## FORM 1: INTRODUCTION AND EVALUATION FORM Page 1

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Code: INS2222** | | **Course Name: Fluid Mechanics** | | | | | | |
| Year | Semester | Group(s) | Language | Theory | App | Lab. | Credit | ECTS |
| 2019-2020 | Spring | 1, 3, 4 | English | 2 | 1 | 1 | 3 | 5 |
| Course Type | | Basic  Sciences | Engineering | Technical  Elective | | | Non-Technical  Elective | |
| Prerequisite | | - | | | | | | |
| Coordinator | | Yalçın Yüksel | | | | | | |
| Instructor(s) | | Esin Çevik, H.A. Güner, Cihan Şahin | | | | | | |
| Course Goals | | The purpose of fluid mechanics is to give basic principal and fluid properties and behavior of fluid | | | | | | |
| Course Topics | | Fluid Properties / Fluid Statics /Fluid Kinematics / Fluid Dynamics; Behavior of Ideal and Real Fluids, Drag and Lift / Introduction to Potential Flow Theory / Dimensional Analysis | | | | | | |
| Knowledge and Skills | | Basic knowledge of principal equations on fluid structure interaction, and how to reach and use knowledge | | | | | | |
| References | | 1)Fundamentals of Fluid Mechanics (Third Ed. John Wiley&Sons, 1998), Munson, Young, Okiishi  2) Fluid Mechanics, Frank White (Mc Graw Hil  3) Fluid Mechanics Lecture Notes, Y. Yüksel and E. Çevik  4) Akışkanlar Mekaniği ve Hidrolik (Beta Yayınevi, fifth edition, 2014), Y. Yüksel | | | | | | |
| Assignments and Projects | |  | | | | | | |
| Laboratory Experiment topics | | Lab: Venturimeter | | | | | | |
| Computer codes | |  | | | | | | |
| Other Activities | | 1) Video and slide shows  2) Private sector seminars | | | | | | |
| Contribution Of The Course Towards Providing Professional Education | | Basic knowledge of principal equations on fluid structure interaction, and how to reach and use knowledge | | | | | | |
| Course Learning Outcomes | | 1. To gain knowledge the properties and behavior of fluids 2. To gain knowledge on basic principles of fluids 3. To gain knowledge on main behaviors and equations of fluids 4. To gain knowledge of solving fluid mechanics problems and understanding their applications in fluid mechanics. 5. To gain solving complex problems. | | | | | | |
| Course Learning Outcomes/ Program Outcomes Matrix | | |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | i | ii | iii | iv | v | vi | vii | viii | ix | x | xi | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 3 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 5 |  |  |  |  |  |  |  |  |  |  |  | | | | | | | |

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| Success Evaluation | | | | | |
| **Theoretical Courses** | | | Projects | | |
|  | Number | Weight (%) |  | Number | Weight (%) |
| Midterms | 2 | 55 | Midterm(s) |  |  |
| Quizzes | - | - | Controls |  |  |
| Assignments | - | - | Mid-submission(s) |  |  |
| Laboratory | 1 | 5 | Oral Exam |  |  |
| Other | - | - | Other |  |  |
| Final Exam | 1 | 40 | Final Exam |  |  |
| Make-up Exam | 1 | 40 | Make-up Exam |  |  |
| **Subjects** | | | | | |
| Week 1 | **Fluid Properties** / Introduction, Definition of continuity, density, specific weight, specific gravity | | | | |
| Week 2 | Viscosity, surface tension, vapor pressure  **Fluid Statics** / Pressure, basic principles | | | | |
| Week 3 | Plane surfaces | | | | |
| Week 4 | Curved surfaces, Euler equations | | | | |
| Week 5 | Relative equilibrium, stability of floating body | | | | |
| Week 6 | **Fluid Kinematics** / Analyzing of fluid mechanics, fundamental concepts | | | | |
| Week 7 | Motion of a fluid element, fluid acceleration | | | | |
| Week 8 | **I. MIDTERM** | | | | |
| Week 9 | **Fluid Dynamics** / Inviscid fluid dynamics, continuity equation | | | | |
| Week 10 | Equation of motion, energy equation  LABORATORY | | | | |
| Week 11 | Impuls-Momentum equation and angular momentum | | | | |
| Week 12 | Flow of viscous fluid, Navier-Stokes equations, Boundary layer  **II. MIDTERM** | | | | |
| Week 13 | Hydrodynamics of submerged bodies, Introduction to Irrotational Flow | | | | |
| Week 14 | Dimensional Analysis | | | | |

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# **FORM 2: LECTURER COMMUNICATION INFORMATION**

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| --- | --- | --- | --- | --- | --- | --- |
| **Course Code: INS2222** | | **Course Name: FLUID MECHANICS** | | | | |
| **Groups** | **Course hours and locations** | **Course Lecturer** | **Lecturer office** | **Student meeting hours** | **email** | **Web address** |
| **1** | MONDAY 1300-1450 F1-92  WEDNESDAY 1100-1250 F1-92 | Prof. Dr. Esin Çevik | H Blok Hidrolik ve Kıyı Liman Lab. Oda No: 8 | WEDNESDAY  1400-1600 | [cevik@yildiz.edu.tr](mailto:cevik@yildiz.edu.tr) | [www.inm](http://www.inm).  Yildiz.edu.tr |
| **3** | MONDAY 1300-1450 F1-94  WEDNESDAY 1100-1250 F1-94 | Doç. Dr. H.A. Güner | H Blok Hidrolik ve Kıyı Liman Lab. Oda No: 4 | WEDNESDAY  1400-1600 | aari@yildiz.edu.tr | [www.inm](http://www.inm).  yildiz.edu.tr |
| **4** | MONDAY 1300-1450 F1-95  WEDNESDAY 1100-12500 F1-95 | Dr. Cihan Şahin | H Blok Hidrolik ve Kıyı Liman Lab. Oda No: 3 | WEDNESDAY  1400-1600 | cisahin@yildiz.edu.tr | [www.inm](http://www.inm).  yildiz.edu.tr |

Date: 03.02.2020