DEMAND

PAVIATH INTEGRATED SOLUTION

CIVIL ENGG

CIVIL POLY

EARTHQUAKE ENGINEERING

Paviath ONLINE

◆ CIVIL POLY ◆ III YEAR ELECTIVE ◆ CODE CEM63.3

OBJECTIVES:
ON COMPLETION OF THE COURSE, THE STUDENT WILL BE ABLE:

- TO KNOW THE CAUSES AND CONSEQUENCES OF EARTHQUAKES;
- TO UNDERSTAND THE MAGNITUDE AND EFFECTS OF EARTHQUAKES ON STRUCTURES;
- TO UNDERSTAND THE BEHAVIOUR OF VARIOUS TYPES OF BUILDINGS DURING EARTHQUAKES; TO KNOW ABOUT THE DESIGN CONCEPTS OF EARTHQUAKE RESISTING BUILDINGS.
- TO KNOW THE METHODS OF EVALUATION AND RETROFITTING OF DAMAGED STRUCTURES.

1.1 INTRODUCTION TO EARTH QUAKE
OBJECTIVE OF EARTHQUAKE ENGINEERING - ENGINEERING SEISMOLOGY
- STRUCTURE OF THE EARTH – TEMPERATURES AND PRESSURES WITH RESPECT TO DEPTH - PLATE TECTONICS - EVOLUTION OF INDIAN SUB CONTINENT - SEISMOTECTONICS OF INDIA - SEVERE EARTHQUAKES IN INDIAN SUB CONTINENT - CAUSES OF EARTHQUAKE - DEFINITION OF TERMS: FAULT LINE, ACTIVE FAULT,

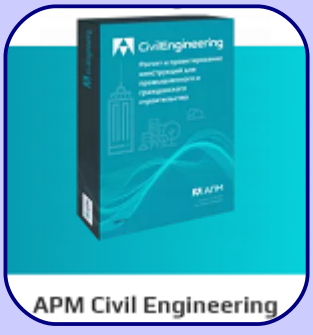
FOCUS OR HYPO CENTRE, EPICENTRE,EPICENTRE DISTANCE, FOCAL DEPTH, PEAK GROUND ACCELERATION, FORESHOCKS, AFTERSHOCKS, ASEISMIC, ISO-SEISMAL, SEISMIC GAP - GROUND SHAKING - SEISMIC WAVES - BODY WAVES - P-WAVES AND S-WAVES - SURFACE WAVES - REYLEIGH AND LOVE WAVES – EARTHQUAKE INTENSITY - EARTHQUAKE SIZE- MAGNITUDE - WAVE MAGNITUDE, DURATION MAGNITUDE, MOMENT MAGNITUDE - ENERGY RELEASED - CLASSIFICATION OF EARTHQUAKE BASED ON MAGNITUDE - CONSEQUENCES OF EARTHQUAKE - GROUND MOTION, GROUND RUPTURE, LIQUEFACTION, LANDSLIDES, FIRE, TSUNAMIS, ETC- SEISMIC ZONING MAP OF INDIA (2002) - EARTHQUAKE FREQUENCY - PREDICTION OF EARTHQUAKE RISK -MEASUREMENT OF EARTHQUAKE - INSTRUMENTS USED - VARIOUS SCALES - RICHTER'S MAGNITUDE SCALE .

2.1 SEISMIC EFFECTS ON STRUCTURES
NATURE OF GROUND MOTION - EFFECTS OF SOURCE, PATH AND SITE - GROUND SHAKING EFFECT ON STRUCTURES - EFFECTS OF AMPLITUDE, DURATION AND DISTANCE OF EARTH QUAKE - DAMAGE POTENTIAL OF EARTHQUAKES -EFFECTS OF INERTIA FORCES, SEISMIC LOAD, DEFORMATIONS IN STRUCTURES, HORIZONTAL AND VERTICAL SHAKING OF STRUCTURES, TRANSFER OF INERTIA FORCES FROM TOP TO BOTTOM - EFFECTS OF SOIL - INFLUENCE OF GROUND CONDITION ON EARTHQUAKE MOTION - CAUSES FOR SEISMIC DAMAGES IN BUILDINGS: SOFT STOREY FAILURE, FLOATING COLUMNS, PLAN IRREGULARITY, VERTICAL IRREGULARITY, LACK OF CONFINEMENT OF CONCRETE, LONG CANTILEVERS WITH HEAVY DEAD LOADS, INSUFFICIENT SHEAR REINFORCEMENTS IN COLUMNS, POOR QUALITY CONSTRUCTION, POOR QUALITY MATERIALS, CORROSION OF REINFORCEMENT, POUNDING OF ADJACENT BUILDINGS - SHORT COLUMN EFFECT - EFFECTS OF SIZE AND SHAPE OF BUILDINGS - HORIZONTAL AND VERTICAL LAYOUT OF BUILDINGS - EFFECT OF SHIFTING OF FILLER WALL LOCATIONS FROM FLOOR TO FLOOR, NON UNIFORM RIGIDITY DISTRIBUTION - DUCTILITY AND FLEXIBILITY OF BUILDINGS.

3.1 BEHAVIOUR OF STRUCTURES DURING EARTHQUAKES
CHARACTERISTICS OF BUILDINGS AFFECTING THEIR BEHAVIOR - SYMMETRY, REGULARITY, STIFFNESS, FLEXIBILITY, STRENGTH TIME PERIOD, DAMPING, DUCTILITY, MATERIALS AND METHOD OF CONSTRUCTION - DUCTILE, BRITTLE AND FATIGUE FRACTURES - BEHAVIOR OF STRUCTURES ON SLOPED GROUND - BEHAVIOUR OF STRUCTURES WITH LOAD BEARING WALLS – BRICK / STONE /MUD MASONRY - LARGE INERTIA FORCES DUE TO HEAVY WEIGHT, VERY LOW TENSILE / SHEAR STRENGTHS AND BRITTLENESS OF WALLS, STRESS CONCENTRATION AT CORNERS OF OPENINGS,
4.1 CONCEPTS OF DESIGN OF EARTHQUAKE RESISTING BUILDINGS
EARTHQUAKE PROOF BUILDING - EARTHQUAKE RESISTING BUILDING - ACCEPTABLE DAMAGES TO BUILDING ELEMENTS UNDER MINOR AND FREQUENT EARTH QUAKES, MODERATE AND OCCASIONAL EARTHQUAKES, AND STRONG BUT RARE EARTH QUAKES - GENERAL REQUIREMENTS OF STRUCTURES FOR EARTHQUAKE RESISTANCE AND STRUCTURAL SAFETY - CONCEPTS OF DUCTILITY, DEFORMABILITY AND DAMAGEABILITY - CONCEPT OF BASE ISOLATION - DUCTILE

5.1 RETROFITTING OF BUILDINGS
EVALUATION, REPAIR, RESTORATION AND SEISMIC STRENGTHENING OF BUILDINGS: ASSESSMENT OF STRUCTURAL AND NON STRUCTURAL DAMAGES CAUSED BY EARTHQUAKES, MAJOR AND MINOR DAMAGES, FEASIBILITY STUDY FOR RETROFITTING – STRUCTURAL LEVEL RETROFITTING METHOD AND MEMBER LEVEL RETROFITTING METHOD - REPAIR MATERIALS: SHOTCRETE, EPOXY RESINS, EPOXY MORTAR, GYPSUM CEMENT MORTAR, QUICK SETTING MORTARS, MECHANICAL ANCHORS - TECHNIQUES TO RESTORE ORIGINAL STRENGTH: REPAIR OF MINOR AND MEDIUM CRACKS, REPAIR OF MAJOR CRACKS CRUSHED CONCRETE AND FRACTURED / EXCESSIVELY YIELDED / BUCKLED REINFORCEMENT - SEISMIC STRENGTHENING TECHNIQUES: MODIFICATION OF ROOFS OR FLOORS, INSERTION OF NEW SLAB, STIFFENING EXISTING SLAB, ANCHORING THE SLAB TO SUPPORTING WALLS / BEAMS - INSERTING NEW WALLS - STRENGTHENING EXISTING WALLS: GROUTING, USE OF WIRE MESH, CONNECTING THE WALLS, PRE STRESSING, PROVIDING BUTTRESS - STRENGTHENING OF RC MEMBERS: REINFORCED CONCRETE RINGS AROUND EXISTING COLUMNS, JACKETING THE EXISTING WEAK BEAMS, WELDING NEW STEEL TO THE OLD STEEL AND REPLACING THE COVER, PRE STRESSING OF OLD BEAMS - INTRODUCTION OF ADDITIONAL LOAD BEARING ELEMENTS IN THE STRUCTURE - STRENGTHENING OF

TEXT BOOK:
1.EARTHQUAKE RESISTANT DESIGN OF STRUCTURES BY PANKAJ AGARWAL AND MANISH SHRIKHANDE (2010) PHI LEARNING PVT LTD
2.GUIDELINES FOR EARTHQUAKE RESISTANT NON ENGINEERED CONSTRUCTION BY THE ASSOCIATED CEMENT COMPANIES LTD
3.CRITERIA FOR EARTHQUAKE RESISTANT DESIGN OF STRUCTURES - GENERAL PROVISIONS AND BUILDINGS, IS: 1893 (PART I) – 2002
REFERENCE BOOK:
1.EARTHQUAKE TIPS BY C.V.R.MURTY, IIT, KANPUR, SPONSORED BY BMTPC, NEW DELHI.
2.GEOTECHNICAL EARTHQUAKE ENGINEERING HAND BOOK BY ROBERT W.DAY – MCGRAW – HILL
3.INTRODUCTION TO EARTHQUAKE ENGINEERING BY SHUNZO OKAMOTO – UNIVERSITY OF TOKYO PRESS
4.REPAIR AND SEISMIC STRENGTHENING OF BUILDINGS - GUIDELINES, IS:13935 - 2002
5.DR KAMALESH KUMAR, –BASIC GEOTECHNICAL EARTHQUAKE ENGINEERING‖, NEW AGE INTERNATIONAL PUBLICATIONS, NEW DELHI, 2009
6.ROBERT W. DAY, –GEOTECHNICAL EARTHQUAKES ENGINEERING HAND BOOK, TATA MCGRAW-HILL, NEW DELHI, 2002



STC APM

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

MATHS ILLUSTRATION - GEOMETRY EXPRESSIONS

ASCON RENGA

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

MECHANICAL EXPRESSIONS – ANALYTIX CAMS

ARCADIA BIM

FEATURES
TRAINING BY IND. PROFESSIONAL
INDUSTRY APPLICATION
TRAINER OPPORTUNITY
CERTIFICATION

info@paviathintegratedsolution.com -www.paviathintegratedsolution.com www.paviathjobportal.com