**CE 374K Hydrology, Spring 2012**

**Review for First Exam**

The material is classified according to ***Bloom’s Taxonomy of Educational Objectives***:

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| --- | --- | --- |
| **Level** | **Title** | **Meaning** |
| 1 | Knowledge | Definitions, facts, formulas |
| 2 | Comprehension | Explanation of definitions, formulas, problem solving procedures |
| 3 | Application | Know how to use a formula or procedure to solve simple problems |
| 4 | Analysis | Break down a complex problem and solve by steps |
| 5 | Synthesis | Derivation of basic formulas, design of new systems |
| 6 | Evaluation | Advantages and limitations of alternative approaches |

**Lectures**

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| **Lecture** | **Topic** | **Leve**l |
| 1 | Introduction to surface water hydrology, hydrologic cycle | 2 |
| 2 | Hydrologic systems and continuity | 5 |
| 3 | Momentum, energy and atmospheric water | 4 |
| 4 | Precipitation | 3 |
| 5 | Field trip to Brushy Creek watershed | 2 |
| 6 | Introduction to ArcGIS for Brushy Creek, evaporation | 3 |
| 7 | Soil water | 3 |
| 8 | Infiltration by Green-Ampt method | 5 |
| 9 | Runoff volume, SCS method | 4 |
| 10 | Hydrologic measurement | 2 |

**Readings: Applied Hydrology**

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| **Source** | **Topic** | **Level** |
| Chap 1 | Introduction to hydrology | 2 |
| Sec 2.1 | Reynolds transport theorem, | 2 |
| Sec 2.2-2.3 | Continuity equation | 5 |
| Sec 2.5 | Open channel flow | 3 |
| Sec. 2.4,2.6 | Momentum principle, flow in porous media | 3 |
| Sec. 2.7-2.8 | Energy balance | 4 |
| Sec. 3.1 | Atmospheric circulation | 2 |
| Sec. 3.2 | Water vapor | 5 |
| Sec. 3.3 | Precipitation | 3 |
| Sec. 3.4 | Rainfall | 4 |
| Sec. 3.5 | Evaporation | 4 |
| Sec. 3.6 | Evapotranspiration | 4 |
| Sec. 4.1 | Unsaturated flow | 3 |
| Sec. 4.2 | Infiltration | 2 |
| Sec 4.3-4.4 | Green-Ampt Method | 5 |
| Sec 5.1 – 5.3 | Runoff processes | 2 |
| Sec 5.4 – 5.5 | Abstractions using infiltration equations | 4 |
| Sec 6 | Hydrologic measurement | 2 |

  You may bring a review sheet 8/5 x 11 inches with you with anything on it on both sides of the paper that you want.