ACADEMIC SENATE
CSU BAKERSFIELD

New Bachelor of Science in Mechanical Engineering

RES 252638

AAC, BPC

RESOLVED: That the Academic Senate approves the proposed Bachelor of Science in Mechanical Engineering degree program.

RATIONALE: The Bachelor of Science in Mechanical Engineering program is designed to meet the demand for mechanical engineers by local industries in Kern County and beyond, including but not limited to sustainable and conventional energy (e.g. petroleum), power, construction, aerospace, agriculture, and health and safety. The proposed program curriculum offers students the opportunity to build and develop technical expertise in areas of thermal-fluid sciences, mechanical systems, and material sciences. The proposed program addresses an important community need, can launch with existing resources, and every level of review has found it to be sound academically. The Department of Physics and Engineering is advised to seek external accreditation for the proposed program.

Attachment: *Referral 2025-2026 37 New Degree Proposal for Bachelor of Science in Mechanical Engineering*

Distribution List:

President
Provost and Vice-President for Academic Affairs
Vice-President for Student Affairs and Strategic Enrollment Management
AVP for Faculty Affairs
AVP Academic Affairs and Dean of Academic Programs
College Deans
Dean of Libraries
Dean of Antelope Valley
Dean of Extended Education and Global Outreach
General Faculty

Approved by the Academic Senate: April 30,2026
Sent to the President: May 8, 2026
President Approved: May 28, 2026

ACADEMIC SENATE
CSU BAKERSFIELD

2025-2026 REFERRAL #37

New Degree Proposal for Bachelor of Science in Mechanical Engineering

From: Melissa Danforth, Academic Senate Chair

To: Tiffany Tsantsoulas, Academic Affairs Committee (AAC) Chair
Amanda Grombly, Budget and Planning Committee (BPC) Chair

Date: January 20, 2026

cc: Katherine Van Grinsven, Academic Senate Administrative Analyst

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At their meeting on December 2, 2025, the Academic Senate Executive Committee requested that the Academic Affairs Committee (AAC) and Budget and Planning Committee (BPC) review and address the new proposal for a Bachelor of Science in Mechanical Engineering.

During your discussion, please consider:

- rationale as presented in the attached proposal
- impact on students.

Please take up this matter with your committees and get back to me with your recommendations. If your recommendation requires Senate action, please prepare a resolution and the rationale for the resolution.

Thank you.

Attachments:

(1) Link to view in CIM: https://next-catalog.csub.edu/programadmin/ Enter 09101 in search box.
(2) 09101_ Bachelor of Science in Mechanical Engineering.pdf

DR. MELISSA DANFORTH, CHAIR, ACADEMIC SENATE
California State University, Bakersfield
9001 Stockdale Hwy. • Mail Stop: 20 BDC • Bakersfield, CA 93311

academicsenatechair@csub.edu csub.edu/senate

09101: BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING (BSME)

In Workflow

1. 806 - PHEN Curriculum Review (zliu3@csub.edu)
2. NSM Curriculum Committee (dgilliland@csub.edu)
3. NSM Dean Office (jdong2@csub.edu,klopez@csub.edu)
4. Academic Programs (eadams6@csub.edu)
5. Senate Approval (mdanforth@csub.edu,kvan-grinsven@csub.edu)
6. President (vharper@csub.edu,kvan-grinsven@csub.edu)
7. Academic Operations (amendoza145@csub.edu,czuniga-prado@csub.edu,org-curriculum@csub.edu)

Approval Path

1. Thu, 16 Oct 2025 17:22:13 GMT
   Zhongzhe Liu (zliu3): Approved for 806 - PHEN Curriculum Review
2. Fri, 17 Oct 2025 17:06:47 GMT
   Denise Gilliland (dgilliland): Rollback to 806 - PHEN Curriculum Review for NSM Curriculum Committee
3. Fri, 24 Oct 2025 01:02:26 GMT
   Zhongzhe Liu (zliu3): Approved for 806 - PHEN Curriculum Review
4. Fri, 24 Oct 2025 16:28:29 GMT
   Denise Gilliland (dgilliland): Rollback to 806 - PHEN Curriculum Review for NSM Curriculum Committee
5. Fri, 24 Oct 2025 23:49:00 GMT
   Zhongzhe Liu (zliu3): Approved for 806 - PHEN Curriculum Review
6. Mon, 27 Oct 2025 16:18:16 GMT
   Denise Gilliland (dgilliland): Approved for NSM Curriculum Committee
7. Mon, 27 Oct 2025 23:20:02 GMT
   Jane Dong (jdong2): Approved for NSM Dean Office

New Program Proposal

Date Submitted: Tue, 14 Oct 2025 22:11:13 GMT

Viewing: 09101 : Bachelor of Science in Mechanical Engineering (BSME)

Last edit: Mon, 27 Oct 2025 23:19:45 GMT

Changes proposed by: Tat Acharya (001517152)

Contact

User ID
001517152

Proposer Name
Tat Acharya

Proposer E-mail
tacharya@csub.edu

Proposer Department
Physics and Engineering

Program Information

Program Type
Bachelor of Science

Effective Catalog
2026-2027

Effective Term
Spring 2027

College
Natural Sciences, Mathematics, and Engineering

Department
Physics and Engineering

Program Title
Bachelor of Science in Mechanical Engineering (BSME)

Program Code
09101

CIP Code
14.1901 - 14.1901

Academic Career
Undergraduate

Support Type
State Support

Delivery Format
Fully Face-to-Face

Is the proposed program subject to WASC Substantive Change?
Yes

Explain
Dr. Elizabeth Adams will submit the Substantive Change Screening Form.

WASC Proposal Attachment
WASC declaration.docx

Program Overview and Rationale

Provide a brief descriptive overview of the program citing its 1) purpose and strengths, 2) fit with the institutional mission or institutional learning outcomes and 3) the compelling reasons for offering the program at this time.

The proposed B.S. Program in Mechanical Engineering is designed to meet the increasing demand for mechanical engineers by the local industries in Kern County and beyond. The educational objective of the program is to prepare students with baccalaureate degrees in mechanical engineering, who will fill in positions involving roles and responsibilities in the government agencies, education, and local industries, including but not limited to sustainable and conventional energy (e.g. petroleum), power, construction, aerospace, agriculture, and public health.

Within the B.S. degree program in Mechanical Engineering, the students will (a) build and develop strong technical expertise in areas of thermal-fluid sciences, mechanical systems, and material sciences, (b) assess the broader impacts of their technical knowledge on economic, environmental, societal, and ethical issues in engineering, (c) learn to effectively communicate with peers, supervisors, clientele, vendors, decision makers, and administrators, (d) commit to lifelong learning, and (e) engage in post-baccalaureate endeavors including engineering practice and/or graduate studies. The educational objectives of the program align with California State University, Bakersfield's institutional mission of providing high-quality, accessible education promoting student success and intellectual development, while fostering community engagement and contributing to regional growth.

In addition to the growing need for mechanical engineers in the region, the baccalaureate degree program will attract many students in Kern County who are unable to leave the region. The CSU campuses closest to Bakersfield that offer a baccalaureate degree program in mechanical engineering are the following: (a) California State University, Northridge (CSUN), which is 95 miles away and will require a student from Bakersfield to drive for 2 hours each way depending on traffic. (b) California State University, Fresno (CSU-Fresno), which is 110 miles away from Bakersfield, and will require a student to drive for 2.5 hours each way depending on traffic. The baccalaureate degree program in mechanical engineering at CSUB will therefore attract many students that are interested in pursuing a mechanical engineering degree but are unable to travel to campuses outside of Bakersfield. In addition, the baccalaureate degree program in mechanical engineering will help students build valuable connections with the local industries and will foster workplace learning.

The establishment of a dedicated mechanical engineering program at CSUB is essential to distinguish and strengthen the academic identity of this discipline within the broader engineering curriculum. While the current engineering program closely mirrors a mechanical engineering degree, the proposed program introduces three new core courses and several specialized electives that will

deepen students' understanding and technical proficiency in key areas of mechanical engineering. Cross-listing existing courses will ensure efficient resource utilization, while the new additions provide a more focused and industry-relevant education. This formal recognition of mechanical engineering as a standalone program will enhance the university's ability to meet ABET accreditation standards, attract high-achieving students, and respond more effectively to the workforce needs of Kern County and surrounding regions.

Program Description (i.e. Catalog Description)

The Bachelor of Science degree program in Mechanical Engineering will educate and train students in areas of thermal and fluid sciences, mechanical systems, and material sciences. The program involves courses designed to develop and strengthen fundamental skills in advanced mathematics including calculus and differential equations, physics, and chemistry. Students will also build hands-on skills in experimentation, scientific computing, numerical simulations, and design and fabrication, through course laboratory assignments and the senior year capstone design project. Finally, the program will also help students learn and develop communication and public speaking skills.

Program Requirements

Code	Title	Units
General Education Requirement		
Subject Area 1A: English Composition		3
Subject Area 1B: Critical Thinking [1]		0
Subject Area 1C: Oral Communication		3
Subject Area 2: Mathematical Concepts & Quantitative Reasoning [1]		0
Subject Area 3A: Arts		3
Subject Area 3B: Humanities		3
Upper Division 3 Arts or Humanities: (3UD) [1]		0
Subject Area 4: Social and Behavioral Sciences [1]		0
Upper Division 4 Social and Behavioral Sciences: (4UD) [1]		0
Subject Area 5A: Physical Science [1]		0
Subject Area 5B: Biological Sciences [1]		0
Subject Area 5C: Laboratory [1]		0
Upper Division 5 Science: (5UD) [1]		0
Subject Area 6: Ethnic Studies		3
General Education Subtotal		*15*
Campus Requirements		
First-Year Seminar (FYS) [2]		0
American Institutions: Government		3
American Institutions: History		3
Junior Year Diversity & Reflection (JYDR)		3
Graduation Writing Assessment Requirement (GWAR) [2]		0
Capstone [2]		0
Campus Requirement Subtotal		*9*
Major Requirements		
Lower Division		
MECH 1618	Introduction to Engineering I [2,3]	2
MECH 1628	Introduction to Engineering II [2,3]	2
MECH 2350	Engineering Graphics [3]	2
MECH 2110	Analytic Mechanics, Statics [3]	3
MECH 2140	Materials Science and Engineering [3]	4
MECH 2070	Electric Circuits [3]	4
MECH 2120	Analytical Mechanics, Dynamics [3]	3
MECH 2130	Mechanics of Materials [3]	3
Upper Division		
MECH 3300	Engineering Modeling and Analysis [3]	3
MECH 3110	Thermodynamics [3]	4
ECE 3340	Control Systems	4
MECH 3310	Numerical Methods and Applications in Engineering [3]	3
MECH 3120	Fluid Mechanics [3]	4
MECH 3400	Manufacturing Processes	2
MECH 4610	Thermodynamics II	3
MECH 4110	Heat Transfer [3]	4

MECH 4120	Machine Design [3]	4
MECH 4900	Senior Design Project A [3]	2
MECH 4918	Senior Design Project B [1,2,3]	3
Electives		
Select 5 units from the following list of electives		5
MECH 3450	HVAC System Design	
MECH 4500	Computational Fluid Dynamics	
MECH 4700	Special Topics in Engineering [3]	
MECH 4800	Research Participation [3]	
MECH 4260	Economics of Engineering Design [3]	
Cognates		
CHEM 1000	Foundations of Chemistry	3
MATH 2510	Single Variable Calculus I	4
MATH 2520	Single Variable Calculus II	4
CHEM 1001	Foundations of Chemistry Laboratory	2
PHYS 2210	Physics for Scientists and Engineers I	4
PHYS 2220	Physics for Scientists and Engineers II	4
MATH 2533	Multivariable and Vector Calculus	4
MATH 2540	Ordinary Differential Equations	4
PHIL 3318	Professional Ethics [1,2]	3
Additional Units Needed Towards Graduation		**0**
Total Units		**120**

1 Some General Education requirements are covered within the major by the standard requirement or General Education Modification (GEM). The GEM used in MECH program is the approved GEM used in the ENGR program, which is as follows:
General Education Modifications (GEMS)
- The required Physics courses (PHYS 2210 (https://catalog.csub.edu/search/?P=PHYS%202210) Physics for Scientists and Engineers I or PHYS 2220 (https://catalog.csub.edu/search/?P=PHYS%202220) Physics for Scientists and Engineers II) or CHEM 1000 (https://catalog.csub.edu/search/?P=CHEM%201000) Foundations of Chemistry will satisfy Subject Area 5A. CHEM 1001 (https://catalog.csub.edu/search/?P=CHEM%201001) Foundations of Chemistry Laboratory will satisfy Subject Area 5C.
- Subject Area 1B is satisfied through the following courses: PHYS 2210 or PHYS 2220 or MECH/ENGR/ECE/PHYS 2070.
- Subject Area 5B is satisfied through the following courses: MECH 2140 or MECH 3120 or MECH 4110.
- Subject Area 4 is satisfied by American Institution - Government (American & Constitutional Ideals) or is also met through EAC/ABET Criterion 3 (Student Outcomes) outcome 2 or outcome 4. Outcome 2 is met through MECH/ENGR 4900. Outcome 4 is met through MECH/ENGR 4918.
- Any of the required calculus courses (MATH 2310 (https://catalog.csub.edu/search/?P=MATH%202310) Single Variable Calculus I for Engineers or MATH 2320 (https://catalog.csub.edu/search/?P=MATH%202320) Single Variable Calculus II for Engineers or MATH 2510 (https://catalog.csub.edu/search/?P=MATH%202510) Single Variable Calculus I or MATH 2520 (https://catalog.csub.edu/search/?P=MATH%202520) Single Variable Calculus II or MATH 2533 Multivariable and Vector Calculus or MATH 2540 Ordinary Differential Equations) will satisfy Subject Area 2.
- Upper Division Area 4 is met through EAC/ABET Criterion 3 (Student Outcomes) outcomes 2 or 4. Outcome 2 is met through MECH/ENGR 4900. Outcome 4 is met through MECH/ENGR 4918.
- Upper Division Area 5 is satisfied through the following courses: MECH 3110 or MECH 3120 or MECH 3300 or MECH 3310 or MECH 4110, or MECH 4120.
- PHIL 3318 (https://catalog.csub.edu/search/?P=PHIL%203318) Professional Ethics must be taken and will satisfy Upper Division Area 3.

2 Some Campus Requirements are covered within the major.
- MECH 1618 Introduction to Engineering I and MECH 1628 Introduction to Engineering II satisfy the FYS requirement for entering Freshmen
- GWAR is satisfied with the completion of PHIL 3318 Professional Ethics Course.
- Capstone is satisfied with the completion of MECH 4918 Senior Design Project B.

3 These courses are cross listed with Engineering (ENGR) courses.

Program Learning Outcomes

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

PLO #1: Succeed in the mechanical engineering industry or continue for a position in academia through technical competence, effective communication, leadership skills, and teamwork.

- 1. Goal 1: Critical reasoning and problem solving skills
- - 1.A Ability to read critically
- 1.B Ability to write critically
- 1.C Ability to speak critically
- 1.D Ability to think critically
- 1.E Capacity for life-long learning
- 1.F Critical Problem Solving
- 3. Goal 3: Discipline-based and career knowledge
- - 3.A Knowledge in the major discipline
- 3.B Ability to apply knowledge of discipline
- 3.C Career preparation and planning
- 4. Goal 4: Numerical literacy
- - 4.A Mathematical calculations and estimation skills
- 4.B Quantitative reasoning skills.
- 4.C Apply quantitative reasoning skills to the real world

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

PLO#2: Maintain a lifelong interest in learning for professional and personal development.

- 3. Goal 3: Discipline-based and career knowledge
- - 3.A Knowledge in the major discipline
- 3.B Ability to apply knowledge of discipline
- 3.C Career preparation and planning
- 5. Goal 5: Students will become engaged citizens.
- - 5.A Engage in university and community activities
- 5.B Interpersonal skills
- 5.C Knowledge of self
- 5.D Responsibility in group settings
- 5.E Ability to work independently
- 6. Goal 6: Students will develop a well rounded skill set.
- - 6.A Possess and demonstrate an ethical framework
- 6.B Understanding of cultural and ethnic diversity.
- 6.C Research methods/analysis/technology for problem solving
- 6.D Interdisciplinary knowledge

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

PLO#3: Practice mechanical engineering in a manner that is ethically responsible and consistent with regulatory and social concerns.

- 6. Goal 6: Students will develop a well rounded skill set.
- - 6.A Possess and demonstrate an ethical framework

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

SLO #1
An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

1a Use calculus and differential equations to solve complex engineering problems
1b Use physical concepts and laws to solve complex engineering problems
1c Identify and describe a complex engineering problem

- 1. Goal 1: Critical reasoning and problem solving skills
- - 1.D Ability to think critically
- 1.F Critical Problem Solving
- 4. Goal 4: Numerical literacy
- - 4.A Mathematical calculations and estimation skills

- 4.B Quantitative reasoning skills.
- 4.C Apply quantitative reasoning skills to the real world

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

SLO#2
An ability to apply engineering design to produce solutions that meet specific needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

2a. Follow systematic and logical design procedures and define specifications to meet project requirements. Implement, validate, and meet design goals.
2b. Evaluate different alternatives for a design taking into consideration public health, safety, and welfare.

- 3. Goal 3: Discipline-based and career knowledge
- - 3.A Knowledge in the major discipline
- 3.B Ability to apply knowledge of discipline
- 6. Goal 6: Students will develop a well rounded skill set.
- - 6.A Possess and demonstrate an ethical framework

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

SLO#3 An ability to communicate effectively with a range of audiences

3a Write quality technical reports or term papers
3b Prepare and deliver well-organized presentations
3c Respond and discuss relevant questions during oral presentations

- 2. Goal 2: Oral and written communication
- - 2.A Writing Skills
- 2.B Oral presentation skills
- 2.C Competence in information management
- 2.D Computer literacy

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

SLO#4 An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

4a Identify ethical issues involved in a professional setting. Discuss related codes of ethics such as NSPE code of ethics.
4b Follow safety standards and procedures
4c Discuss the impact of engineering solutions on society and the environment
4d Discuss the economic impact and constraints of engineering solutions

- 6. Goal 6: Students will develop a well rounded skill set.
- - 6.A Possess and demonstrate an ethical framework

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

SLO#5 An ability to function effectively in a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

5a Divide a project into manageable tasks and balance the load among team members.
5b Participate in group meetings, meet deadlines, and achieve project goals.

- 5. Goal 5: Students will become engaged citizens.
- - 5.B Interpersonal skills
- 5.C Knowledge of self
- 5.D Responsibility in group settings
- 6. Goal 6: Students will develop a well rounded skill set.
- - 6.D Interdisciplinary knowledge

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

SLO#6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.

6a Design and setup experiments and follow specified procedures. Perform measurements and collect data.
6b Analyze data, discuss results, and compare them against theory.

- 1. Goal 1: Critical reasoning and problem solving skills
- • 1.F Critical Problem Solving
- 4. Goal 4: Numerical literacy
- • 4.A Mathematical calculations and estimation skills
- 4.B Quantitative reasoning skills.
- 4.C Apply quantitative reasoning skills to the real world
- 6. Goal 6: Students will develop a well rounded skill set.
- • 6.C Research methods/analysis/technology for problem solving

Program Learning Outcome. Identify each PLO one by one (select the green "+" to add)

SLO#7 An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

7a Find relevant information about a topic of interest from a wide collection of sources.
7b Be involved in professional activities such as organizations, seminars, and conferences.

- 1. Goal 1: Critical reasoning and problem solving skills
- • 1.E Capacity for life-long learning
- 3. Goal 3: Discipline-based and career knowledge
- • 3.A Knowledge in the major discipline
- 3.B Ability to apply knowledge of discipline
- 6. Goal 6: Students will develop a well rounded skill set.
- • 6.D Interdisciplinary knowledge

Learning Outcomes Display (show only)

Course Code	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10
MECH 1618										
MECH 1628										
MECH 2350										
MECH 2110										
MECH 2140	#		#							
MECH 2070										
MECH 2120										
MECH 2130										

MECH 3300										
MECH 3110	#									
ECE 3340										
MECH 3310										
MECH 3120	#									
MECH 3400	#									
MECH 4610										
MECH 4110			#							
MECH 4120	#									
MECH 4900	#	#	#							
MECH 4918	#	#	#							
MECH 3450										
MECH 4500										
MECH 4700										
MECH 4800										
MECH 4260										
CHEM 1000										
MATH 2510										
MATH 2520										
CHEM 1001										
PHYS 2210										
PHYS 2220										
MATH 2533										
MATH 2540										

PHIL 3318										

Download the Curriculum Map PDF from the CIM Program Homescreen

Attach Curriculum Map

1Curriculum Map-rev1.docx

Attach 5 Year Assessment Plan

2five-year assessment plan-rev2.docx

Does the program use courses offered by other programs?

Yes

Affected Departments

Department
Mathematics
Computer & Electrical Engr & Computer Science
Chemistry and Biochemistry

Attach letter of support from relevant department(s)

DepartmentSupportLetter_ElectricalEngineering.pdf
Mech_Eng_Degree program_F25_signed_Chemistry.pdf
ME_LetterSupport_Mathematics.pdf

The total number of units required for graduation (not just the total for the major):

120

Does this baccalaureate program require more than 120-semester units?

No

Does this program have any concentrations or emphasis planned under the proposed major?

No

List any new courses that are: (1) needed to initiate the program or (2) needed during the first two years after implementation. Include proposed catalog descriptions for new courses. For graduate program proposals, identify whether each new course would be at the graduate- or undergraduate-level.

MECH 3400: Manufacturing Processes (2), MECH 3450 HVAC System Design (3), MECH 4500 Computational Fluid Dynamics (2).

Attach a proposed course-offering plan for the first three years of program implementation, indicating likely faculty teaching assignments.

3 Proposed course offering plan with teaching assignments-rev2.docx

Please specify the total number of prerequisite units required for the major. Note: The prerequisites must be included in the total program unit count.

29

For undergraduate programs, specify planned provisions for articulation of the proposed major with community college programs.

Roadmaps are attached here.

Academic Roadmap Attachment

4Academic Roadmaps-rev4.docx

For a new program - does this program align with an ADT?

No

Does this program change create new alignment with an ADT?

No

Is this program:

Subject to accreditation

Describe how accreditation requirements will be met, if applicable.

We will apply for ABET accreditation in January 2029. It is currently accredited under WSCUC.

Anticipated Date of Accreditation

2029

Student Demand

Provide compelling evidence of student interest in enrolling in the proposed program. Types of evidence vary and may include (for example), national, statewide, and professional employment forecasts and surveys; petitions; lists of related associate degree programs at feeder community colleges; reports from community college transfer centers; and enrollments from feeder baccalaureate programs.

Student surveys were conducted at Kern High School District and at the local community colleges.

Till now, the survey circulated in Kern High School District has been responded to by 147 students and approximately 66 % of the students suggested that they would be interested in joining the baccalaureate degree program in mechanical engineering if it was offered by CSUB.

The survey conducted among community college students has been responded to by 10 students with 80% indicating that they would be interested in joining the baccalaureate degree program in mechanical engineering at CSUB.

Identify how issues of diversity and access to the university were considered when planning this program. Describe what steps the program will take to insure ALL prospective candidates have equitable access to the program. This description may include recruitment strategies and any other techniques to insure a diverse and qualified candidate pool.

When planning the mechanical engineering program, issues of diversity and access were central considerations to ensure an inclusive and equitable environment. The program incorporates several strategies to promote diversity and widen access. Targeted recruitment campaigns will be implemented, including outreach initiatives aimed at feeder community colleges, partnerships with community organizations, and high schools through open house and college night events. CSUB engineering is not impacted, allowing for the admission of students from diverse backgrounds, experiences, and challenges. To further support underrepresented students, the program will establish mentorship initiatives, peer support networks, and leverage the CSUB resources for students which are designed to foster an inclusive community and provide necessary academic and social support. Financial barriers will be addressed through scholarships (currently NSME has an S-STEM grant) and financial aid targeted at students from diverse socioeconomic backgrounds, ensuring economic constraints do not hinder access. Additionally, the curriculum will be designed to incorporate diverse perspectives related to engineering challenges, promoting cultural competency and inclusivity. Efforts will also be made to create a welcoming environment through inclusive policies. The program commits to continuous evaluation by regularly reviewing recruitment, retention, and support strategies through data collection and feedback, ensuring ongoing improvement and responsiveness to the needs of diverse applicant pools. Through these comprehensive steps, the program aims to foster a diverse, equitable, and accessible environment where all qualified prospective candidates can succeed and contribute to the new program in mechanical engineering.

Describe professional uses of the proposed degree program.

Graduates of the proposed Bachelor of Science in Mechanical Engineering program at CSU Bakersfield will be well prepared for diverse and high-demand roles across multiple industries. With strong foundational knowledge in thermodynamics, mechanics, materials, fluid systems, and control systems, future graduates will be equipped to work in engineering design, analysis, testing, manufacturing, and operations.

Career opportunities span across traditional and emerging sectors vital to Kern County and Southern California economies, including, but not limited to energy (oil, gas, and renewables), water systems, agriculture technology, aerospace, and transportation. The curriculum also supports pathways to Professional Engineer (PE) licensure and graduate studies in engineering, applied sciences, or business administration.

Potential job outcomes include, but are not limited to:
- Mechanical Engineer
- Design Engineer
- Manufacturing Engineer
- Systems Engineer
- Energy Systems Engineer
- HVAC Engineer
- Product Development Engineer
- Engineering Analyst
- Maintenance Engineer
- Quality Assurance Engineer
- Aerospace Engineer
- Plant Engineer
- Mechatronics or Automation Engineer

• Research and Development Engineer
• Water Resource Engineer
• Thermal Systems Engineer

Additionally, graduates may eventually qualify for leadership roles such as:
• Project Manager
• Technical Sales Engineer
• Engineering Consultant
• Operations Manager

This degree also provides the academic foundation necessary to pursue the Fundamentals of Engineering (FE) exam and eventually obtain a PE license, which enhances career advancement and credential recognition in California and nationwide.

Anticipated Student Demand (Majors)

	At Initiation	After 3 Years	After 5 Years
Number of Majors (Annual)	45	105	135
Number of Graduates (Cumulative)	0	15	45

Attach documentation as needed:

5Anticipated Student Demand.docx

Societal and Public Need for the Proposed Degree Major Program

List other California State University campuses currently offering or projecting the proposed degree major program; list neighboring institutions, public and private, currently offering the proposed degree major program.

Institution(s)
Cal Poly San Luis Obispo
Cal Poly Pomona
Cal State Long Beach
Cal State LA
CSU Northridge
Chico State
Sacramento State
San Diego State
Cal State Fullerton
Cal State East Bay
Cal Maritime

Describe differences between the proposed program and programs listed above.

The proposed Bachelor of Science in Mechanical Engineering at CSUB is not currently offered at CSUB nor at any other public or private institution within immediate proximity to the Bakersfield region. The nearest CSU campus offering a comparable program is California State University, Northridge (CSUN), located approximately 100 miles southeast of Bakersfield—well outside daily commuting range for most students.

While other CSU campuses such as Cal Poly San Luis Obispo, Cal Poly Pomona, and CSU Los Angeles offer accredited mechanical engineering degrees, these institutions are located more than 100 miles away, limiting access for students from Kern County and surrounding areas. Similarly, while community colleges such as Bakersfield College offer preparatory coursework in engineering, they do not provide a pathway to a full baccalaureate degree in mechanical engineering without requiring transfer.

Given the significant regional demand in Bakersfield for mechanical engineers in the energy, agriculture, manufacturing, and water infrastructure sectors, the absence of a local program places an undue burden on students seeking this career path. The proposed program at CSUB will provide affordable, accessible, and high-quality mechanical engineering education to a traditionally underserved region, while also meeting the growing workforce needs of Bakersfield and Kern County.

List other curricula currently offered by the campus that are closely related to the proposed program.

Curricula
B.S. Engineering

Describe community participation, if any, in the planning process. This may include prospective employers of graduates.

The letters are attached. We have support from what company and they specialize in?

Provide applicable workforce demand projections and other relevant data.

Workforce Demand Projections.docx
CSUB Letter of Support_ME Program_WZI.pdf
CSUB Letter of Support_ME Program_CRC.pdf

Existing Support Resources for the Proposed Degree Major Program

List faculty who would teach in the program, indicating rank, appointment status, highest degree earned, date and field of highest degree, professional experience, and affiliations with other campus programs. Note: For all proposed graduate degree programs, there must be a minimum of five full-time faculty members with the appropriate terminal degree.

Tathagata Acharya PhD, Mechanical Engineering, 2014
Galina Dzyubenko PhD, Physics, 1986
Gyeong Sung Kim PhD, Mechanical Engineering, 2022
Yize Li PhD, Physics, 2009
Zhongzhe Liu PhD, Chemical Engineering, 2014
Krishna Prasai PhD, Physics, 2013
Dayanand Saini PhD, Petroleum Engineering 2011
Karim Salehpoor PhD, Mechanical Engineering 2007

Describe facilities that would be used in support of the proposed program.

A. Offices, Classrooms, and Laboratories

The following are the details of the facilities that are available to the B.S. degree program in mechanical engineering at CSUB:

Offices: All full-time faculty members have an office in the Science III building on the CSUB main campus (Bakersfield), while adjunct faculty members have shared offices. The offices provide privacy for meetings and advising sessions with students. Each office has a computer connected to the campus network, allowing faculty access to most software applications required for teaching and faculty research and development. In addition, dedicated offices are available to the department's administrative support coordinator and instructional support technician.

Classrooms: The department does not have sole control of any classrooms, but these are allocated centrally by the Office of Academic Scheduling. Therefore, program classes are scheduled across the campus. All classrooms are "smart" because they are equipped with a network computer and a projector.

Laboratory facilities. The department does not have dedicated computer laboratories. However, the program has access to several computer laboratories across campus that are shared with other departments to teach computer-based laboratories. Table 8 shows the details of these facilities:

In addition, the department keeps a cart with laptops (17 Dell Latitude 6500 and 5 Dell Latitude E5430) running MS Office, MATLAB, NI MultiSim. The cart is rolled into regular laboratories as needed.

The department has scheduling control of the facilities listed below for instructional laboratory courses. Faculty can authorize the use of engineering laboratories outside of class time. However, the faculty must inform the department staff of (a) the list of allowed students and (b) any safety restrictions on access outside of class time, such as requiring an instructional student assistant (CSUB's equivalent of a T.A.) to be present.

EC 102. This is a Properties of Materials laboratory. The room has fume hoods, 223 water, and drains.

EC 103. This is a faculty research laboratory. This room has a Particle Image Velocimetry (PIV) apparatus in addition to a flow rig which can be used for senior design projects within MECH 4900 and MECH 4918.

EC 201. This laboratory is shared with the Department of Computer and Electrical Engineering and Computer Science (CEE/CS). They will teach ECE 3370 Power Systems and MECH/ENGR/ECE 1618, 1628 Introduction to Engineering I & II Activities there. The Department of Physics and Engineering will teach MECH/ENGR/ECE 1618, 1628 Introduction to Engineering I & II Activities, and MECH/ENGR/ECE 2070 Electric Circuits.

EC 202. This is a faculty research laboratory. In addition, certain elective courses may be taught here. The room has fume hoods, water, and drains.

SCI III 106. This room is shared with the Department of CEE/CS. This lab contains remote sensors and calibration instruments.

SCI II 177. Presently this room is being used as the laboratory for ENGR 3120 Fluid Mechanics, which will be cross-listed with MECH 3120.

Fab Lab. This is used by students to aid in their (both freshman and senior) projects. The CSUB Fab Lab is part of the Fab Foundation network. All labs in the network must contain a standard set of hardware and software, at a minimum; items such as a computer-networked controlled (CNC) router, 3D printers, laser cutters, vinyl cutters, milling machine, laptop computers, various circuit boards, and circuitry items, soldering guns, CNC sewing machine, and multiple corresponding software packages. The Fab Lab is staffed by a Fab Lab Specialist, three paid interns, and eleven unpaid interns.

Storage. The department has a storage container ("sea train") where equipment can be stored. Equipment for courses not being taught during a particular term can be stored for optimal use of lab space.

B. Computing Resources

The department does not have specific, dedicated computer resources; however, students in the program will have access to the following resources:

SCI III 324. Mechanical Engineering majors will have access to the CEE/CS Tutoring Center. This is a walk-in lab with twenty-two Linux computers (sixteen Dell Precision T3400 224 and six Dell Optiplex 360) which are available for student use, even if they are not seeking tutoring. The CEE/CS Tutoring Center is open for computer use Monday – Thursday from 8:00am to 5:30pm and on Fridays from 8:00am – 3:30pm.

WSL Computer Lab A. This is a large area in the library with 11 Apple iMacs 21.5, and 68 Dell Optiplex 3030 AIO computers. These are general-purpose computers with internet access with MS Office, and MATLAB. It is available to students 7 AM-10 PM, Monday through Thursday, 7 AM - 5 PM on Friday, 9 AM - 5 PM Saturday, and 11 AM -7 PM on Sundays.

Computer maintenance is done through the campus ITS Department on an as-needed basis and during campus breaks for upgrades and maintenance. The ITS personnel are solely responsible for handling (i.e., installation and updates) any new software applications needed for instruction purposes. Minor servicing is done through the ITS Help Desk and student employees. Most of these minor service needs are usually addressed remotely from the Help Desk.

Wi-Fi is available throughout the campus. Students can access the network with a NetID provided by the university.

C. Guidance

Every lab course starts with safety training. Students are required to undergo this training on the first day of the lab and sign a document indicating that they did so. The instructor also fills out a corresponding form. This training requirement applies to all students, including those working on research with a faculty mentor and high school students participating in summer research programs. These records are audited by the NSME Lab Safety Coordinator every term and kept by the department's Instructional Support Technician for three years. Students learn how to use the laboratory equipment under the guidance and supervision of a faculty member during the lab session of the associated course. Students are taught the proper inspection and control procedures before being allowed to work with the equipment to ensure the safe operation and handling of the equipment.

All Fab Lab users are required to complete the CSUB Fab Lab safety orientation workshop and comply with all CSUB Fab Lab safety rules (a copy of which is posted in the CSUB Fab Lab) before using any CSUB Fab Lab equipment. The Fab Lab Director or other available staff members conduct these orientations as needed, and a signed CSUB Fab Lab User

See supporting documents for details.

Provide evidence that the institution provides adequate access to both electronic and physical library and learning resources.

The Walter W. Stiern Library opened in 1994 and is the largest building on the California State University, Bakersfield campus. The 150,000-square-foot building houses nearly half a million volumes and provides electronic access to more than 30,000 periodical titles via its hundreds of computer terminals. The library is managed and operated by 29 staff members and faculty librarians.

On the main floor, students can check out books, laptop computers, and iPads, obtain research help from a librarian at the reference desk, borrow reserve materials, or use the reference computers to access resources. The library's users check out more than 200,000 physical and electronic books per year on average. The Interlibrary Loan Department, which performs more than 15,000 borrowing and

lending transactions per year, is located on the first floor, as are the reference, California History, Multicultural, First Year Experience, and law collections. The Resource Sharing Department, which performs more than 4,000 borrowing and lending transactions per year, is located on the first floor, as are the reference, juvenile, California History, Multicultural, career and student success, law, and popular reading collections.

The 2nd floor contains the library's extensive collection of print periodicals. The 3rd and 4th floors house the primary book collections. Computer Science, Engineering, and other technology-related books are located on the 4th floor. Texts related to general Engineering number 634 in-print books and 101 in-print journals. Texts related to Computer Engineering, Electronic Engineering, and Electronics number 1401 in-print books and 466 in-print journals. This circulation collection is the most extensive academic book collection in the southern San Joaquin Valley. Group and individual study rooms are also found on these floors.

Ten full-time Librarians, all of whom hold advanced degrees in library science, on average, answer more than 500 reference questions per week at the reference desk. They also provide online reference assistance through the 24-hour Question Point service and offer in-depth help to students through the Individual Research Assistance Program. There is a tenured Full Librarian assigned to the engineering subject area. Services provided by the Librarian include consultation with students and faculty, both in-person and online, and orientation programs.

Access to the library's collection and electronic resources is provided online via the library's homepage: library.csub.edu. From the homepage, CSUB users can connect to eBooks, research databases and reference resources. All these resources can be accessed off campus by CSUB students and faculty. Faculty and staff have access to materials from across all 23 campuses of the California State University via the system-wide shared library catalog, OneSearch, and the system-wide resource sharing system, CSU+. CSUB users may access a huge collection of electronic engineering books via O'Reilly, ProQuest Academic Complete, and EBSCOhost eBook collections, which are also accessible in OneSearch. Periodical databases, such as EBSCOhost, ScienceDirect, IEEE Xplore Digital Library, ACM Digital Library, ASABE Technical Library, and OnePetro are a few of the 196 different databases CSUB students have access to. These databases cover a wide spectrum of subject areas and provide citations up to full text articles. Users can access over 5000 Engineering journals through the subscribed databases. These databases cover a broad spectrum of engineering areas and provide citations up to full-text articles. Users can access over 5000 engineering journals through these databases. Online reference resources such as Gale eBooks Library allow users to search from anywhere, anytime.

Describe available academic technology, equipment, and other specialized materials.

Students enrolled in the baccalaureate degree program in mechanical engineering will benefit from a wide range of academic technology, equipment, and specialized materials which are as follows:

A. Classroom Technology:
• Smart and Flex Classrooms: These are classrooms equipped with built-in computers, projectors, and easy to control panels.
• Zoom-ready Flex Rooms: These rooms will allow hybrid teaching with remote participation.
• S2 Hybrid Classrooms: These rooms will include cameras and microphones to capture both instructors and students for synchronous hybrid teaching.

B. Computer Laboratories:
• General Use Laboratories: These are open to all students and are equipped with standard software such as Microsoft Office, Zoom, and Adobe Acrobat.
• Program Specific Computer Laboratories: These labs are equipped with software such as the following:
o AutoCAD: Mechanical engineering software used widely in the industry for engineering drawing and drafting
o SolidWorks: Mechanical engineering software useful for 3D drawing and solid dynamics.
o MATLAB: Widely used programming and computing software used by engineers
o Mathematica: Programming and computing software used by engineers
o ANSYS Fluent: State-of-the-art and industry standard computational fluid dynamics (CFD) software
• Statistical and Data Analysis: SPSS, R, R-Studio, SAS
• Virtual Computer Laboratory: This is a virtual lab with standard software and engineering software, available to students remotely, and from anywhere.

C. Media and Video Tools:
• Panopto: A video-on-demand platform for uploading and sharing course-related videos within the campus.
• Instructional Television (ITV): Used for distance learning.
• Live Audio/Video Event Support: Available for campus events, including equipment rental and technical staffing.

D. CSUB Information Technology Support: The Information Technology Services (ITS) department at California State University, Bakersfield (CSUB) plays a central role in supporting the university's digital infrastructure and academic mission

Additional Support Resources Required

Describe additional faculty or staff support positions needed to implement the proposed program.

We have adequate faculty and staff to initiate the program. As the program grows, we may request hiring new faculty members.

Describe the amount of additional lecture and/or laboratory space required to initiate and to sustain the program over the next five years. Indicate any additional special facilities that will be required. If the space is under construction, what is the projected occupancy date? If the space is planned, indicate campus-wide priority of the facility, capital outlay program priority, and projected date of occupancy. Major capital outlay construction projects are those projects whose total cost is $610,000 or more (as adjusted pursuant to Cal. Pub. Cont. Code §§ 10705(a); 10105 and 10108).

We will have our energy innovation building. However, what we have presently is adequate to initiate the program.

Include a report written in consultation with the campus librarian which indicates any necessary library resources not available through the CSU library system. Indicate the commitment of the campus to purchase these additional resources.

7Librarian Report.docx

Indicate additional academic technology, equipment, or specialized materials that will be (1) needed to implement the program, and (2) needed during the first two years after initiation. Indicate the source of funds and priority to secure these resource needs.

The NSME Dean's Office has acquired industry donations to establish a machine shop within the first two years after initiation.

Self-Support Program Information

Confirm that the proposed program will not be offered at places or times likely to supplant or limit existing state-support programs.

No

Explain how at least one of the following additional criteria shall be met:

The courses or program are primarily designed for career enrichment or retraining;

No

The location of the courses or program is significantly removed from permanent, state-supported campus facilities;

No

The course or program is offered through a distinct technology, such as online delivery;

No

For new programs, the client group for the course or program receives educational or other services at a cost beyond what could be reasonably provided within CSU Operating Funds;

No

For existing programs, there has been a cessation of non-state funding that previously provided for educational or other services costing beyond what could be reasonably provided within CSU Operating Funds.

No

Specify how all required EO 1099 self-support criteria are met.

Not applicable.

The proposed program does not replace existing state-support courses or programs.

Yes

Academic standards associated with all aspects of such offerings are identical to those of comparable state-supported CSU instructional programs.

Yes

Basic Cost Recovery Budget Elements (Three to five year budget projection)

Student per-unit cost:

0

Number of units producing revenue each academic year:

0

Total cost a student will pay to complete the program:

0

Revenue

	1st Year	2nd Year	3rd Year	4th Year	5th Year
Student Fees	0	0	0	0	0
Projected Attrition Numbers	0	0	0	0	0
Totals	0	0	0	0	0

Additional Revenue Sources

	1st Year	2nd year	3rd Year	4th Year	5th Year
Grants	0	0	0	0	0
Other	0	0	0	0	0
Totals	0	0	0	0	0

Direct Expenses

	1st Year	2nd Year	3rd Year	4th Year	5th Year
Intstructional costs	0	0	0	0	0
Operational costs	0	0	0	0	0
Extended Education costs	0	0	0	0	0
Technology development and ongoing support	0	0	0	0	0
Totals	0	0	0	0	0

Indirect Expenses

	1st Year	2nd Year	3rd Year	4th Year	5th Year
Campus Partners	0	0	0	0	0
Campus reimbursement general fund	0	0	0	0	0
Extended Education overhead	0	0	0	0	0
Chancellor's Office overhead	0	0	0	0	0
Totals	0	0	0	0	0

Additional Questions

Is this program an accredited educator preparation program?

No

Do you want email notification when the course is fully approved?

Yes

Supporting Documentation

8Supporting Documents-rev2.docx
csu-new-degree-proposal-for department faculty_finalized-REV18.docx
BSME New Program Proposal Letter copy.docx
Support letter for BS in ME (NSME Dean).pdf

Reviewer Comments

Denise Gilliland (dgilliland) (Fri, 17 Oct 2025 17:06:47 GMT): Rollback: Please make changes based on Curriculum Committee 1st reading.

Denise Gilliland (dgilliland) (Fri, 24 Oct 2025 16:28:29 GMT): Rollback: Please make small corrections recommended by the Curriculum Committee on 10/24/2025. Thank you!

Denise Gilliland (dgilliland) (Mon, 27 Oct 2025 16:17:47 GMT): https://csub.box.com/s/0mzyai37o848bbeepakmgf7uy8hk9esx

Key: 520