

Instructor: Duncan Mahoney

Office: TTL 102

Office Hours: M-F, 10AM-1PM by appointment

Contact Info: dmahoney@usc.edu 213-743-1968

Course Description and Overview

To instruct students in advanced technical direction topics involving the technical analysis and design of moving scenery and theatrical systems.

Learning Objectives

Students will learn to:

- Mathematically analyze the forces acting on moving theatrical systems and scenic elements
- Specify materials and equipment appropriate for the stress levels to use in those systems and elements
- Develop basic documentation and shop drawings for dynamic theatrical scenery systems
- Evaluate the safety and risk issues in a particular theatrical automation system.

Recommended Preparation: Thtr 438

Required Texts: Mechanical Design for the Stage, Alan Hendrickson (MDS).
Scenic Automation Handbook, Gareth Conner (SAH)

Grading: 50% homework assignments, 20% midterm, 30% final exam. Overall grading may be curved. I expect homework and exams to be complete, with all steps shown in calculations. Consult the examples in the textbook if you have questions about the process or equations to use. Remember that you may have to use procedures learned in previous chapters to solve these problems.

- Clearly draw or diagram the information given
- Clearly show each step of the math necessary to arrive at your solution
- Submit scans/pictures of your homework before and after lecture if you are zooming

Homework Grading Rubric (10 points/problem) Exams (varies)

0	0	Copied the problem onto paper
5	10-30%	Copied the problem correctly on to paper, then made an honest attempt that was a train wreck of math and formula errors.
6-7	30-60%	Made errors in application of 1 or more formulas
8-9	60-90%	Made simple math error but used all formulas correctly
10	100%	Arrived at a correct answer using all formulas correctly with no math errors

Homework: Homework will be assigned at every class session. It will be due at the next class session. We will work through the solution at the beginning of the next class session. If you have not at least attempted the homework, you will not be able to participate effectively, and you will be wasting your time and everyone else's. **DO NOT FALL BEHIND!** If you are sick, turn in your homework as soon as possible. You are also responsible for watching the Zoom recording of the class to get the assignment/s for the next session/s and completing that as well. Because I will be solving the problems in class, late homework will not be accepted under other circumstances. **Use a pen or pencil to correct your homework that is a different color than the one you used to do your homework.** You will need a **calculator** that can solve powers, roots, and trigonometric functions.

Weekly Schedule: (subject to change)

Week 1: Intro to Class, Basic concepts, Safety

Reading due; Preface, Chapters 1 & 13 (MDS)

Week 2: Acceleration, More Safety

Reading due: Chapter 2 (MDS) Chapter 10 (SAH)

Week 3: More Acceleration, Stage Machinery

Reading due: Chapters 3 (MDS) Chapters 1-3 (SAH)

Week 4: Friction, More Machinery

Reading due: Chapters 4 & 29-33 (MDS)

Week 5: Lifting, Motors and Actuators

Reading due: Chapter 5,14 &15 (MDS)

Week 6: Power, Force, Motors and Power Transmission

Reading due: Chapter 6 (MDS) Chapter 4 (SAH)

Week 7: More Power transmission

Reading due: Chapters 16-20 (MDS)

Week 8: Rotational Motion, and More Power

Reading due: Chapters 7 & 21 (MDS) Chapter 5 (SAH)

Week 9: Accelerational Torque, Feedback and Sensing

Reading due: Chapter 8 & 22 (MDS) Chapter 6 (SAH)

Week 10: Frictional Torque, Control

Reading due: Chapter 9 (MDS) Chapters 7-9 (SAH)

Week 11: Lifting Torque, Operation and Integration
Reading due: Chapters 10 (MDS) Chapters 11-13 (SAH)

Week 12: Power and Torque, Implementation
Reading due: Chapters 11 & 23-28 (MDS)

Week 13: Combining multiple motions, Implementation
Reading due: Chapters 12 (MDS) Chapter 14 (SAH)

Week 14: Safety Revisited
Reading due: Chapters 13 (MDS) Chapter 10 (SAH)

Week 15: Putting it all together, system design

Final Examination Date: 5/10/2023 8:00 am-10:00 am

SDA PRODUCTIONS, ISPS, AND EXTRACURRICULAR ACTIVITIES

SDA productions, ISPs and Extracurricular Activities* will not excuse you from any class work. There will be no exceptions made for absences in class, missed or delayed assignments, homework or lack of class participation resulting from your involvement in any of the above. Your grade will reflect your work in this class, independent from work in any other class or activity.

*Activities that have been officially sanctioned by the larger university (such as marching band, song girls, or varsity sports) are exempt. You must submit official documentation to your professor regarding your participation in an event prior to your absence.

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website for DSP and contact information: (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies. See the university’s site on Campus Safety and Emergency Preparedness.

Equity, Diversity & Inclusion + Intimacy in Theater Consent Culture Statement:

Through our pluralistic approach of diverse pedagogies, methodologies, ideologies, and modalities of artistic expression, we invite(engage) and challenge students to expand their breadth and depth of knowledge, complexity, and range of the human experience. Even though we nurture, guide, and challenge our students to embrace the unknown or unfamiliar and step outside of their comfort zones through storytelling/art, we aim to practice effective strategies and offer tools to students mindful of their physical, psychological, social, and emotional wellbeing. In alignment with professional and industry standards, we will integrate core principles and techniques of Intimacy in Theater and Building Cultures of Affirmative Consent. This will provide agency, offer resources and support to the teachers, students, directors, and staff to establish healthy boundaries of consent when working on material that is physically, intimately, or emotionally charged content in both the classroom and production.

Support Systems:

Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs

Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.
Provides overall safety to USC community. dps.usc.edu