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| Image result for nit meghalaya logo | **National Institute of Technology Meghalaya**An Institute of National Importance | **CURRICULUM** |
| Programme | **Bachelor of Technology** | Year of Regulation | **2019-20** |
| Department | **Civil Engineering** | Semester | **VII** |
| CourseCode | Course Name | **Pre requisite** | Credit Structure | Marks Distribution |
| L | T | P | C | INT | MID | END | Total |
| **CE422** | **Irrigation Engineering** | **Nil** | **3** | **0** | **0** | **3** | **50** | **50** | **100** | **200** |
| CourseObjectives | To develop the student’s knowledge on basics of irrigation engineering science. | Course Outcomes | CO1 | Student will be able to interpret the need, benefits and ill effects of irrigation process. |
| To provide some knowledge about various water application methods in farms. | CO2 | Student will be able to interpret the various types of water application methods in farms along with their advantages and disadvantages. |
| To develop understanding of duty, delta and all related terminologies of soil moisture relationship. | CO3 | Student will be able to apply soil-moisture-irrigation relationships to find irrigation requirement. |
| To make the student understand about canal irrigation system. | CO4 | Student will be able to design canal irrigation system. |
| To provide knowledge about various hydraulic structures. | CO5 | Student will be able to interpret functions of various hydraulic structures. |
|  | CO6 |  |
| No. | COs | Mapping with Program Outcomes (POs) | Mapping with PSOs |
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | CO1 | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| 2 | CO2 | **3** | **2** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| 3 | CO3 | **3** | **2** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| 4 | CO4 | **3** | **2** | **3** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** | **2** |
| 5 | CO5 | **3** | **2** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** |
| 6 | CO6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SYLLABUS |
| No. | Content | Hours | COs |
| I | **Introduction**Definition and aim of irrigation, Necessity, Benefits and ill effects of irrigation, Types of irrigation. | **02** | **CO1** |
| II | **Water Application Methods** Definition, Surface and subsurface irrigations, Free flooding, Border flooding, Check flooding, Basin flooding, Furrow irrigation method, Sprinkler irrigation method, Drip irrigation method, Advantages and disadvantages of various types. | **04** | **CO2** |
| III | **Water Requirement of Crops** Crop period, Base period, Duty, Delta, Relationship between duty and delta, Irrigation requirements, Irrigation efficiencies, Soil-moisture-irrigation relationship, Depth and frequency of irrigations. | **08** | **CO3** |
| IV | **Lift Irrigation** Definition, Types, Sources, Advantages and disadvantages, Comparison of well irrigation with canal irrigation. | **02** | **CO2** |
| V | **Canal Irrigation System** Introduction, Alluvial and non-alluvial canal, Alignment of canals, Curves in canals, Design capacity of an irrigation canal, Canal losses, Canal linings, Advantage of linings, Different types of linings. | **08** | **CO4** |
| VI | **Canal Headworks**Definition, Types of different headworks, Layout and components of storage and diversion head works, Weir and barrage, Head regulator, Silt excluder. | **10** | **CO5** |
| VII | **Regulation Works**Canal falls: Necessity, Location and various types. | **01** | **CO5** |
| VIII | **Water Logging**Causes of water logging, Ill effects and preventive measure of water loggings, Surface and sub surface drains. | **01** | **CO1** |
| Total Hours | **36** |  |
| **Essential Readings** |
| 1. G. L. Asawa, “Irrigation and Water Resources Engineering”, New Age Internationals, 2nd edition, 2005.
 |
| 1. S. K. Garg, “Irrigation Engineering and Hydraulic Structures”, Khanna Publishers, 35th edition, 2019.
 |
| **Supplementary Readings** |
| 1. N. N. Basak, “Irrigation Engineering”, McGraw Hill Education, 4th edition, 2013.
 |
| 1. M. M. Das and M. D. Saikia, “Irrigation and Water Power Engineering”, PHI Learning, 6th edition, 2016.
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