

ECE 455: Recommended Readings

1. **Tuesday, August 23th** - Overview of topic
 - a. Textbook: Chapter 1
 - b. Supplementary Text: Section 1, pgs. 2-3
2. **Thursday, August 25th** – Object modelling
 - a. Supplementary Text: Section 2, pgs. 3-5
3. **Tuesday, August 30th** – Transformations
 - a. Textbook: Section 3.2.1
 - b. Textbook: Section 3.3.1
 - c. Supplementary Text: Sections 3-4, pgs. 5-9
4. **Thursday, September 1st** – Point of view
 - a. Supplementary Text: Section 5, pgs. 9-10
5. **Tuesday, September 6th** - General position interpolation
 - a. Textbook: Sections 9.1-9.3
6. **Thursday, September 8th** – Catmul-Rom interpolation
 - a. Supplementary Text: Section 6, pgs. 10-12
7. **Tuesday, September 13th** – Tension, bias, and continuity control
 - a. Article: “Interpolating Splines with Local Tension, Continuity, and Bias Control” by Doris H. U. Kochanek and Richard H. Bartels
8. **Thursday, September 15th** – Hermite basis
 - a. Finish Kochanek and Bartels article
9. **Tuesday, September 20nd** – Bezier splines
 - a. Article: “Three-Dimensional Graphics”, Section 21-3: Bezier Methods, pgs. 315-318
10. **Thursday, September 22th** - Euler angles, Roll-Pitch-Yaw angles
 - a. Textbook: Appendix B.1-B.2
11. **Tuesday, September 27th** – Quaternions

- a. Textbook: Appendix B.3
 - b. Supplementary Text: Section 7, pgs. 13-15
12. **Thursday, September 29th** – Mini Exam #1
- a. In class. Open book/notes
13. **Tuesday, October 4th** – Orientation interpolation
- a. Article: “Animating Rotation with Quaternions”
14. **Thursday, October 6th** – Denavit and Hartenberg parameters
- a. Textbook: Section 2.2.1
 - b. Textbook: Appendix C.1
15. **Tuesday, October 11th** – Examples of DH parameters
- a. Textbook: Appendix C.4
16. **Thursday, October 13th** – Introduce kinematics
- a. Textbook: Section 2.3
 - b. Textbook: Section 2.5
 - c. Textbook: Appendix C.3
17. **Tuesday, October 18nd** – Jacobian
- a. Textbook: Introduction to Chapter 5
 - b. Textbook: Section 5.1.1
 - c. Supplementary Text: Section 8, pgs. 15-16
18. **Thursday, October 20nd** – Inverse kinematics
- a. Textbook: Sections 6.1-6.2.2
 - b. Textbook: Section 6.3
19. **Tuesday, October 25th** – Feedback control
- a. Textbook: Section 11.3.1.1-11.3.1.2 P Control and First-Order Error Dynamics
20. **Thursday, October 27th** – Mini Exam #2
- a. In class. Open book/notes
21. **Tuesday, November 1st** – Numerical analysis and ill conditioning
22. **Thursday, November 3rd** – Singular value decomposition and condition number

- a. Book: "Numerical Recipes in Pascal: The Art of Scientific Computing", section 2.9 singular value decomposition

23. **Tuesday, November 8th** – Singularities

- a. Textbook: Sections 5.3-5.4

24. **Thursday, November 10th** – Damped least squares

- a. Article: "Dealing with the ill-conditioned equations of motion for articulated figures" by Anthony A. Maciejewski

25. **Tuesday, November 15th** – Mini Exam #3

- a. In class. Open book/notes

26. Fall recess week of November 21st

27. Finals begin week of December 14th