYAN BISOI	P		P		P		P		P		P		
18	1901219164	SHYAM SUNDAR SOREN	P		P		P		P		P		P		
19	1901219165	SUBHAGYA RAMJAN	P		P		P		P		P		P		
20	1901219166	SUNIL DAS	P		P		P		P		P		P		



Course Coordinator
(Signature with Seal)

Principal Signature

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR

PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion

This is to certify that Mr./Ms. ABHISEK SAHOO student of the Department

of Automobile Engg. semester Third bearing registration number 1901219001

has successfully completed the ADD-ON Course titled Structural System Fundamentals

conducted at College of Engineering Bhubaneswar in the academic year 2020-21

TRUE COPY

Course-Coordinator

Principal

PRINCIPAL

College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR

PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion

This is to certify that Mr./Ms. DEBASHISH MALLICK, student of the Department
of Automobile Engg. _____ semester Third bearing registration number 1901219003
has successfully completed the ADD-ON Course titled Structural System Fundamentals
conducted at College of Engineering Bhubaneswar in the academic year 2020-21

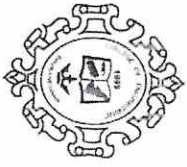
TRUE COPY

Course-Coordinator

Principal

PRINCIPAL

College of Engineering, Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR
PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion

This is to certify that Mr./Ms. PABITRA KUMAR JENA, student of the Department
of Automobile Engg. semester Third bearing registration number 1901219004
has successfully completed the ADD-ON Course titled Structural System Fundamentals
conducted at College of Engineering Bhubaneswar in the academic year 2020-21.

TRUE COPY

Course-Coordinator

Principal

PRINCIPAL
College of Engineering Bhubaneswar

Page No. _____



COLLEGE OF ENGINEERING BHUBANESWAR
PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion

This is to certify that Mr./Ms. PRIYABRATA PARIDA, student of the Department

of Automobile Engg. semester Third bearing registration number 1901219005

has successfully completed the ADD-ON Course titled Structural System Fundamentals

conducted at College of Engineering Bhubaneswar in the academic year 2020-21.

TRUE COPY

Course-Coordinator

Principal

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR
PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion

This is to certify that Mr./Ms. ANURAG DAS student of the Department

of Automobile Engg. semester Third bearing registration number 1901219002

has successfully completed the ADD-ON Course titled Structural System Fundamentals

conducted at College of Engineering Bhubaneswar in the academic year 2020-21.

TRUE COPY

Course-Coordinator

Principal

PRINCIPAL
College of Engineering Bhubaneswar