



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

Name of the course : Add-on course on Modern Fuels and Alternative to IC Engines
Course code :
Branch : Automobile
Semester : 7th
Duration : 40 hours

Learning Objective:

- ❖ To give an overview of Internal Combustion Engines, their classification, applications, operation and processes.
- ❖ To give complete knowledge of type of fuels used in IC engines and the fuel supply systems.
- ❖ To describe combustion phenomena in IC engines.
- ❖ To explain the Gas Turbine with various operating cycles.

Course Outcome:

After completion of course the students will be able to:

CO1: Understand various types of I.C. Engines, Cycles of operation and Identify fuel metering, fuel supply systems for different types of engines.

CO2: Understand combustion phenomena in SI and CI engines and Analyze the effect of various operating variables on engine performance.

CO3: Evaluate performance Analysis of IC Engine and Justify the suitability for different applications.

CO4: Understand the conventional and non-conventional fuels and effects of emission formation of IC engines, its effects and the legislation standards.

SYLLABUS

MODULE 1:

(14 hours)

I.C. Engines - Classification based on multi cylinder engine, firing order, selection criteria of IC engines based on application, materials and manufacturing processes of ICE components. Fuel Supply systems of SI and CI engines – Types of carburetor (makes), Fuel supply systems for C.I. engines: Requirement of ideal injection system, types of injection systems, fuel pumps and injectors, types of nozzles:

MODULE 2:

(14 hours)

Testing and performance – Review of IC engine testing, and trial calculation on testing at different load characteristics, Performance characteristics such as brake thermal efficiency.

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volumetric efficiency BSFC, Economical running, Williams line, interrelationship of various engines variables, performance graphs

MODULE 3:

(12 hours)

Exhaust Emission – Introduction, constituents of exhaust gas, effects on human health and causes of formation and their measurement pollution control device and EURO standards. Alternative fuels for IC engines like LPG, CNG, Alcohols, Hydrogen etc., their need, properties, engine modification and performance

Text Book:

1. Heywood J.B., “Internal combustion Engine Fundamentals”, McGraw Hill, 1988
2. Obert E.F., “Internal combustion Engine and Air Pollution”, Intext Educational Pub, 1974
3. Ganesan V., “Internal combustion Engines”, 6 th Ed. Tata McGraw Hill Publishing Co. Domkundwar V.M. “Internal Combustion Engines”-
3. Pulkrabek W., “Engineering Fundamentals of Internal Combustion Engine”, Prentice Hall, 1997

Reference Text Book:

1. Fundamentals of internal combustion engines: Gill, Smith and Ziurys, Oxford and IBH
2. The Internal combustion Engine in theory and practice: C F Taylor, MIT Press, Cambridge
3. Alternative Fuels Guidebook, Properties, Storage, Dispensing, and Vehicle Facility Modifications, Richard L. Bechtold, SAE Publications 1997.

Online resources:

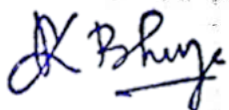
1. https://archive.nptel.ac.in/content/syllabus_pdf/112104033.pdf
2. <https://ocw.mit.edu/courses/2-61-internal-combustion-engines-spring-2017/>

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: Prof. Pusparanjan Swain & Prof. Rajkumar Sahu

Approved by:



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

NOTICE

Department of Automobile Engineering
Add On Course 2018-2019

Ref No: COEB/AE/2018/20

Date: 04.06.2018

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 2018-2019. All the students are instructed to enroll their names for the following courses on or before **23.06.2018**. The classes will be commenced from **17.07.2018** with timing from 5.30pm to 7.30pm. You can contact the following course co-ordinators for enrolment and any queries.

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

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Principal

College of Engineering Bhubaneswar

Vice Chairman

Executive Director

Principal

All Notice Board.

A.O(Admin)

All HODs

Hostel, Security

PSW

HOD

Automobile Engineering Department

A. Bhuje

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COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

DEPARTMENT OF AUTOMOBILE ENGINEERING ADD ON/CERTIFICATE COURSE STUDENT ENROLLMENT SHEET

Programme: B Tech in AUTOMOBILE ENGINEERING		Academic Year : 2018-19	
Semester: 7 th	Course Code (if any):	Course Duration: 40 hours	
Name of the Course: Modern Fuels and Alternatives to IC Engine		Sheet No:	
I do hereby undertake to participate in the above mentioned add on course.			
Sl No.	Reg. No.	Name of the Students	Signature
1	1501219049	AKSHAY KUMAR BARIK	Akshay Kumar Barik
2	1501219050	ASHUTOSH DASH	Ashutosh Dash
3	1501219051	GURU CHARAN	Guru Charan
4	1501219052	NEELAMANI BRAJA SUNDAR	N. B. Sundar Sabu
5	1501219053	SHALOM DIGAL	Shalom Digal
6	1501219054	SUDHANSU SEKHAR PATI	S.K. Pati
7	1501219055	SUMESH KUMAR MISHRA	Sumesh Kumar Mishra
8	1501219056	SATYA PRAKASH SAHOO	Satya P. Sahoo
9	1501219057	RINKESH KUMAR BHADRA	R.K. Bhadra




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DEPARTMENT OF AUTOMOBILE ENGINEERING
ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

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Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7th

Academic Year : 2018-19

Sheet No:

Name of the Course: Modern Fuels and Alternatives to IC Engine

Sl.No.	Reg. No.	Name of the Students	Date	Date	Date	Date
1	1501219049	AKSHAY KUMAR BARIK	17/7/18	18/7/18	19/7/18	20/7/18
2	1501219050	ASHUTOSH DASH	Ashutosh Dash	Ashutosh Dash	Ashutosh Dash	Ashutosh Dash
3	1501219051	GURU CHARAN	G. C. Mahapatra	ABS	G. C. Mahapatra	G. C. Mahapatra
4	1501219052	NEELAMANI BRAJA SUNDAR	N. B. Sunda Sabu	N. B. Sunda Sabu	N. B. Sunda Sabu	N. B. Sunda Sabu
5	1501219053	SHALOM DIGAL	Shalom Digal	Shalom Digal	Shalom Digal	Shalom Digal
6	1501219054	SUDHANSU SEKHAR PATI	S.K. Pati	S.K. Pati	S.K. Pati	S.K. Pati
7	1501219055	SUMESH KUMAR MISHRA	Suresh Kumar Mishra	Suresh Kumar Mishra	Suresh Kumar Mishra	Suresh Kumar Mishra
8	1501219056	SATYA PRAKASH SAHOO	Satyap. Sahoo	Satyap. Sahoo	ABS	Satyap. Sahoo
9	1501219057	RINKESH KUMAR BHADRA	R.K. Bhadra	R.K. Bhadra	R.K. Bhadra	R.K. Bhadra

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DEPARTMENT OF AUTOMOBILE ENGINEERING
ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

2

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7th

Academic Year : 2018-19

Sheet No:

Name of the Course: Modern Fuels and Alternatives to IC Engine

Sl No.	Reg. No.	Name of the Students	Date	Date	Date	Date
1	1501219049	AKSHAY KUMAR BARIK	23/11/18 Akelon ku Bonic	25/11/18 Akelon ku Bonic	26/11/18 Akelon ku Bonic	27/11/18 Akelon ku Bonic
2	1501219050	ASHUTOSH DASH	Ashutosh Dash	Ashutosh Dash	Ashutosh Dash	Ashutosh Dash
3	1501219051	GURU CHARAN	G.C Mukhopadhyay	G.C Mukhopadhyay	G.C Mukhopadhyay	A B C
4	1501219052	NELAMANI BRAJA SUNDAR	N.B. Sundar Sahu	N.B. Sundar Sahu	N.B. Sundar Sahu	N.B. Sundar Sahu
5	1501219053	SHALOM DIGAL	Shalom Digal	Shalom Digal	Shalom Digal	Shalom Digal
6	1501219054	SUDHANSU SEKHAR PATI	S.K. Pati	S.K. Pati	S.K. Pati	S.K. Pati
7	1501219055	SUMESH KUMAR MISHRA	Suresh Kumar Mishra	Suresh Kumar Mishra	Suresh Kumar Mishra	Suresh Kumar Mishra
8	1501219056	SATYA PRAKASH SAHOO	Satyajit P. Sahoo	Satyajit P. Sahoo	Satyajit P. Sahoo	Satyajit P. Sahoo
9	1501219057	RINKESH KUMAR BHADRA	R.K. Bhadrara	R.K. Bhadrara	R.K. Bhadrara	R.K. Bhadrara

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DEPARTMENT OF AUTOMOBILE ENGINEERING
ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

(3)

Programme: B Tech In AUTOMOBILE ENGINEERING

Semester: 7th

Academic Year : 2018-19

Sheet No:

Name of the Course: Modern Fuels and Alternatives to IC Engine

Sl/No.	Reg. No.	Name of the Students	Date	Date	Date	Date
1	1501219049	AKSHAY KUMAR BARIK	30/7/18 Akhay Ku Barik	31/7/18 Akhay Ku Barik	31/8/18 Akhay Ku Barik	31/8/18 Akhay Ku Barik
2	1501219050	ASHUTOSH DASH	Pshutosh Dash ABS	Pshutosh Dash ABS	ABS	Pshutosh Dash
3	1501219051	GURU CHARAN	ABS	G. C Mukhopadhyay	G. C Mukhopadhyay	G. C Mukhopadhyay
4	1501219052	NEELAMANI BRAJA SUNDAR	N. B. Sundar	N. B. Sundar	N. B. Sundar	N. B. Sundar
5	1501219053	SHALOM DIGAL	Shalom Digal	Shalom Digal ABS	Shalom Digal	Shalom Digal
6	1501219054	SUDHANSU SEKHAR PATI	S.K. Pati	S.K. Pati	S.K. Pati	S.K. Pati
7	1501219055	SUMESH KUMAR MISHRA	Suresh Kumar Mishra	Suresh Kumar Mishra	Suresh Kumar Mishra	Suresh Kumar Mishra
8	1501219056	SATYA PRAKASH SAHOO	Satyajit P. Sahoo	Satyajit P. Sahoo	Satyajit P. Sahoo	Satyajit P. Sahoo
9	1501219057	RINKESH KUMAR BHADRA	R.K. Bhadrara	R.K. Bhadrara	R.K. Bhadrara	R.K. Bhadrara

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DEPARTMENT OF AUTOMOBILE ENGINEERING
ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

4

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7th

Academic Year : 2018-19

Sheet No:

Name of the Course: Modern Fuels and Alternatives to IC Engine

Sl No.	Reg. No.	Name of the Students	Date	Date	Date	Date
1	1501219049	AKSHAY KUMAR BARIK	11/8/18 Aeksha Ku Barik	9/8/18 Aeksha Ku Barik	9/8/18 Aeksha Ku Barik	10/8/18 Aeksha Ku Barik
2	1501219050	ASHUTOSH DASH	Ashutosh Dash	Ashutosh Dash	Ashutosh Dash	Ashutosh Dash
3	1501219051	GURU CHARAN	ABS	G.C. Mahapatra	G.C. Mahapatra	G.C. Mahapatra
4	1501219052	NEELAMANI BRAJA SUNDAR	N.B. Sunda Sahu	N.B. Sunda Sahu	N.B. Sunda Sahu	N.B. Sunda Sahu
5	1501219053	SHALOM DIGAL	Shalom Digal	Shalom Digal	Shalom Digal	Shalom Digal
6	1501219054	SUDHANSU SEKHAR PATI	S.K. Pati	S.K. Pati	S.K. Pati	S.K. Pati
7	1501219055	SUMESH KUMAR MISHRA	Sumesh Kumar Mishra	Sumesh Kumar Mishra	Sumesh Kumar Mishra	Sumesh Kumar Mishra
8	1501219056	SATYA PRAKASH SAHOO	Satya P. Sahoo	Satya P. Sahoo	Satya P. Sahoo	Satya P. Sahoo
9	1501219057	RINKESH KUMAR BHADRA	R.K. Bhadra	R.K. Bhadra	R.K. Bhadra	R.K. Bhadra

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DEPARTMENT OF AUTOMOBILE ENGINEERING
ADD ON/CERTIFICATE COURSE
STUDENT ATTENDANCE SHEET

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Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7th

Academic Year : 2018-19

Course Code (if any):

Sheet No:

Name of the Course: Modern Fuels and Alternatives to IC Engine

Sl.No.	Reg. No.	Name of the Students	Date	Date	Date	Date
1	1501219049	AKSHAY KUMAR BARIK	17/01/18 Akeley ku Barik	20/01/18 Akeley ku Barik	21/01/18 Akeley ku Barik	28/01/18 Akeley ku Barik
2	1501219050	ASHUTOSH DASH	18/01/18 Ashutosh Dash	20/01/18 Ashutosh Dash	21/01/18 Ashutosh Dash	28/01/18 A B S
3	1501219051	GURU CHARAN	18/01/18 G. C. Mukhopadhyay	20/01/18 G. C. Mukhopadhyay	21/01/18 G. C. Mukhopadhyay	28/01/18 A B S
4	1501219052	NEELAMANI BRAJA SUNDAR	18/01/18 N. B. Sundar Sahu	20/01/18 N. B. Sundar Sahu	21/01/18 N. B. Sundar Sahu	28/01/18 N. B. Sundar Sahu
5	1501219053	SHALOM DIGAL	18/01/18 Shalom Digal	20/01/18 Shalom Digal	21/01/18 Shalom Digal	28/01/18 Shalom Digal
6	1501219054	SUDHANSU SEKHAR PATI	18/01/18 S. K. Pati	20/01/18 S. K. Pati	21/01/18 S. K. Pati	28/01/18 S. K. Pati
7	1501219055	SUMESH KUMAR MISHRA	18/01/18 Sunesh Kumar Mishra	20/01/18 A B S	21/01/18 Sunesh Kumar Mishra	28/01/18 Sunesh Kumar Mishra
8	1501219056	SATYA PRAKASH SAHOO	18/01/18 Satya P. Sahoo	20/01/18 Satya P. Sahoo	21/01/18 Satya P. Sahoo	28/01/18 Satya P. Sahoo
9	1501219057	RINKESH KUMAR BHADRA	18/01/18 R. K. Bhadrara	20/01/18 R. K. Bhadrara	21/01/18 R. K. Bhadrara	28/01/18 R. K. Bhadrara

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



Certificate of Completion


This is to certify that Mr./Ms. NEELAMANI BRAJA SUNDAR SAHU, student of the Department


of Automobile Engg. semester Seventh bearing registration number 1501219052


has successfully completed the ADD-ON Course titled Modern Fuels and Alternatives to IC Engine

conducted at College of Engineering Bhubaneswar in the academic year 2018-19

TRUE COPY


 Course-Coordinator


 Principal


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Certificate of Completion

This is to certify that Mr./Ms. SUDHANSU SEKHAR PATI, student of the Department


of Automobile Engg. semester Seventh bearing registration number 1501219054


has successfully completed the ADD-ON Course titled Modern Fuels and Alternatives to IC Engine

conducted at College of Engineering Bhubaneswar in the academic year 2018-19

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Course-Cordinator


Principal


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Certificate of Completion

This is to certify that Mr./Ms. SUMESH KUMAR MISHRA, student of the Department


of Automobile Engg. semester Seventh bearing registration number 1501219055

has successfully completed the ADD-ON Course titled Modern Fuels and Alternatives to IC Engine

conducted at College of Engineering Bhubaneswar in the academic year 2018-19

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 Course-Coordinator


 Principal


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Certificate of Completion

This is to certify that Mr./Ms. SATYA PRAKASH SAHOO, student of the Department


of Automobile Engg. semester Seventh bearing registration number 1501219056


has successfully completed the ADD-ON Course titled Modern Fuels and Alternatives to IC Engine

conducted at College of Engineering Bhubaneswar in the academic year 2018-19.

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Course-Cordinator


Principal


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Certificate of Completion

This is to certify that Mr./Ms. RINKESH KUMAR BHADRA, student of the Department


of Automobile Engg. semester Seventh bearing registration number 1501219057


has successfully completed the ADD-ON Course titled Modern Fuels and Alternatives to IC Engine

conducted at College of Engineering Bhubaneswar in the academic year 2018-19.

TRUE COPY


Course-Coordinator


Principal


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