



COLORADO STATE UNIVERSITY

MECHANICAL ENGINEERING

The background of the page is a photograph of an industrial setting. On the left, a white ABB robotic arm is visible, extending from the top left towards the center. In the middle ground, there is a large industrial fan with a metal grille. The floor is a light-colored concrete. The overall scene is brightly lit, typical of a factory or laboratory environment.

ADVANCED MANUFACTURING CONCENTRATION

Study and explore manufacturing techniques, automation, simulation, and processing of materials. Courses cover a range of topics including engineering optimization, laser applications, manufacturing, nanomaterials, composites and robotics as they apply to innovative technologies that improve products and processes in the world market.



WHEN AND HOW TO DECLARE

To declare a concentration in advanced manufacturing, you must be a declared mechanical engineering major. If you decide you would like to declare the concentration, email your academic advisor and they will initiate the process.

THE COURSEWORK

Students who complete 12 credit hours from the lists of courses below will earn a concentration in advanced manufacturing. The 12 credit hours fulfill the technical elective requirement for mechanical engineering students. Courses can be selected from a single theme or multiple. Students are required to take one of the two foundational courses.

To enroll in 500-level courses, students must have a 3.0 GPA or instructor approval.

FOUNDATIONAL		PROCESSING OF MATERIALS		AUTOMATION & SIMULATION	
MECH 411	Manufacturing Engineering	MECH 432	Engineering of Nanomaterials	MECH 407	Laser Applications in ME
MECH 502	Advanced / Additive Manufacturing Engineering	MECH 434	Materials Selection for Mechanical Design	MECH 417	Control Systems
		MECH 530	Advanced Composite Materials	MECH 428	Probabilistic Design
		MECH 531	Materials Engineering	MECH 464	injection Molding
		MECH 533	Composites Product Development	MECH 513	Simulation Modeling and Experimentation
		MECH 537	Processing of Polymer Composites	MECH 529	Advanced Mechanical Systems
		MSE 502A	Structure and Properties of Materials	MECH 564	Fundamentals of Robot Mechanics and Controls
		MSE 502C	Materials Microscopy	ENGR 510	Engineering Optimization: Method / Application
		MSE 502E	Bulk Properties and Performance		
		MSE 502F	Experimental Methods for Materials Research		

