The Design program offers courses in architecture, drafting, and engineering for students who wish to transfer to a four-year institution or gain employment in the fields of architecture, computer-aided design, mechanical design, and engineering. The program also offers courses for those who may not be pursuing a career in design but who have an interest in or need to understand graphic communication.

The engineering coursework includes engineering design graphics courses for students majoring in aerospace, civil, environmental, industrial, mechanical, and structural engineering. Careers in engineering, some of which require an undergraduate degree, include CAD drafter, civil engineer, industrial designer, structural engineer, and mechanical engineer.

The architectural coursework gives students a working knowledge of the practices and technical aspects of architectural design and drawing. Careers in architecture, some of which require an undergraduate degree, include architect, designer, urban planner, surveyor, draftsperson, building inspector, and technical illustrator.

Employers for students obtaining certificates and associate degrees include federal, state, and local land use planning agencies; building and transportation agencies; private architectural, contract, and construction companies; and forprofit industrial and manufacturing companies in life science, defense, sport/recreation equipment, and various other industries.

Graduates of the program have been hired by local companies such as General Atomics, Calloway Golf, LaCantina Doors, Forecast 3D, NASA, Boeing, and Illumina. Graduates of the program have also been accepted to universities such as SDSU, Cal Poly, NewSchool, Woodbury, USC, UCSD, UCLA, and UC Berkeley. Graduates have been awarded the Bridges Scholarship and the prestigious Jack Kent Cooke undergraduate transfer scholarship.

Academic and Career Pathway

Business and Technology

Contact Information

Chair: Paul Clarke
Dean: Al Taccone
https://www.miracosta.edu/
academics/degree-andcertificate-programs/businessand-technology/design/
index.html

Department: Design **Office:** Building OC4800, 760.795.6811

Full-Time Faculty

Paul Clarke David Parker

Associate Degrees

Associate in Arts Degrees
Architectural Design
Computer-Aided Drafting
Computer-Aided Drafting and Design
Mechanical Design
Associate in Science Degrees
Engineering Technology

Students may earn one of the above-named associate degrees by completing a certificate of achievement and the general education courses required for MiraCosta College's Associate in Arts or Associate in Science degree (see Associate Degrees). Students should meet with a MiraCosta counselor to identify required courses and to develop a written educational plan for their chosen degree or certificate.

Certificates

Certificate of Achievement Architectural Design

This certificate program gives students a working knowledge of the practices and technical aspects of architectural design and drawing. Students complete the required core courses and choose two elective courses that relates to their own career objective. Completion of this certificate provides students with a foundation in architectural design, construction materials, computer-aided drafting, and building-information modeling, and it enables students to qualify for entry-level positions in detailing, revisions, design update, and general office practice.

Program Student Learning Outcome

Upon completion of this program, the student will be able to design and create graphical representations of the built environment based on industry standards.

Course Requirements

Required courses:		
DESN 100	Fundamentals of Design	3
DESN 101	Computer-Aided Design and Drafting	4
DESN 102	Architectural Drawing	3
DESN 103	Architectural Communications	3
DESN 105	Construction Materials	3
DESN 200	Architectural Design I	3
DESN 201	Advanced AutoCAD Computer- Aided Design and Drafting	3
DESN 207	Revit Building Information Modeling	3
DESN 290	Portfolio and Presentation	1
or DESN 292	Internship Studies	
or DESN 299	Occupational Work Experience Educatio	n
Select at least 6 ele	ctive units from the following:	6
BUS 133	Project Management	
DESN 107	History of Western Architecture-A Sustainable Perspective	
DESN 108	World Architecture	
DESN 204	Modeling, Prototyping, and Manufacturing	

Desian

Total Units		32
MAT 110	Digital Imaging 1: Adobe Photoshop	
HORT 127	Landscape Design	

Certificate of Achievement **Computer-Aided Drafting**

This certificate provides a solid foundation in computer-aided drafting (CAD). In addition to the common core of required courses, students choose an area of emphasis (architecture, engineering, or landscape) and complete all the courses from that emphasis. Completion of this program prepares students for entry level support positions in a variety of local industries or for continuing their education. Typical job titles of students completing this certificate include drafter, CAD operator, AutoCAD technician, and architectural and civil drafter.

This certificate consists of 18 units of required core courses and 6-7 units of elective courses from one area of emphasis: architecture, engineering, or landscape. Students should select an emphasis area and complete both courses in that emphasis.

Program Student Learning Outcome

Upon completion of this program, the student will be able to design and create graphical representations of the built environment based on industry standards.

Course Requirements

DESN 101 Computer-Aided Design and Draffing DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Draffing DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, 4-6 Engineering or Landscape from below: Emphasis in Architecture (6 units): DESN 102 Architectural Drawing DESN 207 Revit Building Information Modeling Emphasis in Engineering (4 units): DESN 111 Engineering Design Graphics Emphasis in Landscape (6 units): HORT 127 Landscape Design HORT 220 Computer-Aided Landscape Design Applications	Total Units	:	22-24
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, 4-6 Engineering or Landscape from below: Emphasis in Architecture (6 units): DESN 102 Architectural Drawing DESN 207 Revit Building Information Modeling Emphasis in Engineering (4 units): DESN 111 Engineering Design Graphics Emphasis in Landscape (6 units): Landscape Design		Applications	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 or DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, 4-6 Engineering or Landscape from below: Emphasis in Architecture (6 units): DESN 102 Architectural Drawing DESN 207 Revit Building Information Modeling Emphasis in Engineering (4 units): DESN 111 Engineering Design Graphics Emphasis in Landscape (6 units):	HORT 220	Computer-Aided Landscape Design	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation or DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, Engineering or Landscape from below: Emphasis in Architecture (6 units): DESN 102 Architectural Drawing DESN 207 Revit Building Information Modeling Emphasis in Engineering (4 units): DESN 111 Engineering Design Graphics	HORT 127	Landscape Design	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 or DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, Engineering or Landscape from below: Emphasis in Architecture (6 units): DESN 102 Architectural Drawing DESN 207 Revit Building Information Modeling Emphasis in Engineering (4 units):	Emphasis in Landsc	ape (6 units):	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer- Aided Design and Drafting DESN 203 Solid Modeling DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation or DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, Engineering or Landscape from below: Emphasis in Architecture (6 units): DESN 102 Architectural Drawing DESN 207 Revit Building Information Modeling	DESN 111	Engineering Design Graphics	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 or DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, Engineering or Landscape from below: Emphasis in Architecture (6 units): DESN 102 Architectural Drawing	Emphasis in Enginee	ering (4 units):	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 or DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, 4-6 Engineering or Landscape from below: Emphasis in Architecture (6 units):	DESN 207	Revit Building Information Modeling	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 or DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, 4-6 Engineering or Landscape from below:	DESN 102	Architectural Drawing	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 DESN 292 Internship Studies or DESN 299 Occupational Work Experience Education Select an area of emphasis in either Architecture, 4-6	Emphasis in Archite	cture (6 units):	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1 or DESN 292 Internship Studies			4-6
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1 DESN 290 Portfolio and Presentation 1	or DESN 299	Occupational Work Experience Educa	ıtion
DESN 101 Computer-Aided Design and design 2 Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing DESN 286 Professional Certification Preparation 1	or DESN 292	Internship Studies	
DESN 101 Computer-Aided Design and Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and Manufacturing	DESN 290	Portfolio and Presentation	1
DESN 101 Computer-Aided Design and 4 Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer-Aided Design and Drafting DESN 203 Solid Modeling 3 DESN 204 Modeling, Prototyping, and 3	DESN 286	Professional Certification Preparation	1
DESN 101 Computer-Aided Design and 4 Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer- Aided Design and Drafting	DESN 204	7. 0	3
DESN 101 Computer-Aided Design and 4 Drafting DESN 110 Graphics Communication 3 DESN 201 Advanced AutoCAD Computer- 3	DESN 203	Solid Modeling	3
DESN 101 Computer-Aided Design and 4 Drafting	DESN 201		3
DESN 101 Computer-Aided Design and 4	DESN 110	Graphics Communication	3
nequired courses.	DESN 101		4
Peguired courses:	Required courses:		

Certificate of Achievement Computer-Aided Drafting and Design

This certificate provides a solid foundation in computer-aided drafting and design (CADD). In addition to the common core of required courses, students choose an area of emphasis (architecture, engineering, or landscape) and complete at least 11 elective units from that emphasis. Completion of this program prepares students for entry-level support positions in a variety of local industries or for continuing their education. Typical job titles of students completing this certificate include designer, CAD technician, design drafter, and architectural and civil designer.

This certificate consists of 18 units of required core courses and at least 11 units of elective courses from one area of emphasis: architecture, engineering, or landscape.

Program Student Learning Outcome

Upon completion of this program, the student will be able to design and create graphical representations of the built environment based on industry standards.

Course Requirements

Required courses:		
DESN 101	Computer-Aided Design and Drafting	4
DESN 110	Graphics Communication	3
DESN 201	Advanced AutoCAD Computer- Aided Design and Drafting	3
DESN 203	Solid Modeling	3
DESN 204	Modeling, Prototyping, and Manufacturing	3
DESN 286	Professional Certification Preparation	1
DESN 290	Portfolio and Presentation	1
or DESN 292	Internship Studies	
or DESN 299	Occupational Work Experience Educa	tion
	nits from one of the three areas of cture, Engineering, or Landscape):	11
Architecture Emph	asis	
DESN 100	Fundamentals of Design	
DESN 102	Architectural Drawing	
DESN 105	Construction Materials	
DESN 200	Architectural Design I	
DESN 207	Revit Building Information Modeling	
Engineering Empha	asis	
BUS 133	Project Management	
DESN 109	Introduction to Engineering and Design	
DESN 111	Engineering Design Graphics	
DESN 120	Manufacturing Processes	
Landscape Empha	sis	
DESN 102	Architectural Drawing	
HORT 117	Plant Identification: Trees, Shrubs, and Vines	
HORT 126	Irrigation and Water Management	
HORT 127	Landscape Design	

HORT 220 Computer-Aided Landscape Design Applications

Total Units 29

Certificate of Achievement Engineering Technology

This certificate provides students with a background for employment in an engineering, manufacturing, or product development firm in support of and under the direction of an engineering professional. Employment opportunities exist in private manufacturing industries, such as aerospace, medical, industrial, or information technology, as an engineering assistant, engineering technologist, or engineering technician. Most of the course requirements are applicable to lower-division preparation leading to a bachelor's degree in engineering technology at a four-year institution. The support courses allow students to select two courses that will strengthen their preparation for the required core courses. Students should select the support courses based on their previous academic record, their future academic goals, and with input from a counselor or discipline faculty member.

Program Student Learning

Upon completion of this program students will be able to demonstrate engineering and design skills necessary for entry level engineering positions and further academic study in engineering and/or design.

Course Requirements

Course Requirer	101110	
Required courses:		
CSIT 110	Computer Applications	3
CS 150	C++ Programming	3
DESN 101	Computer-Aided Design and Drafting	4
DESN 109	Introduction to Engineering and Design	1
DESN 111	Engineering Design Graphics	4
DESN 120	Manufacturing Processes	3
DESN 203	Solid Modeling	3
MATH 131	Pre-Calculus II: Trigonometry and Analytic Geometry	4-5
or MATH 131H	Pre-Calculus II: Trigonometry and Analy Geometry (Honors)	/tic
or MATH 150	Calculus and Analytic Geometry I	
or MATH 150H	Calculus and Analytic Geometry I (Hor	nors)
DESN 286	Professional Certification Preparation	1
or DESN 292	Internship Studies	
or DESN 299	Occupational Work Experience Educat	tion
Support Courses: Se	elect two courses.	6-8
CHEM 140	Preparation for General Chemistry: For Science Majors	
CS 101	Introduction to Computer Science Principles	
DESN 110	Graphics Communication	
MATH 126	Pre-Calculus I: College Algebra	
PHYS 111	Introductory Physics I	
or PHYS 151	Principles of Physics I	

or PHYS 151H Principles of Physics I (Honors)

Total Units 32-35

Certificate of Achievement Mechanical Design

This certificate prepares individuals for entry-level jobs with companies and agencies involved in the design and/or manufacture of mechanical objects, devices, and equipment. Students develop the knowledge and skills needed to take design ideas from concept sketches to digital models, physical prototypes, detail drawings, and subsequent manufacture and production. Job titles of students completing this certificate include drafter, designer, mechanical designer, and engineering assistant. The certificate also equips employed and transfer students with expertise using the latest industry-standard design tools required for job promotions, advanced study, and professional practice.

Program Student Learning Outcome

Upon completion of this program, the student will be able to design and create graphical representations of the built environment based on industry standards.

Course Requirements

Total Units		23
DESN 299	Occupational Work Experience Education	
DESN 292	Internship Studies	
DESN 290	Portfolio and Presentation	
Select one unit from	the following list of courses:	1
DESN 286	Professional Certification Preparation	1
DESN 204	Modeling, Prototyping, and Manufacturing	3
DESN 203	Solid Modeling	3
DESN 120	Manufacturing Processes	3
DESN 111	Engineering Design Graphics	4
DESN 110	Graphics Communication	3
DESN 109	Introduction to Engineering and Design	1
DESN 101	Computer-Aided Design and Drafting	4
Required courses:		

Certificate of Proficiency

Applied Design

This certificate prepares individuals with skills fundamental to careers in professional interior and industrial design. It is designed for students who desire to secure entry-level positions or who plan to continue their education at a college of design. Job titles typical of students completing this certificate include design assistant or interior design assistant.

Program Student Learning Outcome

Upon completion of this program students will be able to apply the standard Design Process to generate solutions across multiple industries.

Course Requirements

Total Units		13
	Manufacturing	
DESN 204	Modeling, Prototyping, and	
DESN 203	Solid Modeling	
DESN 110	Graphics Communication	
Emphasis in Indust	rial Design (6 units)	
DESN 200	Architectural Design I	
DESN 107	History of Western Architecture-A Sustainable Perspective	
DESN 102	Architectural Drawing	
Emphasis in Design	n (6 units)	
Design from below	,	O
Select an area of a	Drafting emphasis in Interior Design or Industrial	6
DESN 101	Computer-Aided Design and	4
DESN 100	Fundamentals of Design	3
Required courses:		

Certificate of Proficiency AutoCAD Certified User

This certificate offers students credit college courses in solid modeling that transfer to local universities and prepare students to take the AutoCAD certification exam and become a certified user. Beginning students who complete this certificate are on a path toward completing an associate degree in computer aided drafting and transferring to a four-year university. The certificate is also valuable to industry professionals seeking to upgrade their skills and obtain certification.

Program Student Learning Outcome

At the end of the program students will be able to demonstrate knowledge of the certification exam schedules and be able to apply success skills and strategies to prepare for certification exams.

Course Requirements

Total Units		8
DESN 286	Professional Certification Preparation	1
DESN 201	Advanced AutoCAD Computer- Aided Design and Drafting	3
DESN 101	Computer-Aided Design and Drafting	4
Required courses:		

Certificate of Proficiency Engineering Design Graphics

This certificate provides students an opportunity to explore and become proficient with the graphic tools used by designers and engineers to take ideas from design concept to prototype and physical product. Students who complete this certificate are encouraged to then pursue the Mechanical Design or CADD

Certificate of Achievement and continue their engineering education.

Program Student Learning Outcome

Upon completion of this program students will be able to critically analyze the needs of the audience or end user of the model and select the optimal model media and presentation style (multi-view, shading, dimensioning, etc.) based on the often conflicting demands of user needs, time and budget constraints, and available technology (plotters, projectors, RP machines, etc.).

Course Requirements

Required courses:		
DESN 101	Computer-Aided Design and Drafting	4
DESN 109	Introduction to Engineering and Design	1
DESN 111	Engineering Design Graphics	4
DESN 120	Manufacturing Processes	3
DESN 203	Solid Modeling	3
Total Units		15

Certificate of Proficiency Drafting Fundamentals

This certificate introduces and provides an overview of the issues and skills involved in drafting education or a career in drafting. A graphics communication course covering sketching, visualization, and projection is combined with a computer-aided drafting and architectural drawing course to help students develop skills using the board and AutoCAD. These courses provide a foundation for work or study related to drafting.

Program Student Learning Outcome

Upon successful completion of the program, students will be able to create, present, and evaluate a CAD design project that solves design problems typical in industry and/or the community.

Course Requirements

Total Units		10
DESN 110	Graphics Communication	3
DESN 102	Architectural Drawing	3
DESN 101	Computer-Aided Design and Drafting	4
Required courses:		

Certificate of Proficiency SolidWorks Certified User

This certificate offers students credit college courses in solid modeling that transfer to local universities and prepare students to take the SOLIDWORKS certification exam and become a certified user. Beginning students who complete this certificate are on a path toward completing an associate degree in CADD or mechanical design and transferring to a four-year university. The certificate is also valuable to industry professionals seeking to upgrade their skills and obtain certification.

Program Student Learning Outcome

At the end of the program students will be able to demonstrate knowledge of the certification exam schedules and be able to apply success skills and strategies to prepare for certification exams.

Course Requirements

Total Units		8
DESN 286	Professional Certification Preparation	1
DESN 203	Solid Modeling	3
DESN 111	Engineering Design Graphics	4
Required courses:		

Certificate of Proficiency 3D Modeling and Prototyping

This certificate of proficiency will prepare students for opportunities in the emerging fields of 3D Printing (3DP), Rapid Prototyping (RP), and Additive Manufacturing (AM). Students develop skills in producing digital 3D models that are used to print, fabricate, and/or manufacture physical prototypes in a rapid manner.

Program Student Learning Outcome

Upon completion of this program, students will be able to design and create graphical representations of the built environment based on industry standards.

Course Requirements

Total Units		13
DESN 286	Professional Certification Preparation	1
	Manufacturing	
DESN 204	Modeling, Prototyping, and	3
DESN 203	Solid Modeling	3
DE014 201	Aided Design and Drafting	O
DESN 201	Advanced AutoCAD Computer-	3
DESN 120	Manufacturing Processes	3
Required courses:		

Courses

DESN 100: Fundamentals of Design

Units: 3

Prerequisites: None

Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 3 hours. Course Typically Offered: Fall, Spring

This course introduces the fundamentals of the design process as students develop and apply design skills using visual elements and principles of two- and three-dimensional design. It includes solving visual problems and creating authentic designs using black and white and color media in both two- and three-dimensions. Students also study design in historical, social, and multicultural contexts.

DESN 101: Computer-Aided Design and Drafting

Units: 4

Prerequisites: None

Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 6 hours.

Course Typically Offered: Fall, Spring, and Summer

This course introduces students to the fundamentals of computer graphics and two and three-dimensional modeling on computer-aided design and drafting systems. Students use AutoCAD and other software and online computer systems to design and display various objects. Students learn principles and techniques that enable them to create, modify, annotate, scale, and output two- and three-dimensional drawings, renderings, and models.

DESN 102: Architectural Drawing

Units: 3

Prerequisites: None

Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 3 hours. Course Typically Offered: Fall, Spring

This course provides the methods and techniques required for architectural drawing. It covers freehand sketching, line work, lettering, geometric constructions, orthographic and isometric projections, and construction drawings, which include floor plans, elevations, sections, and details.

DESN 103: Architectural Communications

Units: 3

Prerequisites: None Advisory: DESN 102

Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 3 hours. Course Typically Offered: Fall

This course provides students the fundamentals of architectural presentation, rendering, and model making. It introduces standards and applications of design language, color theory, pen and ink, freehand drawing, two-point perspective, and model making technique.

DESN 105: Construction Materials

Units: 3

Prerequisites: None

Acceptable for Credit: CSU, UC

Lecture 2.50 hours, laboratory 1.50 hours.

Course Typically Offered: Spring

This course provides an overview of the processes and materials used in construction. Topics include elements of planning, designing, and contracting of the work. The course emphasizes site preparation and the materials used in residential and commercial projects, including wood, concrete, steel, glazing, and masonry as applied to the interiors and exteriors of buildings.

DESN 107: History of Western Architecture-A Sustainable Perspective

Units: 3

Prerequisites: None

Acceptable for Credit: CSU, UC

Lecture 3 hours.

Course Typically Offered: Fall, Spring, and Summer

This course introduces the history of Western architecture from the ancient Near East to the present day with an emphasis on the timeless principles of sustainable design. It examines selected significant historical works of architecture to shed light on the technological, religious, and social forces that shaped these works. Students are introduced to important buildings as they examine past exemplars of architectural design through the lens of present day sustainability guidelines.

DESN 108: World Architecture

Units: 3

Prerequisites: None

Acceptable for Credit: CSU, UC

Lecture 3 hours.

Course Typically Offered: Fall, Spring

This survey of non-Western architectural history examines how non-Western building traditions evolved during and after Western and Islamic colonialism. The course focuses on the cultural conditions and forces that shaped the indigenous architecture of the pre-Columbian Americas, the Islamic empires, and India, China, South-East Asia, and Japan.

DESN 109: Introduction to Engineering and Design

Units: 1

Prerequisites: None

Acceptable for Credit: CSU, UC

Lecture 0.50 hour, laboratory 1.50 hours.

Course Typically Offered: Fall

This course introduces students to engineering and design. Students learn about engineering as a field of study and profession. Through tours, guest speakers, text reading, and group discussions, students learn about the campus resources, organizations, academic planning, time management, and study skills necessary for success in engineering. Students develop a plan to achieve their own academic, personal, and professional goals as well as an understanding of design through a project- and team-based learning experience.

DESN 110: Graphics Communication

Units: 3

Prerequisites: None

Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 3 hours. Course Typically Offered: Fall

This course introduces graphics as a fundamental means of communicating technical information for product design, manufacturing, and construction. Students develop an understanding of graphics communication in the design process and gain hands-on experience using computer-aided design software to produce models, assemblies, and drawings according to industry standards.

DESN 111: Engineering Design Graphics

Units: 4

Prerequisites: None

Advisory: DESN 101 or DESN 110
Acceptable for Credit: CSU, UC
Lecture 3 hours, laboratory 3 hours.
Course Typically Offered: Spring

This course prepares engineering and design students to use the graphic communication tools used by engineers in industry. Students develop an advanced understanding of these tools in the engineering design process and gain hands-on experience using modern computer-aided solid modeling software to produce complex part models, assemblies, and drawings.

DESN 120: Manufacturing Processes

Units: 3

Prerequisites: None Acceptable for Credit: CSU

Lecture 2.50 hours, laboratory 1.50 hours.

Course Typically Offered: Fall

This course provides students a basic understanding of the properties of materials and how these materials, including plastics, metals, ceramics, and composites, are transformed into finished products. Students study basic and advanced manufacturing processes, including material removal, joining, assembly, casting, surfacing, and finishing. Other topics include numerical control, rapid prototyping, measurement and gaging, geometric dimensions and tolerancing, and statistical methods

DESN 200: Architectural Design I

Units: 3

Prerequisites: DESN 102.

Enrollment Limitation: Concurrent enrollment in DESN 102 if

prerequisite not met.

Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 3 hours. Course Typically Offered: Spring

This course introduces the basics of architectural design. Students learn and apply fundamental form and space concepts to a design project using visual communication, spatial communications, and creative problem solving.

DESN 201: Advanced AutoCAD Computer-Aided Design and Drafting

Units: 3

Prerequisites: DESN 101.

Enrollment Limitation: Concurrent enrollment in DESN 101 if

prerequisite not met.
Acceptable for Credit: CSU
Lecture 2 hours, laboratory 3 hours.
Course Typically Offered: Spring

This course focuses on applying advanced AutoCAD skills in the design process to create models, drawings, and related documentation for a variety of applications and industries. Topics include blocks, attributes, external references, solid, mesh, and surface modeling, presentation, and photorealistic rendering. Students develop and apply skills in visualizing, creating, and editing 3D shapes for modeling, testing, rapid prototyping, and marketing. The course emphasizes improving productivity and developing modeling and presentation skills.

DESN 203: Solid Modeling

Units: 3

Prerequisites: None

Advisory: DESN 101 and DESN 110 Acceptable for Credit: CSU, UC

Lecture 1.50 hours, laboratory 4.50 hours.

Course Typically Offered: Spring

This course introduces engineering and design students to 3D parametric solid modeling, including basic and intermediate parts, assemblies, and drawings. From their models, students produce CAD drawings to include orthographic, pictorial, section, and detail views. The course also covers dimensioning, dimensional tolerancing, and thread notation per ASME Y14.5M-2009 and uses SolidWorks software.

DESN 204: Modeling, Prototyping, and Manufacturing

Units: 3

Prerequisites: None

Advisory: DESN 203 or DESN 201 Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 3 hours. Course Typically Offered: Fall

This course provides theory and hands-on application of the design process, 3D modeling, prototyping, and manufacturing to students with prior modeling experience or coursework. Building upon drafting fundamentals, students develop skill in computer-aided solid modeling, additive manufacturing, and conventional machining processes. Students develop and refine modeling skills, produce prototypes, enhance presentation models, and use simulation and 3D printing tools to solve design problems individually and in teams. Additional topics include problem identification, concept generation, project management, risk reduction, file translation, virtual/augmented reality (VR/AR), quality control, and Computer Numerical Control (CNC).

DESN 207: Revit Building Information Modeling

Units: 3

Prerequisites: None

Acceptable for Credit: CSU, UC Lecture 2 hours, laboratory 3 hours. Course Typically Offered: Fall

This course prepares intermediate design students to create, detail, and present CAD models of the built environment using Revit building information modeling software. Students create and modify building models, produce presentations including renderings and animated walk-throughs, manipulate parametric objects, create schedules and details from the data base, and generate construction documents from the model. The course is intended for students pursuing careers in architecture, engineering, construction, drafting, and landscape and interior design.

DESN 286: Professional Certification Preparation

Units: 1

Prerequisites: None Acceptable for Credit: CSU

Lecture 1 hour.

Course Typically Offered: Fall

Attaining a professional certification can help employers further validate a students MiraCosta degree, certificate, or course work. This course provides an overview of industry-based third-party professional certifications, credentials, and licenses specific to a students discipline of study. Topics include goal setting, a survey of professional certifications relevant to the discipline, industry trends and certification value assessment, exam preparation and exam strategies, practice exams, resolving any skill deficiencies, and life-long learning. Under the instruction of a faculty-mentor, students reflect on their prior course work and career aspirations to produce and execute a plan that outlines the necessary steps to attain the professional certification of their choice. Although students are encouraged to do so, signing up for and/or passing a certification exam is not required to pass the course.

DESN 290: Portfolio and Presentation

Units: 1

Prerequisites: None Acceptable for Credit: CSU

Lecture 0.50 hour, laboratory 1.50 hours.

Course Typically Offered: Spring

Students develop a professional portfolio using their best work from previously completed architecture and drafting courses to highlight their design and drawing achievements. The course also covers how students can market themselves for the workforce through resume writing, job search strategies, and presentation and interview skills.

DESN 292: Internship Studies

Units: 0.5-14 Prerequisites: None

Corequisite: Complete 54 hours of work per unit, paid or

unpaid

Enrollment Limitation: Instructor, dept chair, and Career Center approval. Fourteen unit maximum in any combination of work experience education and/or internship studies per semester.

Acceptable for Credit: CSU

Course Typically Offered: Fall, Spring, and Summer

This course provides students the opportunity to apply the theories and techniques of their discipline in an internship position in a professional setting under the instruction of a faculty-mentor and site supervisor. It introduces students to aspects of the roles and responsibilities of professionals employed in the field of study. Topics include goal-setting, employability skills development, and examination of the world of work as it relates to the student's career plans. Students must develop new learning objectives and/or work/intern at a new site upon each enrollment.

DESN 296: Topics in Design

Units: 1-3

Prerequisites: None

Acceptable for Credit: CSU

Lecture 1 hour. Lecture 2 hours. Lecture 3 hours.

Course Typically Offered: To be arranged

This course gives students an opportunity to study topics in Design that are not included in regular course offerings. Each Topics course is announced, described, and given its own title and 296 number designation in the class schedule.

DESN 299: Occupational Work Experience Education

Units: 0.5-14 Prerequisites: None

Corequisite: Complete 54 hours of work per unit, paid or

unpaid

Enrollment Limitation: Career Center approval. Fourteen unit maximum in any combination of work experience education and/or internship studies per semester.

and/or internship studies per s

Acceptable for Credit: CSU

Course Typically Offered: Fall, Spring, and Summer

This course is intended for students who are employed in a job directly related to their major or career area of interest. It allows such students the opportunity to apply the theories and skills of their discipline to their position and to undertake new responsibilities and learn new skills at work. Topics include goal-setting, employability skills development, and examination of the world of work as it relates to the student's career plans. Students must develop new learning objectives and/or work/intern at a new site upon each enrollment.