**Lesson Plan**

**Name of faculty : Guest Faculty**

**Discipline : CIVIL**

**Semester : 4TH**

**Subject : FLUID MECHANICS-II**

**Lesson Plan Duration** : **15 weeks (from January, 2018 to April, 2018)**

**(Lecture/Practical) per week: Lectures: 03 hours, Tutorials: 02hours**

**(in hours)**

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| **WEEK** | **L NO.** | **Topic** | **Practical day** | **Topic** |
| 1st | 1 | Navier Stoke's equation | 1 | To determine the coff. Of drag by stoke law |
| 2 | Laminar flow between parallel plates - |  |  |
| 3 | Couette flow, laminar flow around a sphere |  |  |
| 2nd | 4 | Types of flows-Reynold's experiment, shear stress on turbulent flow, boundary layer in pipes | 2 | To study the pheomenon of cavitation in pipe |
| 5 | Establishment of flow, velocity distribution for turbulent flow in smooth and rough pipes, resistance to flow of fluid in smooth and rough pipes |  |  |
| 6 | Stanton and Moody's diagram. Darcy's weisbach equation, other energy losses in pipes, loss due to sudden expansion, hydraulic gradient and total energy lines, pipes in series and in parallel |  |  |
| 3rd | 7 | Numerical problem | 3 | To determine critical Reynolds number |
| 8 | Numerical problem |  |  |
| 9 | Equivalent pipe, branched pipe, pipe networks, Hardy Cross method, water hammer. |  |  |
| 4th | 10 | Types of drag, drag on a sphere, flat plate, cylinder and airfoil | 4 | To determine coff. Of discharge for flow |
| 11 | development of lift on immersed bodies like circular cylinder and airfoil. |  |  |
| 12 | Type of flow in open channels, geometric parameters of channel section |  |  |
| 5th | 13 | uniform flow, most economical section (rectangular and trapezoidal | 5 | To study the scouring phenomenon for bridge pier |
| 14 | specific energy and critical depth, momentum in open channel, specific force |  |  |
| 15 | Critical flow in rectangular channel, applications of specific energy and discharge diagrams to channel transition, metering flumes |  |  |
| 6th | 16 | hydraulic jump in rectangular channel, surges in open channels | 6 | REVISION |
| 17 | Positive and negative surges, gradually varied flow equation and |  |  |
| 18 | its integration, surface profiles |  |  |
| 7th | 19 | Basic relationship of thermodynamics continuity, | 7 | 1st Viva Voce |
| 20 | momentum and energy equations |  |  |
| 21 | propagation of elastic waves due to compression of fluid |  |  |
| 8th | 22 | Numerical problem | 8 | To study the scouring phenomenon for past a spur |
| 23 | Numerical problem |  |  |
| 24 | Numerical problem |  |  |
| 9th | 25 | Numerical problem | 9 | To determine head loss due to various pipe fitting |
| 26 | Mach number and its significance, subsonic and supersonic flows |  |  |
| 27 | Numerical problem |  |  |
| 10th | 28 | , propagation of elastic wave due to disturbance in fluid mach cone | 10 | REVISION |
| 29 | Numerical problem |  |  |
| 30 | stagnation pressure |  |  |
| 11th | 31 | Numerical problem | 11 | 2nd Viva Voce |
| 32 | Reciprocating pumps |  |  |
| 33 | Numerical problem |  |  |
| 12th | 34 | Numerical problem | 12 | To study the momentum characteristics for jet |
| 13th | 35 | their types, work done by single and double acting pumps manometric heads,. | 13 | To study the characteristics of hydraulic jump |
| 36 | Centrifugal pumps |  |  |
| 37 | components and parts and working |  |  |
| 14th | 38 | heads of a pump-statics | 14 | REVISION |
| 39 | Force executed by fluid jet on stationary and moving flat vanes, specific speed |  |  |
| 40 | Turbines-classifications of turbines based on head |  |  |
| 41 | Numerical problem |  |  |
| 15th | 42 | Component and working of Pelton wheel and Francis turbines | 15 | 3rd Viva Voce |
| 43 | Numerical problem |  |  |
|  | cavitation and setting of turbines |  |  |
|  | Numerical problem |  |  |