DEMAND

PAVIATH INTEGRATED SOLUTION

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FLUID MECHANICS

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◆ CIVIL UNIVERSITY ◆ SECOND YEAR ◆ CODE A30101

UNIT I
INTRODUCTION : DIMENSIONS AND UNITS – PHYSICAL PROPERTIES OF FLUIDS SPECIFIC GRAVITY, VISCOSITY, SURFACE TENSION, VAPOR PRESSURE AND THEIR INFLUENCES ON FLUID MOTION PRESSURE AT A POINT, PASCAL'S LAW, HYDROSTATIC LAW - ATMOSPHERIC, GAUGE AND VACUUM PRESSURE- MEASUREMENT OF PRESSURE. PRESSURE GAUGES, MANOMETERS: DIFFERENTIAL AND MICRO MANOMETERS.
HYDROSTATIC FORCES : HYDROSTATIC FORCES ON SUBMERGED PLANE, HORIZONTAL, VERTICAL, INCLINED AND CURVED SURFACES – CENTER OF PRESSURE. DERIVATIONS AND PROBLEMS.

UNIT – II
FLUID KINEMATICS : DESCRIPTION OF FLUID FLOW, STREAM LINE, PATH LINE AND STREAK LINES AND STREAM TUBE. CLASSIFICATION OF FLOWS : STEADY, UNSTEADY, UNIFORM, NON-UNIFORM, LAMINAR, TURBULENT, ROTATIONAL AND IRROTATIONAL FLOWS – EQUATION OF CONTINUITY FOR ONE, TWO , THREE DIMENSIONAL FLOWS – STREAM AND VELOCITY POTENTIAL FUNCTIONS, FLOWNET ANALYSIS.

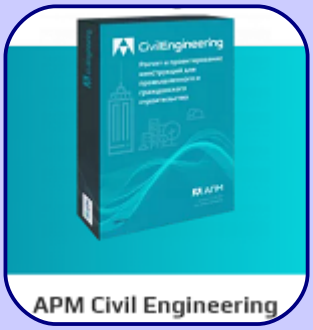
UNIT –III
FLUID DYNAMICS: SURFACE AND BODY FORCES – EULER'S AND BERNOULLI'S EQUATIONS FOR FLOW ALONG A STREAM LINE FOR 3-D FLOW, (NAVIER – STOKES EQUATIONS (EXPLANATIONARY) MOMENTUM EQUATION AND ITS APPLICATION – FORCES ON PIPE BEND.
PITOT TUBE, VENTURI METER AND ORIFICE METER – CLASSIFICATION OF ORIFICES, FLOW OVER RECTANGULAR, TRIANGULAR AND TRAPEZOIDAL AND STEPPED NOTCHES - –BROAD CRESTED WEIRS.

UNIT – IV
BOUNDARY LAYER THEORY : APPROXIMATE SOLUTIONS OF NAVIER STOKE'S EQUATIONS – BOUNDARY LAYER – CONCEPTS, PRANDTL CONTRIBUTION, CHARACTERISTICS OF BOUNDARY LAYER ALONG A THIN FLAT PLATE, VONKARMEN MOMENTUM INTEGRAL EQUATION, LAMINAR AND TURBULENT BOUNDARY LAYERS (NO DEVIATION), BL IN TRANSITION, SEPARATION OF BL, CONTROL OF BL, FLOW AROUND SUBMERGED OBJECTS-
DRAG AND LIFT- MAGNUS EFFECT.

UNIT –V
CLOSED CONDUIT FLOW : REYNOLD'S EXPERIMENT – CHARACTERISTICS OF LAMINAR & TURBULENT FLOWS. FLOW BETWEEN PARALLEL PLATES, FLOW THROUGH LONG TUBES,
FLOW THROUGH INCLINED TUBES. LAWS OF FLUID FRICTION – DARCY'S EQUATION, MINOR LOSSES – PIPES IN SERIES – PIPES IN PARALLEL – TOTAL ENERGY LINE AND HYDRAULIC GRADIENT LINE. PIPE NETWORK PROBLEMS, VARIATION OF FRICTION FACTOR WITH REYNOLD'S NUMBER – MOODY'S CHART.

TEXT BOOKS:
1. FLUID MECHANICS BY MODI AND SETH, STANDARD BOOK HOUSE.
2. INTRODUCTION TO FLUID MACHINES BY S.K.SOM & G.BISWAS (TATA MC.GRAWHILL PUBLISHERS PVT. LTD.)
3. MECHANICS OF FLUIDS BY POTTER, CENGAGE LEARNING PVT. LTD.

REFERENCES:
1. FLUID MECHANICS BASIC CONCEPTS & PRINCIPLES, SHIV KUMAR, ANE BOOKS PVT LTD.
2. FLUID MECHANICS AND MACHINARY, CSP OJHA, OXFORD HIGHER EDUCTION
3. FLUID MECHANICS BY FRANK.M. WHITE (TATA MC.GRAWHILL PVT. LTD.)
4. FLUID MEHANICS BY A.K. MOHANTY, PRENTICE HALL OF INDIA PVT. LTD., NEW DELHI
5. A TEXT OF FLUID MECHANICS AND HYDRAULIC MACHINES BY DR. R.K. BANSAL- LAXMI PUBLICATIONS (P) LTD., NEW DELHI.
6. FLUID MECHANICS AND MACHINERY BY D. RAMDURGAIA NEW AGE PUBLICATIONS.



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TRAINING - 2/UNIT TRAINING
SELF - 4/UNIT ASSIGNMENT
PRESENTATION – 2/UNIT
SHOWTIME - 2/UNIT

SYLLABUS PERIOD
TRAINING – 2/2 HRS/UNIT
REMOTE - 2/2 HRS/UNIT
DURATION - SEMESTER
ONLINE/REMOTE ACCESS

FEATURES
TRAINING BY IND. PROFESSIONAL
INDUSTRY APPLICATION
TRAINER OPPORTUNITY
CERTIFICATION

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