NAVJIVAN SCIENCE COLLEGE ,DAHOD
DEPARTMENT OF PHYSICS
CERTIFICATE COURSE 2024-25
Fluid Mechanics

Course schedule: There will be 1 clock hour of teaching every day for 30 days.
Course Venue: Navjivan science college, Dahod
Course Duration: 30 Days

Eligible Students: Any Student from F.Y. to T.Y. will be preferred

Course Content : Fluid Mechanics 2024-25

1. **Fluid Dynamics**:
    a. **Fluid Flow**: Fluid flow is categorized into two main types: laminar flow and turbulent flow. Laminar flow occurs when a fluid flows in parallel layers with minimal mixing between them, characterized by smooth streamlines. Turbulent flow, on the other hand, is chaotic and characterized by irregular fluctuations in velocity and pressure.
    b. **Equations of Motion**: The fundamental equations governing fluid flow are the Navier-Stokes equations. These equations describe the conservation of momentum and are used to analyze the velocity and pressure fields of fluid flow under different conditions.
2. **Buoyancy**:
    a. **Archimedes' Principle**: Buoyancy is the upward force exerted by a fluid that opposes the weight of an immersed object. According to Archimedes' principle, this buoyant force is equal to the weight of the fluid displaced by the object. This principle explains why objects float or sink in fluids.
3. **Viscosity**:
    a. **Definition**: Viscosity is a measure of a fluid's resistance to deformation under shear stress. It quantifies how easily molecules of the fluid can move past each other. High viscosity fluids (like honey) resist flow more than low viscosity fluids (like water).
    b. **Newtonian vs. Non-Newtonian Fluids**: Newtonian fluids have a constant viscosity that does not change with shear rate (e.g., water, air). Non-Newtonian fluids, such as ketchup or blood, have viscosity that depends on shear rate or other factors.
4. **Bernoulli's Principle**:
    a. **Statement**: Bernoulli's principle states that in an ideal fluid flow, an increase in the speed of the fluid occurs simultaneously with a decrease in pressure or a decrease in the fluid's potential energy.
    b. **Applications**: This principle is applied in various situations, such as in aircraft wings (to generate lift), in carburetors and atomizers (to mix air and fuel), and in various fluid dynamics applications to understand pressure variations along streamline paths.

5. **Applications:**
    a. Fluid mechanics has numerous practical applications in engineering and everyday life, including the design of airplanes and rockets, hydraulic systems, turbines, pumps, pipes, and ventilation systems. Understanding fluid behavior helps engineers optimize designs for efficiency and safety.
6. **Fluid Statics:**
    a. Fluid statics deals with fluids at rest and includes concepts such as pressure distribution in a fluid (Pascal's law), hydrostatic equilibrium, and determining forces on submerged surfaces (buoyant force)

Report of Certificate Course in Physics, 2024-25

The Certificate course in Physics was conducted by Navjivan Science College of Science from 16 August 2024 to 30 September 2024 in which 10 students from college actively participated. The duration of the teaching was 30 hrs. The course was aimed to clear the fundamental concepts of Fluid Mechanics which the students skip during their graduation and post graduation. The objective of the course was to prepare quality graduates and post graduates so that they can meet the requirements of electrical industries and can be benefitted by greater job opportunities offered by eminent Fluid Mechanics industries of India.

Key Topics Covered:

A certificate course on fluid mechanics typically covers several key topics, including:

1. **Basic Concepts:**
   - Definition of fluid and types of fluids (ideal vs. real)
   - Properties of fluids (density, viscosity, pressure, etc.)
2. **Fluid Statics:**
   - Hydrostatic pressure and buoyancy
   - Pascal's principle
   - Archimedes' principle
3. **Fluid Dynamics:**
   - Continuity equation
   - Bernoulli's equation
   - Energy equation and applications
4. **Viscous Flow:**
   - Newtonian and non-Newtonian fluids
   - Laminar and turbulent flow characteristics
   - Flow in pipes and channel flow
5. **Flow Measurement:**
   - Flow meters and measuring techniques
   - Pitot tube, orifice plate, and venturi meter
6. **Dimensional Analysis and Similitude:**
   - Buckingham Pi theorem
   - Model testing and scale-up
7. **Computational Fluid Dynamics (CFD):**
   - Introduction to numerical methods in fluid mechanics
   - Basic CFD principles and software applications
8. **Applications of Fluid Mechanics:**
   - Fluid flow in engineering systems (pumps, turbines)
   - Environmental applications (aerodynamics, hydrodynamics)
   - Biological applications (blood flow, respiratory mechanics)
9. **Recent Developments and Research:**
   - Emerging trends in fluid mechanics
   - Case studies and real-world applications

Delivery Method: The course content is typically delivered through a combination of lectures, practical demonstrations, and hands-on lab sessions. Participants engage in theoretical learning supplemented by practical experiments to reinforce their understanding of Fluid concepts.

Assessment: Assessment methods may include quizzes, assignments, lab reports, and a final examination to evaluate participants' comprehension of the course material.

Conclusion: The Fluid Mechanics certificate course provides a comprehensive introduction to the foundational principles of Fluid. Participants gain the knowledge and skills necessary to analyze simple Fluid dynamics and lay the groundwork for further study or application in various fields such as engineering, telecommunications, and automation.

NAVJIVAN SCIENCE COLLEGE, DAHOD

Conducted by : Dahod Anaj Mahajan Sarvajanik Education Society, Dahod
Affiliated with Shri Govind Guru University, Godhra
Re-Accredited by NAAC with B grade with a CGPA of 2.31
Accredited "AAA" B Grade With a CGPA of 2.65

Dr. G.J. Kharadi
(Officiating Principal)
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Ref. No.: 822/2024-25
Date : 26 / 03 / 2025

Ph. : (O) 94845 48232
E-mail : navjivan_73@yahoo.co.in
Website : www.navjivansciencecollege.com

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Know the world around you

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CERTIFICATE COURSE IN PHYSICS

Date: 16/08/2024 to 31/10/2024

(30 days, 1hr per Day)

Registration fees Rs. 250/- (Rs. Two Fifty only)

Maximum intake of Students 15

Registration starts: 10/08/2024 to 15/08/2024

Eligible students: Any student from F. Y. to T. Y. will be preferred

Note: Registration forms will be available from college office from 10/08/2024 OR Registration forms will be available from our college website www.navjivansciencecollege.com duly filled forms with fees should be submitted in our college office on or before Date: 15/08/2024. The detailed schedule of the course will be declared latter. All the participants will be given certificate on successfully completion of the course.

For Further Details contact:
(1) Dr. V.R.JAIN –9510617131 (Course Coordinator)
(2) Mr. MOHIT AGRAWAL– 9712551828

Officiating Principal
Navjivan Science College,
DAHOD

Navjivan Science College ,Dahod

Department of Physics

Certificate Course : Fluid Mechanics (2024-25)

Attendance Report

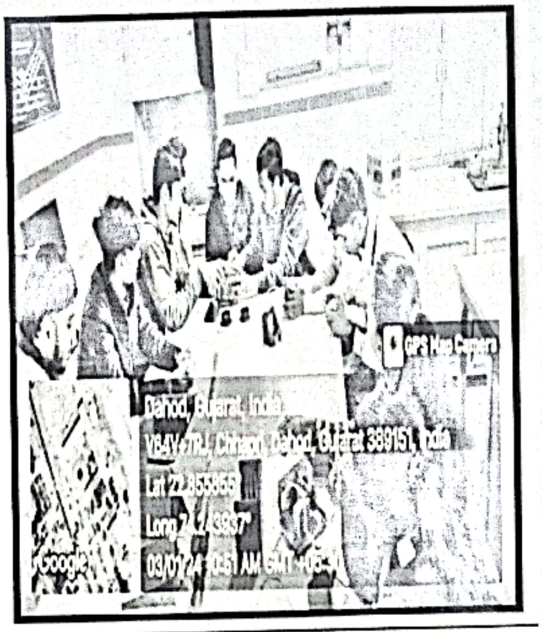
Sr. No	Name	16/8	17/8	19/8	20/8	21/8	22/8	23/8	24/8	27/8	28/8	29/8	30/8	1/9	2/9	3/9	4/9	5/9	6/9	10/9	11/9	12/9	13/9	14/9	15 9	20/9	25/9	30/9	25/10	26/10	31/10
1	BHABHOR ANKITKUMAR. R	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	BHABHOR DIVYABEN . C	P	P	P	P	A	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	LUHAR AAMIR . I	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	NIMACHIYA DURGESH . M	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P
5	PALAS ANUJBHAI . M	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	PATEL CHANHALBEN . N	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	PITHAYA RAHULBAI . S	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	RANA DHRUVI . J	P	P	P	P	P	P	P	P	P	P	P	A	A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P
9	SHEIKH MAHINURBANU. A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
10	SOLANKI JAYESHKUMAR . R	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

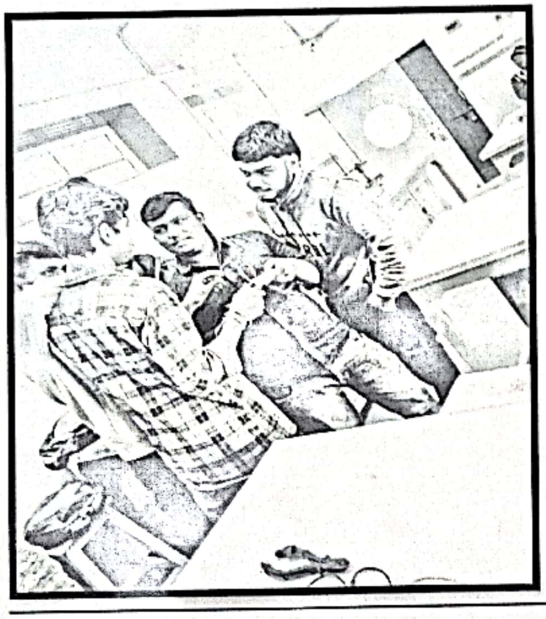
NAVJIVAN SCIENCE COLLEGE DAHOD

MARKSHEET

Sr.No	Name	SEM	MARKS	GRADE
1	BHABHOR ANKITKUMAR. R	V	42	A
2	BHABHOR DIVYABEN . C	V	40	A
3	LUHAR AAMIR . I	V	50	A+
4	NIMACHIYA DURGESH . M	V	40	A
5	PALAS ANUJBHAI . M	V	42	A
6	PATEL CHANHALBEN . N	V	48	A+
7	PITHAYA RAHULBAI . S	V	42	A
8	RANA DHRUVI . J	V	42	A
9	SHEIKH MAHINURBANU. A	V	48	A+
10	SOLANKI JAYESHKUMAR . R	V	50	A+

Certificate Course in Physics





Head
Department of Physics
Navjivan Science College,
DAHOD

NAVJIVAN SCIENCE COLLEGE DAHOD

Navjivan Science College Dahod

(Conducted By : Dahod Anaj Mahajan Sarvajanik Education Society)

Girdharnagar College Campus, Opp. Govt. Polytechnic college,
Jhalod Road, Usarvan Dahod

Certificate of Participation

This is to certify that Shri /Ku. SHEIKH MAHINURBANU AJAMUDDIN

student of ***Navjivan Science College, Dahod*** *has Successfully completed 30 hours Certificate*

Course in fluid Mechanics *During the*

academic year From 16/08/2024 *To* 31/10/2024 *with Grade* A+ .

Place : DAHOD

Date : 26/11/2024

Dr. Vishal Jain	Mr. Mihir Shah	Dr. Gaurang Kharadi
Co-Ordinator	Director, College Campus	Principal

Navjivan Science College Dahod

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Jhalod Road, Usarvan Dahod

Certificate of Participation

This is to certify that Shri /Ku. RANA DHRUVI JAGRUTKUMAR

student of Navjivan Science College, Dahod has Successfully completed 30 hours Certificate

Course in Fluid Mechanics *During the*

academic year From 1/10/2024 *To* 31/10/2024 *with Grade* A .

Place : DAHOD

Date : 26/11/2024

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Co-Ordinator	Director, College Campus	Principal

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Certificate of Participation

This is to certify that Shri /Ku. PITHAYA RAHUL SHANTILAL

student of ***Navjivan Science College, Dahod*** *has Successfully completed 30 hours Certificate Course in* Fluid Mechanics *During the academic year From* 16/08/2024 *To* 31/10/2024 *with Grade* A .

Place : DAHOD

Date : 26/11/2024

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Co-Ordinator	Director, College Campus	Principal

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Certificate of Participation

This is to certify that Shri /Ku. PATEL CHANCHALBEN NARVATSINH

student of **Navjivan Science College, Dahod** has Successfully completed 30 hours Certificate Course in Fluid Mechanics During the academic year From 16/08/2024 To 31/10/2024 with Grade A+.

Place : DAHOD

Date : 26/11/2024

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Co-Ordinator	Director, College Campus	Principal

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Certificate of Participation

This is to certify that Shri /Ku. PALAS ANUJ MANUBHAI

student of Navjivan Science College, Dahod has Successfully completed 30 hours Certificate Course in Fluid Mechanics During the academic year From 1/10/2024 To 31/10/2024 with Grade A+.

Place : DAHOD

Date : 26/11/2024

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Certificate of Participation

This is to certify that Shri / Ku. NIMACHIYA DURVESHBHAI DINESHBHAI

student of Navjivan Science College, Dahod has Successfully completed 30 hours Certificate Course in Fluid Mechanics During the academic year From 16/09/2024 To 31/10/2024 with Grade A.

Place : DAHOD

Date : 26/11/2024

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Jhalod Road, Usarvan Dahod

Certificate of Participation

This is to certify that Shri /Ku. LUHAR AAMIR IBRAHIM

student of ***Navjivan Science College, Dahod*** *has Successfully completed 30 hours Certificate*

Course in Fluid Mechanics *During the*

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student of ***Navjivan Science College, Dahod*** *has Successfully completed 30 hours Certificate Course in* Fluid Mechanics *During the academic year From* 16/08/2024 *To* 31/10/2024 *with Grade* A .

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