



# COLLEGE OF ENGINEERING BHUBANESWAR

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

[AFFILIATED TO BPUT, ODISHA]

[www.coeb.ac.in](http://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 : 7<sup>th</sup>  
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
- 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:**

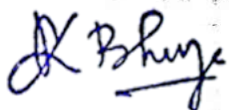
1. [https://archive.nptel.ac.in/content/syllabus\\_pdf/112104033.pdf](https://archive.nptel.ac.in/content/syllabus_pdf/112104033.pdf)
2. <https://ocw.mit.edu/courses/2-61-internal-combustion-engines-spring-2017/>

**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 2019-2020

Ref No: COEB/AE/2019/16

Date: 03.07.2019

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 2019-2020. All the students are instructed to enroll their names for the following courses on or before 23.07.2019. The classes will be commenced from **13/08/2019** 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 <sup>rd</sup> | 40                | Prof. Asis Kumar Nayak           |
| 2      | Fuels and Combustion                        | 5 <sup>th</sup> | 40                | Pusparanjan Swain                |
| 3      | Modern Fuels and Alternatives to IC Engines | 7 <sup>th</sup> | 40                | Dr. Krishna                      |

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

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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 : 2019-20   |
| Semester: 7 <sup>th</sup>                                      | Course Code (if any):     |
| Name of the Course: Modern Fuels and Alternatives to IC Engine | Course Duration: 40 hours |
|  | 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      | 1601219001 | AJAYA KUMAR GAMANGO  | Ajaya Kumar Gamango |
| 2      | 1601219002 | JYOTI KRUSHNA RAUTA  | Jyoti Krushna Rauta |
| 3      | 1601219003 | KAUSTUVA JENA        | Kaustava Jena       |
| 4      | 1601219004 | SURESH SABAR         | Suresh Sabar        |
| 5      | 1601219005 | SUSHIL KUMAR PRUSTY  | S. K. Prusty        |
| 6      | 1601219006 | SYED ZEESHAN ALAM    | S. Z. Alam          |
| 7      | 1601219007 | MAHESH CHARAN PATEL  | Mahesh Ch. Patel    |
| 8      | 1601219175 | ABHIMANYU SAHOO      | Abhimanyu saho      |
| 9      | 1601219176 | BISWARANJAN MALLICK  | B. Mallik           |
| 10     | 1601219177 | HARICHANDAN GHOSH    | H. Ghosh            |
| 11     | 1601219178 | MD SAHEEN ALAM       | Md Saher Alam       |
| 12     | 1601219179 | PRATEEK PANDA        | Prateek Panda       |
| 13     | 1601219180 | SATSANKLPA TRIPATHY  | S.K. Tripathy       |
| 14     | 1601219181 | SEKHAR MOHANTY       | Seckhar mohanty     |
| 15     | 1601219182 | SIDDHARTH SAHOO      | S. Sahoo            |
| 16     | 1601219183 | SATYANARAYAN DAS     | Satyharayan Das     |

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COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

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

1

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7<sup>th</sup>

Academic Year : 2019-20

Name of the Course: Modern Fuels and

Course Code (if any):

Sheet No:

Alternatives to IC Engine

| Sl No. | Reg. No.   | Name of the Students | Date    | Date    | Date    | Date    |
|--------|------------|----------------------|---------|---------|---------|---------|
| 1      | 1601219001 | AIJAYA KUMAR GAMANCO | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 2      | 1601219002 | JYOTI KRUSHNA RAUTA  | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 3      | 1601219003 | KAUSTUYA JENA        | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 4      | 1601219004 | SURESH SABAR         | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 5      | 1601219005 | SUSHIL KUMAR PRUSTY  | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 6      | 1601219006 | SYED ZEESHAN ALAM    | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 7      | 1601219007 | MAHESH CHARAN PATEL  | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 8      | 1601219175 | ABHIMANYU SAHOO      | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 9      | 1601219176 | BISWARANJAN MALLICK  | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 10     | 1601219177 | HARICHANDAN GHOSH    | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 11     | 1601219178 | MD SAHEEN ALAM       | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 12     | 1601219179 | PRATEEK PANDA        | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 13     | 1601219180 | SATSANKI PA TRIPATHY | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 14     | 1601219181 | SEKHAR MOHANTY       | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 15     | 1601219182 | SIDDHARTH SAHOO      | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |
| 16     | 1601219183 | SATYANARAYAN DAS     | 13/8/19 | 14/8/19 | 16/8/19 | 19/8/19 |

*[Signature]*

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COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

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

(2)

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7<sup>th</sup>

Academic Year: 2019-20

Name of the Course: Modern Fuels and

Course Code (if any):

Sheet No:

Alternatives to IC Engine

| Sl No. | Reg. No.   | Name of the Students | Date               | Date               | Date               | Date               |
|--------|------------|----------------------|--------------------|--------------------|--------------------|--------------------|
| 1      | 1601219001 | AJAYA KUMAR GAMANGO  | 20/8/19            | 21/8/19            | 22/8/19            | 25/8/19            |
| 2      | 1601219002 | JYOTI KRUSHNA RAUTA  | Ajaya Kuman Gango  | Ajaya Kuman Gango  | Ajaya Kuman Gango  | Ajaya Kuman Gango  |
| 3      | 1601219003 | KAUSTUVA JENA        | Jyoti Krishna Raut | Jyoti Krishna Raut | Jyoti Krishna Raut | Jyoti Krishna Raut |
| 4      | 1601219004 | SURESH SABAR         | Kaustava Jena      | Kaustava Jena      | Kaustava Jena      | Kaustava Jena      |
| 5      | 1601219005 | SUSHIL KUMAR PRUSTY  | Suresh Sabar       | Suresh Sabar       | Suresh Sabar       | Suresh Sabar       |
| 6      | 1601219006 | SYED ZEESHAN ALAM    | A.P.S              | S.K. Prusty        | S.K. Prusty        | A.P.S              |
| 7      | 1601219007 | MAHESH CHARAN PATEL  | S.2. Alam          | S.2. Alam          | S.2. Alam          | S.K. Prusty        |
| 8      | 1601219175 | ABHIMANYU SAHOO      | Mahesh Ch. Patil   | Mahesh Ch. Patil   | Mahesh Ch. Patil   | C.2. Alam          |
| 9      | 1601219176 | BISWARANJAN MALLICK  | Abhinanyu saho     | ABSI               | Abhinanyu saho     | Mahesh Ch. Patil   |
| 10     | 1601219177 | HARICHANDAN GHOSH    | B. Maurya          | B. Maurya          | B. Maurya          | Abhinanyu saho     |
| 11     | 1601219178 | MD SAHEEN ALAM       | H. Ghosh           | ABSI               | H. Ghosh           | B. Maurya          |
| 12     | 1601219179 | PRATEEK PANDA        | Md Saheem Alam     | Md Saheem Alam     | Md Saheem Alam     | H. Ghosh           |
| 13     | 1601219180 | SATSANKI PA TRIPATHY | Prateek Panda      | Prateek Panda      | Prateek Panda      | Md Saheem Alam     |
| 14     | 1601219181 | SEKHAR MOHANTY       | S.K. Tripathy      | S.K. Tripathy      | S.K. Tripathy      | Prateek Panda      |
| 15     | 1601219182 | SIDDHARTH SAHOO      | ABSI               | Sekhar Mohanty     | Sekhar Mohanty     | S.K. Tripathy      |
| 16     | 1601219183 | SATYANARAYAN DAS     | S. Das             | S. Das             | S. Das             | Sekhar Mohanty     |



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COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

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

3

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7<sup>th</sup>

Academic Year : 2019-20

Name of the Course: Modern Fuels and

Course Code (if any):

Sheet No:

Alternatives to IC Engine

| Sl No. | Reg. No.   | Name of the Students | Date    | Date    | Date    | Date    |
|--------|------------|----------------------|---------|---------|---------|---------|
| 1      | 1601219001 | AJAYA KUMAR GAMANGO  | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 2      | 1601219002 | JYOTI KRUSHNA RAUTA  | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 3      | 1601219003 | KAUSTUVA JENA        | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 4      | 1601219004 | SURESH SABAR         | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 5      | 1601219005 | SUSHIL KUMAR PRUSTY  | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 6      | 1601219006 | SYED ZEESHAN ALAM    | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 7      | 1601219007 | MAHESH CHARAN PATEL  | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 8      | 1601219175 | ABHIMANYU SAHOO      | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 9      | 1601219176 | BISWARANJAN MALLICK  | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 10     | 1601219177 | HARICHANDAN GHOSH    | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 11     | 1601219178 | MD SAHEEN ALAM       | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 12     | 1601219179 | PRATEEK PANDA        | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 13     | 1601219180 | SATSANKI PA TRIPATHY | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 14     | 1601219181 | SEKHAR MOHANTY       | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 15     | 1601219182 | SIDDHARTH SAHOO      | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |
| 16     | 1601219183 | SATYANARAYAN DAS     | 27/8/19 | 28/8/19 | 29/8/19 | 30/8/19 |



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COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

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

(4)

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7<sup>th</sup> Academic Year : 2019-20

| Name of the Course: Modern Fuels and Alternatives to IC Engine |            | Course Code (if any): |        | Sheet No: |        |
|--|------------|-----------------------|--------|-----------|--------|
| Sl No.   | Reg. No.   | Name of the Students  | Date   | Date      | Date   |
| 1  | 1601219001 | AJAYA KUMAR GAMANGO   | 4/9/19 | 5/9/19    | 6/9/19 |
| 2  | 1601219002 | JYOTI KRUSHNA RAUTA   | 4/9/19 | 5/9/19    | 6/9/19 |
| 3  | 1601219003 | KAUSTUVA JENA         | 4/9/19 | 5/9/19    | 6/9/19 |
| 4  | 1601219004 | SURESH SABAR          | 4/9/19 | 5/9/19    | 6/9/19 |
| 5  | 1601219005 | SUSHIL KUMAR PRUSTY   | 4/9/19 | 5/9/19    | 6/9/19 |
| 6  | 1601219006 | SYED ZEESHAN ALAM     | 4/9/19 | 5/9/19    | 6/9/19 |
| 7  | 1601219007 | MAHESH CHARAN PATEL   | 4/9/19 | 5/9/19    | 6/9/19 |
| 8  | 1601219175 | ABHIMANYU SAHOO       | 4/9/19 | 5/9/19    | 6/9/19 |
| 9  | 1601219176 | BISWARANJAN MALLICK   | 4/9/19 | 5/9/19    | 6/9/19 |
| 10   | 1601219177 | HARICHANDAN GHOSH     | 4/9/19 | 5/9/19    | 6/9/19 |
| 11   | 1601219178 | MD SAHEEN ALAM        | 4/9/19 | 5/9/19    | 6/9/19 |
| 12   | 1601219179 | PRATEEK PANDA         | 4/9/19 | 5/9/19    | 6/9/19 |
| 13   | 1601219180 | SATSANKI PA TRIPATHY  | 4/9/19 | 5/9/19    | 6/9/19 |
| 14   | 1601219181 | SEKHAR MOHANTY        | 4/9/19 | 5/9/19    | 6/9/19 |
| 15   | 1601219182 | SIDDHARTH SAHOO       | 4/9/19 | 5/9/19    | 6/9/19 |
| 16   | 1601219183 | SATYANARAYAN DAS      | 4/9/19 | 5/9/19    | 6/9/19 |



*[Signature]*

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

5

Programme: B Tech in AUTOMOBILE ENGINEERING

Semester: 7<sup>th</sup>

Academic Year : 2019-20

Sheet No:

| Name of the Course: Modern Fuels and Alternatives to IC Engine |                                 | Date               |                    | Date               |                    | Date               |                    |
|--|---------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 1  | 1601219001 AJAYA KUMAR GAMANGO  | 18/9/19            | 19/9/19            | 18/9/19            | 18/9/19            | 18/9/19            | 18/9/19            |
| 2  | 1601219002 JYOTI KRUSHNA RAUTA  | Ajaya Kumar Gansel | Ajaya Kumar Gansel | Ajaya Kumar Gansel | Ajaya Kumar Gansel | Jyoti Krushna Raut | Jyoti Krushna Raut |
| 3  | 1601219003 KAUSTUVA JENA        | Jyoti Krushna Raut | Jyoti Krushna Raut | Jyoti Krushna Raut | Jyoti Krushna Raut | Jyoti Krushna Raut | Jyoti Krushna Raut |
| 4  | 1601219004 SURESH SABAR         | Kaustava Jena      | Kaustava Jena      | Kaustava Jena      | Kaustava Jena      | Kaustava Jena      | Kaustava Jena      |
| 5  | 1601219005 SUSHIL KUMAR PRUSTY  | Suresh Sabar       | Suresh Sabar       | Suresh Sabar       | Suresh Sabar       | Suresh Sabar       | Suresh Sabar       |
| 6  | 1601219006 SYED ZEESHAN ALAM    | S. K. Prusty       | S. K. Prusty       | S. K. Prusty       | S. K. Prusty       | S. K. Prusty       | S. K. Prusty       |
| 7  | 1601219007 MAHESH CHARAN PATEL  | S. Z. Alam         | S. Z. Alam         | S. Z. Alam         | S. Z. Alam         | S. Z. Alam         | S. Z. Alam         |
| 8  | 1601219175 ABHIMANYU SAHOO      | Mahesh Ch. Patil   | Mahesh Ch. Patil   | Mahesh Ch. Patil   | Mahesh Ch. Patil   | Mahesh Ch. Patil   | Mahesh Ch. Patil   |
| 9  | 1601219176 BISWARANJAN MALLICK  | ABCS               | Abhimanya Sahoo    | Abhimanya Sahoo    | Abhimanya Sahoo    | Abhimanya Sahoo    | Abhimanya Sahoo    |
| 10   | 1601219177 HARCHANDAN GHOSH     | ABCS               | B. Mallik          | B. Mallik          | B. Mallik          | B. Mallik          | B. Mallik          |
| 11   | 1601219178 MD SAHEEN ALAM       | H. Ghosh           | H. Ghosh           | H. Ghosh           | H. Ghosh           | H. Ghosh           | H. Ghosh           |
| 12   | 1601219179 PRATEEK PANDA        | MD Sahen Alam      | MD Sahen Alam      | MD Sahen Alam      | MD Sahen Alam      | MD Sahen Alam      | MD Sahen Alam      |
| 13   | 1601219180 SATSANKI PA TRIPATHY | Prateek Panda      | Prateek Panda      | Prateek Panda      | Prateek Panda      | Prateek Panda      | Prateek Panda      |
| 14   | 1601219181 SEKHAR MOHANTY       | S. K. Tripathy     | S. K. Tripathy     | S. K. Tripathy     | S. K. Tripathy     | S. K. Tripathy     | S. K. Tripathy     |
| 15   | 1601219182 SIDDHARTH SAHOO      | Sekhar Mohanty     | Sekhar Mohanty     | Sekhar Mohanty     | Sekhar Mohanty     | Sekhar Mohanty     | Sekhar Mohanty     |
| 16   | 1601219183 SATYANARAYAN DAS     | S. Sahoo           | S. Sahoo           | S. Sahoo           | S. Sahoo           | S. Sahoo           | S. Sahoo           |
|  |                                 | ABCS               | S. Das             | S. Das             | S. Das             | ABCS               | ABCS               |



*[Signature]*

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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. PRATBEK PANDA, student of the Department


of Automobile Engg. semester Seventh bearing registration number 1601219179


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 2019-20.

**TRUE COPY**

  
Course-Coordinator

  
Principal

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




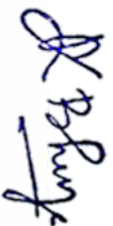
# *Certificate of Completion*

This is to certify that Mr./Ms. SATSANKI PA TRIPATHY, student of the Department  
of Automobile Engg. semester Seventh bearing registration number 1601219180  
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 2019-20

**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. SEKHAR MOHANTY, student of the Department

of Automobile Engg. semester Seventh bearing registration number 1601219181

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 2019-20.

**TRUE COPY**

Course-Coordinator

Principal

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**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. SIDDHARTH SAHOO, student of the Department  
of Automobile Engg. semester Seventh bearing registration number 1601219182  
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 2019-20

**TRUE COPY**

  
Course-Coordinator

  
Principal  
  
PRINCIPAL  
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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. SATYANARAYAN DAS, student of the Department


of Automobile Engg. semester Seventh bearing registration number 1601219183

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 2019-20

**TRUE COPY**

  
Course-Coordinator

  
Principal

  
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College of Engineering Bhubaneswar