

Mechanical Engineering

LOWER-DIVISION TRANSFER PATTERN California State University (CSU) Statewide Pattern

The Lower-Division Transfer Pattern (LDTP) consists of the CSU statewide pattern of coursework outlined below, plus campus-specific coursework, bringing the total pattern to at least 60 but no more than 70 transferable semester units for students to complete at a California Community College (CCC).

The CSU statewide pattern of coursework for CCC students who plan to major in Mechanical Engineering at any CSU campus offering the major includes:

- Partial completion of lower-division general education requirements, following the CSU General Education Breadth (GE-Breadth) pattern as specified below in (1);
- Completion of the CSU graduation requirements in United States History, Constitution and American Ideals; and
- Completion of additional semester units as specified below in (3) to (10).

Please note that the information here is an academic and curricular advising tool: a roadmap that enables transfer students to efficiently and effectively progress towards the CSU baccalaureate degree in a specified discipline. California Community College students should work closely with their advisers when planning their academic program in preparation for transfer to the CSU.

This information does not represent any guarantee with regard to admission nor does it include or replace CSU campus admissions impaction criteria (see <http://www.calstate.edu/AR/impactioninfo.shtml>). These curricular guidelines are subject to change.

CSU Statewide Pattern	Semester Unit Requirement
<p>(1) Complete the following lower-division general education requirements areas:</p> <ul style="list-style-type: none"> • A course that satisfies CSU GE Breadth AREA A1, Oral Communication. <u>And</u> • A course that satisfies CSU GE Breadth AREA A2, Written Communication. <u>And</u> • A course that satisfies CSU GE Breadth AREA B2, Life Science. <u>And</u> • A course that satisfies CSU GE Breadth AREA C, Arts, Literature, Philosophy, and Foreign Languages. <p><i>A minimum grade of C is required in courses used to meet CSU GE Breadth AREA A.</i></p>	12 units
<p>(2) Complete the graduation requirements in United States History, Constitution, and American Ideals.</p> <p>These are typically completed with one course each in American government and American history, or a sequence of courses that integrate the history and government topics.</p>	6 units
<p>(3) Complete the Single Variable Calculus Sequence [CAN MATH SEQ B].</p> <p><i>One of these courses may be used to satisfy CSU GE Breadth AREA B4 requirement.</i></p>	6 units
<p>(4) Complete at least one of the following:</p> <ul style="list-style-type: none"> • A course that articulates with Differential Equations and Linear Algebra. <u>Or</u> • Complete both of the following: <ul style="list-style-type: none"> ○ A course that articulates with Introduction to Linear Algebra [CAN MATH 26]. <u>And</u> ○ A course that articulates with Ordinary Differential Equations [CAN MATH 24]. 	4-6 units

(5) Complete General Chemistry for Science Majors I, with Lab. <i>This course may be used to satisfy CSU GE Breadth AREAS B1 and B3.</i>	4 units
(6) Complete Physics – Calculus Based I [CAN PHYS 8].	3 units
(7) Complete Physics – Calculus Based II [CAN PHYS 12].	3 units
(8) Complete Statics [CAN ENGR 8].	1 unit
(9) Complete Engineering Materials [CAN ENGR 4].	3 units
(10) Complete one of the following: <ul style="list-style-type: none"> • A course that articulates with Circuits [CAN ENGR 12]. Or • A course that articulates with Circuits, with Lab [CAN ENGR 6]. 	3 units
Total Semester Units Required for Statewide LDTP Pattern	45-47 Units

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Bakersfield Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Channel Islands Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Chico Campus-Specific Pattern**

In addition to the statewide pattern, the following is the CSU Chico campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
<p>(1) If not taken as part of the statewide pattern complete <u>all</u> of the following:</p> <ul style="list-style-type: none"> • One additional unit allowed for [CSUC PHYS 204A], Physics I (Mechanics). <u>And</u> • One additional unit allowed for [CSUC PHYS 204B], Physics II (Electricity and Magnetism). <u>And</u> • Two additional units allowed for [CSUC CIVL 211], Statics. <u>And</u> • A course that articulates with [CSUC EECE 211L], Circuits Lab. <u>And</u> • A course that articulates with [CSUC MATH 220], Calculus III. <u>And</u> • A course that articulates with [CSUC PHYS 204C], Physics III - Calculus-based Thermal Physics, Waves, Optics, Introduction to Modern Physics. <u>And</u> • A course that satisfies CSU GE-Breath Area D, Social, Political, and Economics Institutions and Behavior, Historical Background. <u>And</u> • A course that articulates with [CSUC MECH 100/100L], Engineering Graphics with lab. <i>This course must include computer-aided 3D solid modeling.</i> <u>And</u> • A course that articulates with [CSUC MECH 200], Engineering Graphics II – Drawing standards, geometric dimensioning and tolerancing, working drawings, product data management, intermediate solid modeling, introduction to Rapid Prototyping and specialized graphic applications. 	<p>0-1 units</p> <p>0-1 units</p> <p>0-2 units</p> <p>0-1 units</p> <p>0-3 units</p> <p>0-4 units</p> <p>0-4 units</p> <p>0-3 units</p> <p>0-2 units</p> <p>0-2 units</p>
<p>(2) If necessary, complete additional coursework to bring total to 60 transferable semester units.</p>	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Dominguez Hills Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU East Bay Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Fresno Campus-Specific Pattern**

In addition to the statewide pattern, the following is the CSU Fresno campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
<p>(1) If not taken as part of the statewide pattern complete <u>all</u> of the following:</p> <ul style="list-style-type: none"> • If a CSU GE Breadth Area C1 requirement was not completed as part of the statewide pattern complete a course that articulates with CSU GE-Breadth AREA C1, Art (Art, Dance, Music, Theater). <u>And</u> • A course that articulates with [CSUF MATH 77], Calculus III - Vectors, three-dimensional calculus, partial derivatives, multiple integrals, Green's Theorem, Stokes' Theorem. <u>And</u> • A course that articulates with [CSUF ME 1], Introduction to Mechanical Engineering or any Intro to Engineering course. <u>And</u> • A course that articulates with [CSUF ME 2], Computer Applications in Mechanical Engineering Lab. <u>And</u> • A course that articulates with [CSUF ME 32], Engineering Materials Lab. <u>And</u> • A course that articulates with [CSUF ECE 91L], Introduction to Electrical Engineering Lab. <u>And</u> • <u>Two</u> additional units in a course that articulates with [CSUF CE 20], Engineering Mechanics: Statics. <u>And</u> • <u>Three</u> additional units in a course that articulates with [CSUF ME 26], Engineering Graphics. <u>And</u> • A course that articulates with [CSUF PHIL 20], Moral Questions. <u>And</u> • A course that articulates with [CSUF PHYS 4AL], Laboratory in Mechanics and Wave Motion. <u>And</u> • A course that articulates with [CSUF PHYS 4C], Light and Modern Physics. 	<p style="text-align: center;">0-3 units</p> <p style="text-align: center;">0-4 units</p> <p style="text-align: center;">0-1 unit</p> <p style="text-align: center;">0-1 unit</p> <p style="text-align: center;">0-1 unit</p> <p style="text-align: center;">0-1 unit</p> <p style="text-align: center;">0-2 units</p> <p style="text-align: center;">0-3 units</p> <p style="text-align: center;">0-3 units</p> <p style="text-align: center;">0-1 unit</p> <p style="text-align: center;">0-3 units</p>
<p>(2) If not taken as part of the statewide pattern complete <u>one</u> of the following:</p> <ul style="list-style-type: none"> • A course that articulates with [CSUF ECE 70], Engineering Computations using C - A course that uses C computer language in engineering analysis and design and covers a systematic development in program structure, specification, testing, and debugging. <u>Or</u> • A course that articulates with [CSUF ECE 71], Engineering Computations- Use of C programming language in engineering analysis and design. A systematic development in program structure, specification, documentation, testing, and debugging. 	<p style="text-align: center;">0-3 units</p>
<p>(3) If necessary, complete additional coursework to bring total to 60 transferable semester units.</p>	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Fullerton Campus-Specific Pattern**

In addition to the statewide pattern, the following is the CSU Fullerton campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern complete <u>all</u> of the following: <ul style="list-style-type: none"> • A course that articulates with CSU GE Breadth AREA A3, Critical Thinking. <u>And</u> • Coursework that articulate with <u>two</u> courses in CSU GE Breadth AREA C, Arts, Literature, Philosophy, and Foreign Language. <u>And</u> • A course that articulates with [CSUF MATH 250A], Multivariate Calculus - Calculus of functions of several variables. Partial derivatives and multiple integrals with applications; parametric curves; vectors and vector-valued functions. 	0-3 units 0-6 units 0-4 units
(2) If necessary, complete additional coursework to bring total to 60 transferable semester units.	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
Humboldt State University Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Long Beach Campus-Specific Pattern**

In addition to the statewide pattern, the following is the CSU Long Beach campus-specific pattern for the B.S. in Mechanical Engineering:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern, complete <u>all</u> of the following: <ul style="list-style-type: none"> • A course that articulates with [CSULB MATH 224], Calculus III. <u>And</u> • A course that articulates with [CSULB MAE 172], Engineering Design Graphics. <u>And</u> • A course that articulates with [CSULB MAE 205], Computer Methods in Mechanical and Aerospace Engineering. <u>And</u> • A course that articulates with Critical Thinking. <i>This requirement should be used to complete CSU GE Breadth AREA A3. A minimum grade of C is necessary to meet this requirement.</i> 	0-4 units 0-2 units 0-2 units 0-3 units
(2) If not taken as part of the statewide pattern, complete at least <u>one</u> the following: <ul style="list-style-type: none"> • A course that articulates with a course in CSU GE Breadth AREA C - Arts and Humanities. <u>Or</u> • A course that articulates with a GE course in CSU GE Breadth AREA E - Lifelong Understanding and Self-development. 	0-3 units
(3) The following additional units are allowed for: <ul style="list-style-type: none"> • <u>Two</u> additional units in Physics. • <u>One</u> additional unit in Statics. 	
(4) If necessary complete additional coursework to bring total to 60 transferable semester units.	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Los Angeles Campus-Specific Pattern**

In addition to the statewide pattern, the following is the CSU Los Angeles campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern complete <u>all</u> of the following: <ul style="list-style-type: none"> • A course that articulates with a second semester of expository writing that emphasizes exposition, research, and critical thinking, typically called “Writing and Critical Thinking” (as opposed to “Literature and Composition”). <u>And</u> • A course that articulates with [CAN BIOL 2], Biology. <u>And</u> • Courses that articulate with [CAN MATH SEQ C], Calculus 1st, 2nd, and 3rd Semester. <u>And</u> • A course that articulates with [CAN PHYS 14], Physics. 	0-3 units 0-3 units 0-4 units 0-4 units
(2) If necessary, complete additional coursework to bring total to 60 transferable semester units.	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
California Maritime Academy Campus-Specific Pattern**

In addition to the statewide pattern, the following is the California Maritime Academy campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern complete <u>all</u> of the following: <ul style="list-style-type: none"> • A course that articulates with [CMA MATH 210, MATH 211, & Math 212], Calculus 1st, 2nd, and 3rd Semester. <u>And</u> • A course that articulates with [CMA ME 230], Engineering Materials. <u>And</u> • A course that articulates with [CMA ENG 250 & ENG 250L], Circuits. <u>And</u> • A course that articulates with [CMA ENG 100], Engineering Graphics - A course that covers technical drawings using drafting instruments and computer aided design (CAD) software based on ANSI standards. <u>And</u> • A course that articulates with [CMA ENG 210], Computer Programming. 	0-9 units 0-4 units 0-3 units 0-3 units 0-3 units
(2) If not taken as part of the statewide pattern complete the following additional units: <ul style="list-style-type: none"> • A course that articulates with <u>one additional unit</u> in [CMA ENG 232], Statics. 	0-1 units
(3) If necessary, complete additional coursework to bring total to 60 transferable semester units.	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Monterey Bay Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

Mechanical Engineering LOWER-DIVISION TRANSFER PATTERN CSU Northridge Campus-Specific Pattern

In addition to the statewide pattern, the following is the CSU Northridge campus-specific pattern:

Campus Specific Pattern	Semester Unit Requirement
<p>(1) If not taken as part of the statewide pattern complete <u>all</u> of the following additional units:</p> <ul style="list-style-type: none"> • A course(s) that articulates with [CSUN MATH 150A & 150B], four additional units in Calculus. <u>And</u> • A course that articulates with [CSUN CHEM 101], one additional unit in Chemistry. <u>And</u> • A course(s) that articulates with [CSUN PHYS 220A & 220B – 2 lab units total], two additional units in Physics. <u>And</u> • A course that articulates with [CSUN CE 240], two additional units in Statics. <u>And</u> • A course that articulates with [CSUN MSE 227 with lab], one additional unit in Materials. <u>And</u> • A course that articulates with [CSUN ECE 240 with lab], one additional unit in Circuits. <p><i>A minimum grade of C is required in courses used to meet these requirements.</i></p>	<p>0-4 units</p> <p>0-1 units</p> <p>0-2 units</p> <p>0-2 units</p> <p>0-1 units</p> <p>0-1 units</p>
<p>(2) If not taken as part of the statewide pattern complete <u>all</u> of the following:</p> <ul style="list-style-type: none"> • A course that articulates with [CSUN MATH 250], a Multivariable Calculus course that covers vectors, dot products, cross products, equations of lines and planes; calculus of Vector Valued Functions including unit tangents, unit normals, and curvature; introduction to multivariable functions, the Differential Calculus of Multivariate Functions, the chain rule. <u>And</u> • A course that articulates with CSU GE Breadth AREA C, Arts, Literature, Philosophy. <p><i>A minimum grade of C is required in courses used to meet these requirements.</i></p>	<p>0-3 units</p> <p>0-3 units</p>
<p>(3) If necessary, complete additional coursework to bring total to 60 transferable semester units.</p>	

Mechanical Engineering LOWER-DIVISION TRANSFER PATTERN Cal Poly Pomona Campus-Specific Pattern

In addition to the statewide pattern, the following is the Cal Poly Pomona campus-specific pattern for the B.S. in Mechanical Engineering:

Campus-Specific Pattern	Semester Unit Requirement
<p>(1) If not taken as part of the statewide pattern complete <u>all</u> of the following:</p> <ul style="list-style-type: none"> • A course that articulates with CSU GE Breadth Area A3, Critical Thinking. <u>And</u> • A course that articulates with CSU GE Breadth Area C, Arts and Humanities. <u>And</u> • A course that articulates with CSU GE Breadth Area E, Lifelong Learning and Self-Development. <u>And</u> • A course that articulates with [CPP MAT 214], a Multivariable Calculus course that covers vectors, dot products, cross products, equations of lines and planes; calculus of Vector Valued Functions including unit tangents, unit normals, and curvature; introduction to multivariable functions, the Differential 	<p>0-3 units</p> <p>0-3 units</p> <p>0-3 units</p> <p>0-4 units</p>

Calculus of Multivariable Functions, the chain rule.	
(2) If necessary, complete additional coursework to bring total to 60 transferable semester units.	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Sacramento Campus-Specific Pattern**

In addition to the statewide pattern, the following is the CSU Sacramento campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern complete <u>all</u> of the following additional units. <ul style="list-style-type: none"> • A course that articulates with <u>one</u> additional unit in [CSUS PHYS 011A], General Physics: Mechanics. <u>And</u> • A course that articulates with <u>one</u> additional unit in [CSUS PHYS 011C], General Physics: Electricity and Magnetism, Modern Physics. <u>And</u> • A course that articulates with <u>one</u> additional unit in [CSUS ENGR 030], Statics. <u>And</u> • A course that articulates with <u>one</u> additional unit in Differential Equations & Linear Algebra. 	0-1 unit 0-1 unit 0-1 unit 0-1 unit
(2) If necessary, complete additional coursework to bring total to 60 transferable semester units.	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU San Bernardino Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
San Diego State University Campus-Specific Pattern**

In addition to the statewide pattern, the following is the San Diego State University campus-specific pattern.

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern, complete <u>all</u> of the following: <ul style="list-style-type: none"> • A course that articulates with [SDSU RWS 200], Intermediate Composition. <u>And</u> • Two courses that articulate with CSU GE Breadth AREA C, Arts, Literature, Philosophy, and Foreign Languages. <u>And</u> • A course that articulates with [SDSU MATH 252], Calculus III - Functions of several variables. Vectors. Partial derivatives and multiple integrals. Line integrals and Green's Theorem. <u>And</u> • A course that articulates with [SDSU PHYS 196L], Principles of Physics Laboratory - Experiments in DC circuits, AC circuits, electrical resonance, oscilloscope measurement techniques, and electric and magnetic fields. <u>And</u> • A course that articulates with [SDSU PHYS 197], Principles of Physics - Fundamental principles of physics in areas of wave motion, sound, electromagnetic waves, optics, relativity, and modern physics. <u>And</u> • A course that articulates with [SDSU E M 220], Dynamics - Kinetics of a particle; central force motion; systems of particles, work and energy; impulse and momentum; 	0-3 units 0-6 units 0-4 units 0-1 unit 0-3 units 0-3 units

moments and products of inertia; Euler's equations of motion; vibration and time response, engineering applications.	
<p>(2) If not taken as part of the statewide pattern, complete <u>all</u> of the following:</p> <ul style="list-style-type: none"> • A course that articulates with [SDSU M E 101], Solid Modeling I - Computer-aided solid modeling, including engineering documentation, dimensioning and tolerancing per ASME Y14.5M-1004. Elementary sketching and dimensioning of orthographic and pictorial drawings and sections. <u>And</u> • A course that articulates with [SDSU M E 102], Solid Modeling II - Continuation of computer-aided solid modeling and engineering documentation with geometric tolerancing, thread, and thread notations per ASME Y14.5M-1994. Finite element analysis (FEA) of mechanical components. <u>And</u> • A course that articulates with [SDSU M E 203], Computer Programming and Applications - Principles of programming using C and Java. Graphical programming using Labview Topics include data types, loops, control flow, arrays, memory acquisition, data structures. Applications related to mechanical system components. <u>And</u> • A course that articulates with [SDSU M E 240], Introduction to Engineering Materials - Atomic and molecular structure of materials utilized in engineering. Analysis of the relationships between structure of materials and their mechanical, thermal, electrical, corrosion, and radiation properties. Examples of material structure relevant to civil, electrical, aerospace, and mechanical engineering applications. <u>And</u> • A course that articulates with [SDSU M E 241], Materials Laboratory - Experimental methods used to characterize engineering materials and their mechanical behavior. <u>And</u> • A course that articulates with [SDSU E M 200], Statics. <u>And</u> • A course that articulates with [SDSU E E 204], Principles of Electrical Engineering - Circuit analysis, phasor diagrams, single-phase and three-phase power, semiconductor devices, and applications, and energy conversion devices. 	<p>0-2 units</p> <p>0-2 units</p> <p>0-2 units</p> <p>0-3 units</p> <p>0-1 unit</p> <p>0-3 units 0-3 units</p>
(3) Students must complete 60 (but not more than 70) transferable semester units. Coursework not taken at the community college must be completed at SDSU.	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
San Francisco State University Campus-Specific Pattern**

In addition to the statewide pattern, the following is the San Francisco State University campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
<p>(1) If not taken as part of the statewide pattern, complete <u>all</u> of the following:</p> <ul style="list-style-type: none"> • A course that articulates with [SFSU ENGR 201], Dynamics – Vector treatment of kinematics and kinetics of particles, systems of particles and rigid bodies. Methods of work, energy, impulse, and momentum. Vibrations and time response. Applications to one- and two-dimensional engineering problems. <u>And</u> • A course that articulates with [SFSU ENGR 103], Introduction to Computers – Introductory course on programming, using a high- level language. Use of algorithms. Program organization, formulation, and solution of engineering problems. Laboratory. <u>And</u> • A course that articulates with [SFSU ENGR 100], Introduction to Engineering – A course that describes the major engineering fields and their subfields; day to day activities of engineers; engineering professionalism, ethics, communication skills, lifelong learning and career planning. <u>And</u> • A course that articulates with [SFSU ENGR 101], Engineering Graphics. <u>And</u> • Three one-unit courses that articulate with [SFSU ENGR 290] Modular Electives. 	<p>0-3 units</p> <p>0-1 units</p> <p>0-1 units</p> <p>0-1 units 0-3 units</p>

<ul style="list-style-type: none"> • <u>And</u> • A course that articulates with [SFSU ENGR 206], Circuits and Instrumentation Laboratory. <u>And</u> • A course that articulates with [SFSU MATH 228], Calculus, 3rd Semester. <u>And</u> • Coursework that articulates with [SFSU PHYS 240 and 242], General Physics with Calculus III with laboratory. • A course that articulates with [SFSU ENGR 102], Statics. 	<p>0-1 units</p> <p>0-4 units</p> <p>0-4 units</p> <p>0-2 units</p>
<p>(2) When possible, satisfy CSU GE Breadth or IGETC Areas by completing:</p> <ul style="list-style-type: none"> • A course that articulates with [SFSU ENG 114], College Composition, 1st semester - Training in expository- argumentative composition, emphasizing work on clear and effective sentences and the organization and development of paragraph and essay. <u>And</u> • A course that articulates with [SFSU ENG 214], College Composition and Literature, 2nd semester - Expository- argumentative composition and critical reading skills through the study of literature; special attention to logic, style, and rhetoric. <i>If necessary, complete additional coursework to bring total to 60 transferable semester units.</i> 	
<p>(3) If necessary, complete additional coursework to bring total to 60 transferable semester units.</p>	

Mechanical Engineering LOWER-DIVISION TRANSFER PATTERN San José State University Campus-Specific Pattern

In addition to the statewide pattern, the following is the San José State University campus-specific pattern for the B.S. in Mechanical Engineering:

Campus-Specific Pattern	Semester Unit Requirement
<p>(1) If not taken as part of the statewide pattern, complete courses from the following to bring total up to 60, and not more than 70 transferable semester units:</p> <ul style="list-style-type: none"> • A course that articulates with [SJSU ENGL 001B], Composition 2. <i>A minimum grade of C or higher is required in courses used to meet this requirement.</i> <u>And</u> • Physical Activity. <i>Two units taken in at least two different activities.</i> <u>And</u> • A course that articulates with [SJSU ENGR 010], Introduction to Engineering. <u>And</u> • A course that articulates with [SJSU MATH 032], Calculus III. <u>And</u> • A course that articulates with [SJSU PHYS 072 or PHYS 052 and PHYS 053], Atomic Physics - A course that covers geometric and physical optics, an introduction to quantum physics emphasizing electronic structure of atoms and solids, and nuclear physics and particle physics. <u>And</u> • A course approved for CSU GE-Breadth Area E, Lifelong Understanding and Self-Development. 	<p>0-3 units</p> <p>0-3 units</p> <p>0-3 units</p> <p>0-6 units</p> <p>3 units</p>
<p>(2) If necessary, complete additional coursework to bring total to 60 transferable semester units.</p>	

Mechanical Engineering LOWER-DIVISION TRANSFER PATTERN Cal Poly San Luis Obispo Campus-Specific Pattern

In addition to the statewide pattern, the following is the Cal Poly San Luis Obispo campus-specific pattern:

Campus-Specific Pattern	Semester Unit Requirement
<p>(1) If not taken as part of the statewide pattern complete <u>all</u> of the following:</p> <ul style="list-style-type: none"> • A course that articulates with [SLO CE 204], Mechanics of Materials I. <u>And</u> 	<p>0-2 units</p>

<ul style="list-style-type: none"> • A course that articulates with [SLO CE 207], Mechanics of Materials II. <u>And</u> • A course that articulates with [SLO IME 142], Manufacturing Processes: Materials Joining. <u>And</u> • A course that articulates with [SLO IME 143], Manufacturing Processes: Material Removal. <u>And</u> • A course that articulates with [SLO ENGL 149], Technical Writing for Engineers. <u>And</u> • A course that articulates with [SLO MATH 241], Calculus IV. 	<p>0-2 units</p> <p>0-2 units</p> <p>0-2 units</p> <p>0-3 units</p> <p>0-3 units</p>
<p>(2) If necessary, complete additional coursework to bring total to 60 transferable semester units.</p>	

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU San Marcos Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
Sonoma State University Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.

**Mechanical Engineering
LOWER-DIVISION TRANSFER PATTERN
CSU Stanislaus Campus-Specific Pattern**

This campus does not have a major, concentration, or option in Mechanical Engineering.