ASTE 575 *Rocket and Spacecraft Propulsion*

Required for Master of Science degree in *Astronautical Engineering*

Regardless of your engineering or science major (electrical, mechanical, aerospace, systems, computer, etc. or physics, astronomy, chemistry, math, etc.) and regardless of your job function (research, development, design, test, management, etc.) ... If you work or plan to work in the space/defense industry or government space R&D centers or in space operations, then **this course is for you.**

ASTE 575 focuses on the fundamentals of rocketry and spacecraft propulsion.

Academic year 2024–2025

ASTE 575 Rocket and *Spacecraft Propulsion* is offered **only in the spring (2025)** semester (not offered in Fall 2024).

Spring 2025 Monday, 6:40 – 9:20 pm (Pacific Time)

Class enrollment is unlimited

For students enrolled in the class:

Course materials for *ASTE 575* will be posted on DEN's D2L class web site **in early January 2025**.

Help with access the D2L site http://courses.uscden.net at DEN:
http://gapp.usc.edu/graduate-programs/den/students

ASTE 575 public website (http://astronauticsnow.com/aste575/)
provides some information on the syllabus, textbooks, instructor, and much, much more.

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Waiver of Required Course ASTE-575

ASTE-575 is required for the MS ASTE degree.

If you took a course similar to (or significantly overlapping with) ASTE-575 during your studies, then you can waive this course requirement toward MS ASTE.

Please review first the ASTE-575 course content in Section 00, Part 1 and Part 2 (no password required) of the course notes – you can also view them at

http://astronauticsnow.com/aste575/aste575_info_web_recent.pdf

Then, decide.

If you decide to waive the ASTE-575 requirement, then you must contact ASTE Student Services Director Mr. Luis Saballos for guidance. Note that the waiver must be added to your file.

Please consult

http://astronauticsnow.com/msaste/faq.html#Waiver_of_the_required_course

how to proceed.

Students with ASTE's degree BS ASTE who took ASTE 470 or ASTE 575 should contact Luis Saballos to waive the course requirement. The course is waived automatically but the waiver must be added to your record.

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Rocket and Spacecraft Propulsion
ASTE 575

Monday, 6:40–9:20 p.m. (Pacific), OHE-122 Spring 2025

CLASS	DATE	Topic	NS	H&P Text* Chapter	HW Due
1	Jan 13	Organization of the class. History of rocketry. Introduction.	0 1,2		
	Jan 20	Observed *MLK's Birthday*. No class/HW			
2	Jan 27	Introduction. Solar system and environment. Elements of orbital mechanics	2 3 4	10.6	1, 2
3	Feb 03	Elements of orbital mechanics Basics of rocket dynamics.	4 5	10.6 10.1-10.4	3,4
4	Feb 10	Thermodynamics and combustion.	6	2	5, 6
	Feb 17	Observed *President's Day*. No class/HW			
5	Feb 24	Nozzle flow	7	3	7, 8, 9
6	Mar 03	Ideal rocket and real nozzles.	9	11.1-11.3	10, 11
7	**Mar 10**	**Mid-Term Exam**	**7:00–9:00 p.m.#**		
	Mar 17	Spring recess. No class, no HW			
8	Mar 24	Rocket heat transfer	10	11.4	12,13,14
9	Mar 31	Liquid rocket systems	11	12.1-12.5,12.8	15, 16
10	Apr 07	Solid rockets	12	12.6-12.8	17,18
11	Apr 14	Launch Systems I Launch Systems II	13a 13b		19,20
12	Apr 21	Advanced (non-chemical) propulsion	14	14	21, 22
13	Apr 28	Interstellar Flight. Review	15		23, 24
14	**May 12**	**Final Exam**	**7:00–8:30 p.m.#**		

* P. Hill and C. Peterson, *Mechanics and Thermodynamics of Propulsion*, Addison-Wesley.

\# Pacific time