**USHARAMA COLLEGE OF ENGINEERING&TECHNOLOGY**

Department of civil engineering

**Lesson plan**

**Sub: FM Year: II Sem: I section: A**

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| --- | --- | --- | --- |
| S.NO | Topics to be covered | cumulative periods | date |
| **UNIT-I{12}** |
| **1** | **INTRODUCTION:** dimensions and units | **1** | **13-06-16** |
| **2** | Physical properties of fluids specific gravity, viscosity, surface tension and vapour pressure | **2-3** | **13-06-16 TO****14-06-16** |
| **3** | Pressure at a point, pascal’s law | 4-5 | **15-06-16 TO****17-06-16** |
| **4** | Hydrostatic law | **6** | **17-06-16** |
| **5** | Atmospheric, gauge and vaccum pressure- measurement of pressure, pressure gauges | **7** | **20-06-16** |
| **6** | Manometers- differential and micro manometers | **8-11** | **20-06-16 TO****24-06-16** |
| **7** | **Assignment on unit-I** | **12** | **24-06-16** |
| **UNIT-II{12}** |
| **8** | **HYDROSTATICS:** introduction | **13** | **27-06-16** |
| **9** | Hydrostatic forces on submerged plane, horizontal, vertical, inclined and curved surface(centre of pressure derivations) | **14-16** | **27-06-16 TO****29-06-16** |
| **10** | problems | **17** | **01-07-16** |
| **11** | **FLUID KINEMATICS:** description of fluid flow, stream line, path line, streak lines and stream tube | **18** | **01-07-16** |
| **12** | Classification of flows | **19** | **04-07-16** |
| **13** | Equation of continuity for 1D,2D, 3D flows | **20-21** | **04-07-16 TO****05-07-16** |
| **14** | Stream and velocity potential functions | **22** | **08-07-16** |
| **15** | Flow net analysis | **23** | **08-07-16** |
| **16** | **Assignment on unit-II** | **24** | **11-07-16** |
| **UNIT-III{23}** |
| **17** | **FLUID DYNAMICS**: surface and body forces | **25** | **11-07-16** |
| **18** | Euler’s and Bernoulli’s equations for flow along stream line for 3D flow | **26-29** | **12-07-16 TO****15-07-16** |
| **19** | Naiver- strokes equation | **30-31** | **18-07-16 TO****18-07-16** |
| **20** | Momentum equation and its application | **32-33** | **19-07-16 TO****20-07-16** |
| **21** | Forces on bend | **34-35** | **22-07-16 TO****22-07-16** |
| **22** | **Assignment on unit-III and problems** | **35-37** | **25-07-16 TO****26-07-16** |
| **23** | **Revision and preparation for Mid-I** | **38-46** | **27-07-16 TO****05-08-16** |
| **UNIT-IV{16}** |
| **24** | **BOUNDARY LAYER THEORY:** boundary- concept | **47** | **16-08-16** |
| **25** | Prandtl contribution | **48-50** | **17-08-16 TO****19-08-16** |
| **26** | Characterstics of boundary layer along a thin flat plate | **51** | **22-08-16** |
| **27** | Vonkarmer momentum integral equation | **52-54** | **22-08-16 TO****24-08-16** |
| **28** | Laminar and turbulent boundery layers | **55-56** | **26-08-16 TO****26-08-16** |
| **29** | No derivation in BL transition, separation of BL control of BL | **57-59** | **29-08016 TO****30-08-16** |
| **30** | Flow around submerged objects | **60** | **31-08-16** |
| **31** | Drag and lift- magnus effect | **61** | **2-07-16** |
| **32** | **Assignment on unit- IV** | 62 | **2-09-16** |
| **UNIT-V{14}** |
| **33** | **LAMINAR FLOW:** Reynold’s experiment | **63** | **06-09-16** |
| **34** | Characterstics of laminar and turbulent flows | **64-65** | **07-09-16 TO****09-09-16** |
| **35** | Flow between paraller plates | **66** | **09-09-16** |
| **36** | Flow through long tubes | **67** | **13-09-16** |
| **37** | Flow through inclined tubes | **68** | **13-09-16** |
| **38** | **CLOSED CONDUIT FLOW:** laws of fluid friction –Darcy’s equation | **69-70** | **14-09-16 TO****16-09-16** |
| **39** | Minor losses- pipes in series, pipes in parallel | **71-72** | **16-09-16 TO****19-09-16** |
| **40** | Total energy line and hydraulic gradient line | **73** | **20-09-16** |
| **41** | Pipe network problems | **74** | **21-09-16** |
| **42** | Variation of friction factor with Reynold’s no- moody’s chart | **75** | **23-09-16** |
| **43** | **Assignment on unit-V** | **76** | **23-09-16** |
| **UNIT-VI{12}** |
| **44** | **MEASUREMENT OF FLOW: pitot tube, venturimeter** | **77-78** | **26-09-16 TO****26-09-16** |
| **45** | **Orfice meter- classifications of orfices** | **79-80** | **27-09-16 TO****28-09-16** |
| **46** | **Flow over rectangle and triangle** | **81** | **30-09-16** |
| **47** | **Flow over trapezoidal and stepped notches** | **82** | **30-09-16** |
| **48** | **Broad crested weirs** | **83** | **3-10-16** |
| **49** | **Assignment on unit-VI** | **84** | **3-10-16** |
| **50** | **Revision and preparation for Mid- II** | **85-88** | **4-10-16 TO****7-10-16** |
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**Text books:**

1. Fluid Mechanics by Modi and Seth, TEXT BOOKS house.

2. Introduction to Fluid Machines by S.K. Som & G. Biswas, Tata Mc

 Graw Hill Pvt. Ltd.

3. A text of Fluid mechanics and hydraulic machines by Dr. R.K. Bansal -

 Laxmi Publications (P) Ltd.,New Delhi.

**References:**

1 Fluid Mechanics by Merie C. potter and David C. Wiggert, Cengage

 Learning.

2. Introduction to Fluid Machines by Edward J. Shaughnessy, Jr, Ira M.

 Katz and James P. Schaffer, Oxford University Press, New Delhi.

3. Fluid Mechanics by A.K. Mohanty, Prentice Hall of India Pvt. Ltd.,

 New Delhi.

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