**Math H2D, Winter 2020, Tentative Schedule**

**Text:** *Vector calculus, linear algebra, and differential forms*, Hubbard and Hubbard, 5th Edition

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| **Lecture** | **Section** | **Topic** |
| 1 |  | Introduction, Review of sections 1.1-1.4 |
| 2 | 1.5 | Limits and continuity |
| 3 |  |  |
| 4 | 1.6 | Five big theorems |
| 5 |  |  |
| 6 | 1.7 | Derivatives in several variables |
| 7 |  |  |
| 8 | 1.8  | Rules for computing derivatives |
| 9 |  |  |
| 10 | 1.9 | Mean value theorem and criteria for differentiability  |
| 11 |  |  |
| 12 |  |  |
| 13 |  | **Midterm**  |
| 14 | 2.10 | The inverse function theorem |
| 15 | 2.10 | The implicit function theorem |
| 16 | 3.1 | Manifolds |
| 17 | 3.2 | Tangent spaces |
| 18 |  |  |
| 19 | 3.3 | Taylor polynomials in several variables |
| 20 | 3.4 | Rules for computing Taylor polynomials |
| 21 | 3.5 | Quadratic forms |
| 22 | 3.6 | Classifying critical points |
| 23 |  |  |
| 24 | 3.7 | Lagrange multipliers |
| 25 |  |  |
| 26 | 3.8 | Probability and singular value decomposition |
| 27 |  | Catch-up and review |
| 28 |  | Catch-up and review |