



## Bachelor of Science in Manufacturing Design Engineering: MiraCosta College

To earn a bachelor's degree from National University students must complete a minimum of 180 quarter units. Requirements include but are not limited to the university's general education program (to include upper division and cultural diversity), the preparatory courses listed below, major core coursework and any additional courses necessary to fulfill overall program requirements.

The table below maps National University's courses to equivalencies identified at MiraCosta College.

MiraCosta College	National University
<b>Equivalent Transfer Course</b>	<b>Preparatory Courses Required</b> (11 courses; 43.5 quarter units)
MATH 126 Pre-Calculus I: College Algebra <b>and</b> MATH 131 Pre-Calculus II: Trig & Analytic Geometry	MTH 215 College Algebra & Trigonometry
Completion of the following sequence will waive PHYS 111 Introductory Physics I <b>and</b> PHYS 112 Introductory Physics II <b>or</b> <i>No Equivalent MiraCosta College Course</i>	PHS 104 Introductory Physics PHS 104A Introductory Physics Lab (1.5 quarter units) <b>or</b> PHS 130A Physics Lab for Engineering (1.5 quarter units)
CHEM 140 Prep for General Chemistry: Science Majors <b>or</b> <i>No Equivalent MiraCosta College Course</i>	CHE 101 Introductory Chemistry CHE 101 Introductory Chemistry Lab (1.5 quarter units) <b>or</b> CHE 120A Intro to Chemistry Lab for Eng (1.5 quarter units)
DESN 101 Computer-Aided Design and Drafting <i>No Equivalent MiraCosta College Course</i>	EGR 219 Intro to Graphics and Auto CAD
<i>No Equivalent MiraCosta College Course</i>	EGR 220 Engineering Mathematics
<i>No Equivalent MiraCosta College Course</i>	EGR 225 Statics & Strength of Material
<i>No Equivalent MiraCosta College Course</i>	EGR 230 Electrical Circuits & Systems
MATH 150 Calculus and Analytic Geometry I	CSC 208 Calculus for Comp. Science I
MATH 103 Statistics	CSC 220 Applied Probability & Stats.

<b>Requirements for the Major at National University</b> (15 courses; 64.5 quarter units)	
EGR 316 Legal Aspects of Engineering	DEN 422 Materials and Manufacturing
EGR 320 Scientific Problem Solving	DEN 423 Human Factors in Engineering
EGR 320L Scientific Problem Solving-LAB (1.5 quarter units)	DEN 426 Reliability Engineering
DEN 308 Computer Aided Engineering I	DEN 429 Product Design Optimization
EGR 310 Engineering Economics	DEN 432 Concurrent Design Engineering
DEN 411 Computer Aided Engineering II	DEN 435 Design & Analysis of Experiment
DEN 417 Computer Aided Engineering IV	EGR 440 Project Management Fundamental
DEN 420 Computer Aided Engineering V	
<b>Engineering Senior Project</b> (2 courses; 9 quarter units)	
DEN 496A Senior Capstone Project I	
DEN 496B Senior Capstone Project II	

Note: These requirements are subject to change. Please see National University's online General Catalog for official record of requirements for the year you are admitted.