

GEOLOGY 531 SYLLABUS

All readings refer to pages in Dunne and Leopold unless otherwise indicated.

| DAY | TOPICS | READING |
|--------|--|------------------|
| 22-Aug | Introduction: hydrologic cycle, water budget | 1-32, 493-505 |
| 24 | Properties of water in the atmosphere | |
| 25 | LAB 1: Drainage-basin properties and simple meteorologic calculations | |
| 26 | Elementary meteorology | |
| 29 | Elementary meteorology and climate | |
| 31 | Elementary meteorology and climate | |
| 1-Sep | work on Lab 1 | |
| 2 | Precipitation: measurement, estimation of averages, spatial pattern | 35-82 |
| 5 | LABOR DAY HOLIDAY | |
| 7 | Precipitation: depth-duration-frequency relations | |
| 8 | LAB 2: Generalization and analysis of precipitation data | |
| 9 | Precipitation: record consistency, estimation of missing data | |
| 12 | Statistics and frequency analysis | |
| 14 | Statistics and frequency analysis | |
| 15 | work on Lab 2 | |
| 16 | Water losses: interception, evaporation | 83-125 |
| 19 | Evaporation: energy budget and mass-transfer approaches | |
| 21 | Evapotranspiration: Penman and mass-transfer approaches | |
| 22 | LAB 3: Estimation of evaporation, evapotranspiration, and water budget | 125-162 |
| 23 | Evapotranspiration: water budget | 236-254 |
| 26 | Infiltration and soil moisture | 163-191 |
| 28 | Soil moisture | |
| 29 | work on Lab 3 | |
| 30 | Groundwater: principles of movement | 192-235 |
| 3-Oct | Groundwater: flow to wells, saltwater intrusion | |
| 5 | Groundwater: occurrence, recharge, mapping, basin management | |
| 6 | LAB 4: Groundwater | |
| 7 | Runoff generation | 255-277 |
| 10 | Runoff generation | |
| 12 | Streamflow: measurement, rating curves | 590-598; 652-656 |
| 13 | work on Lab 4 | |
| 14 | Streamflow: data sources, flow-duration curves, water supply | 441-463 |
| 15 | LAB 5 FIELD TRIP: Saturday, October 15 9:00 AM - 3:00 PM Measurement of streamflow and channel geometry | |
| 17 | Regional relations for duration curves | |
| 19 | Hydrographs and channel storage; storm runoff volumes | 279-297 |
| 20 | MIDTERM (through groundwater) during lab time | |
| 21 | Estimation of flood peaks from gaging records | 305-329 |

| DAY | TOPICS | READING |
|---------------|---|------------------|
| 24-Oct | Estimation of flood peaks: SCS and rational methods | 287-304 |
| 26 | Estimation of flood peaks: unit hydrograph | 329-350 |
| 27 | LAB 6: Flow frequency and channel capacity | |
| 28 | Estimation of flood peaks: unit hydrograph | |
| 31 | Estimation of flood peaks: regional relations | |
| 2-Nov | Flood routing | 350-363 |
| 3 | work on Lab 6 | |
| 4 | Flood routing | |
| 7 | Flood frequency and floodplain hazard mapping | 392-431 |
| 9 | Snowmelt processes | 465-490 |
| 10 | FIELD TRIP: Bankfull and channel geometry flow indicators | |
| 11 | Channel geometry | 496-502; 590-621 |
| 14 | Flow resistance and discharge | |
| 16 | Channel pattern | 622-660 |
| 17 | LAB 7: Estimation of flood frequency and depth | |
| 18 | Channel pattern | |
| 21 | THANKSGIVING RECESS | |
| 23 | THANKSGIVING RECESS | |
| 24 | THANKSGIVING RECESS | |
| 25 | THANKSGIVING RECESS | |
| 28 | Hillslope erosion | 506-589 |
| 30 | Hillslope erosion | |
| 1-Dec | LAB 8: Flood routing and hillslope erosion | |
| 2 | Hillslope erosion | |
| 5 | Sedimentation and sediment transport | 661-709 |
| 7 | Sediment budgets | |
| 8 | FIELD TRIP: Channel stability estimation (optional) | |
| 9 | Sediment budgets | |
| 16-Dec | FINAL EXAM : Due by 4 PM Thursday | |

All lab exercises/homework are due at the following lab period unless otherwise indicated

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| Text: | Dunne and Leopold: Water in Environmental Planning | |
| Website: | http://www.humboldt.edu/~geology/courses/geology531/ | |
| Grading: | Midterm | 20% |
| | Final | 20% |
| | Labs | 60% |
| Grades are assigned using a modified class-average approach. | | |