

AE 247 – Trajectory Optimization in Aerospace Systems

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| Grading: | Homework | 30% |
| | Two One-Hour Exams | 30% |
| | Final Exam | 40% |

Grading Specifics: 100 – 97% A+; 96 – 93% A; 92 – 90% A-; 89 – 85% B+; 84 – 80% B; 79 – 76% B-; 75 – 72% C+; 71 – 68% C; 67 – 64% C-; 63 – 61% D+; 60 – 57% D; 56 – 53% D-; < 53% F. All exams must be taken to receive a passing grade.

Approximate Weekly Schedule

| Week | Topics |
|-------------|--|
| 1 | Introduction to trajectory optimization |
| 2 | Parameter optimization |
| 3 | Calculus of variations |
| 3 | Optimal control, optimization techniques |
| 4 | Dynamic programming |
| 5 | Minimum principle |
| 6 | Method of collocation |
| 7 | Pseudo spectral methods in trajectory optimization |
| 8 | Numerical methods in optimization |
| 9 | Jacobi test |
| 10 | Necessary and sufficient conditions for optimality |
| 11 | Aircraft performance optimization |
| 12 | Aircraft trajectory optimization |
| 13 | Spacecraft performance optimization |
| 14 | Spacecraft trajectory optimization |
| 15 | Robustness in optimization techniques |
| 16 | Perturbation analysis |