**Bakersfield College**

**Comprehensive Program Review**

**I. Program Information:**

Program Name: Engineering Technology

Program Type: [x]  Instructional [ ]  Student Affairs [ ]  Administrative Service

***Bakersfield College Mission****:* Bakersfield College provides opportunities for students from diverse economic, cultural, and educational backgrounds to attain Associate and Baccalaureate degrees and certificates, workplace skills, and preparation for transfer. Our rigorous and supportive learning environment fosters students’ abilities to think critically, communicate effectively, and demonstrate competencies and skills in order to engage productively in their communities and the world.

Describe how the program supports the Bakersfield College Mission:

The Engineering Technology program supports the institutional mission by providing the academic coursework and technical training to prepare students for employment in engineering technician positions. Students are not only prepared for such support positions by completing transfer level mathematics, physics, chemistry, and general education courses, but also by developing technical skill sets through specific technology coursework such as AutoCAD, SolidWorks, manufacturing, and electronics.

Historically, this program was a transfer program to four year university Engineering Technology programs. However, with the discontinuation of many Engineering Technology programs in California public universities and the low transfer rate in the program, the Engineering and Industrial Technology (EIT) Department is currently modifying the degree program to better prepare students for engineering technician positions to meet local workforce need. As a result, fewer engineering and math courses along with more technology courses will be integrated into the degree program. In addition, this updated program will fit better with the efforts to establish a Baccalaureate degree in Industrial Automation.

Program Mission Statement:

Engineering Technology is an instructional program that strives to offer effective and student-centered instruction and training in the engineering technician discipline, being sensitive to the diversity of our students, their educational needs, and career goals.

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| ***Instructional Programs only:***1. List the degrees and Certificates of Achievement the program offers
2. If your program offers both an A.A. and an A.S. degree in the same subject, please explain the rationale for offering both.
3. If your program offers a local degree in addition to the ADT degree, please explain the rationale for offering both.
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**II. Progress on Program Goals, Future Goals, and Action Plans:**

1. List the program’s current goals. For each goal (minimum of 2 goals), discuss progress and changes. If the program is addressing more than two goals, please duplicate this section.

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| **Current Program Goals** | **Which institutional goals from the 2015-2018 Strategic Directions for Bakersfield College will be advanced upon completion of this goal? (select all that apply)** | **Progress on goal achievement****(choose one)** | **Comments** |
| 1. Continue to address gaps in core indicators, revised: faculty are investigating female enrollment. | [ ]  1: Student Learning [ ]  2: Student Progression and Completion [ ]  3: Facilities [x]  4: Oversight and Accountability [x]  5: Leadership and Engagement  | [ ]  Completed: \_\_\_\_\_\_\_\_\_\_ (Date) [ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[x]** Ongoing: \_\_2015-16\_ (Date) | Much work still needs to be completed on this goal. |
| 2. Revise the engineering technology A.S. degree program from a transfer preparation program to a technician-oriented degree. | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [x]  5: Leadership and Engagement  | [ ]  Completed: \_\_\_\_\_\_\_\_\_\_ (Date) [ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[ ]** Ongoing: \_\_\_\_\_\_\_\_\_\_ (Date) | Proposal has been submitted to the curriculum committee, however, additional documentation has been requested. |

1. List the program’s goals for the next three years. Ensure that stated goals are specific and measurable. State how each program goal supports the College’s strategic goals. Each program must include an action plan.

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| **Future Goals** | **Which institutional goals from the 2015-2018 Strategic Directions for Bakersfield College will be advanced upon completion of this goal? (select all that apply)** | **Action Plan** | **Timeline for Completion** | **Lead person for this goal** |
| 1. Strengthen articulation of transfer students to the two remaining CSU programs.
 | [ ]  1: Student Learning [ ]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [x]  5: Leadership and Engagement  | Contact BC’s articulation officer and faculty at Cal Poly Pomona and CSU, Long Beach to begin developing articulation. |  | Jason Dixon |
| 2. | [ ]  1: Student Learning [ ]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  |  |  |  |

**III. Trend Data Analysis:**

Review the data provided by Institutional Research. Provide an analysis of program data throughout the last three years, including:

1. Changes in student demographics (gender, age and ethnicity).
* Gender makeup continues to remain steady with approximately 15% of the students being female.
* Age and ethnic composition closely parallels that of the entire college.
1. Changes in enrollment (headcount, sections, course enrollment, and productivity).
* The 2014-15 unduplicated headcount increased upward by 18% to 280.
* FTES increased to 62.6 in 2014-15, up from 51.5 in 2013-14.
* Last year FTES/FTEF productivity was 13.3 as a result of increased class sections, more students, and increased faculty, full-time and adjunct.
1. Changes in achievement gap and disproportionate impact.

No significant changes.

1. Success and retention for face-to-face as well as online/distance courses.

The success rate for engineering was 90% and the retention rate was 80%.

1. Degrees and certificates awarded (three-year trend data for each degree and/or certificate awarded).

In the past three years one degree has been awarded.

1. Other program-specific data (please specify or attach).
2. List degrees and certificates awarded (three-year trend data for each degree and certificate awarded). Include targets (goal numbers) for the next three years.

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| Full Name of Degree or Certificate | 2011- 2012 | 2012- 2013 | 2013- 2014 | 2014- 2015 | 2015- 2016 | 2016- 2017 |
| A.S. Engineering Technology  |  |  |  | 1 |  | 2 |
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**IV. Program Assessment:**

Use attached **Assessment Report Form Comprehensive Tab**

1. Discuss your program’s strengths.

Additionally, a significant curricular change to the Engineering Technology A.S. degree shifting it from a transfer degree to a technician training program has been submitted for approval. Faculty are in the process of making changes recommended by the curriculum committee in order to submit the proposal to the Chancellor’s Office.

The College was selected to be one of the pilot Baccalaureate Degree Programs and will begin the BS in Industrial Automation program in Fall 2016. There will be coursework in the revised Engineering Technician program will provide a pathway by which students will fulfill admission requirements into the baccalaureate degree program.

1. Discuss your program’s weaknesses.

No changes to report.

1. *If applicable,* describe any unplanned events that affected your program.

**V. Resource Analysis:** To request resources (staff, faculty, technology, equipment, budget, and facilities), please fill out the appropriate form. <https://committees.kccd.edu/bc/committee/programreview>

1. Human Resources and Professional Development:
2. If you are requesting any additional positions, explain briefly how the additional positions will contribute to increased student success. Include upcoming retirements or open positions that need to be filled.

None requested.

1. Professional Development:
2. Describe briefly the effectiveness of the professional development your program has been engaged in (either providing or attending) during the last year, focusing on how it contributed to student success.

No professional development was sought specifically for the engineering technology program.

1. What professional development opportunities and contributions can your program make to the college in the future?
2. Facilities:
3. How have facilities’ maintenance, repair or updating affected your program in the past year as it relates to student success?
4. How will your Facilities Request for next year contribute to student success?

C. Technology and Equipment:

1. Understanding that some programs teach in multiple classrooms, how has new, repurposed or existing technology or equipment affected your program in the past year as it relates to student success?
2. How will your new or repurposed classroom, office technology and/or equipment request contribute to student success?
3. Discuss the effectiveness of technology used in your area to meet college strategic goals.

D. Budget: Explain how your budget justifications will contribute to increased student success for your program.

**VII. Faculty and Staff Engagement:**

1. Discuss how program members have engaged in institutional efforts such as college committees, presentations, and departmental activities.
2. Instruction Only: Discuss how adjunct faculty are included in departmental training, discussions and decision-making.

**VIII. Conclusions and Findings:**

Present any conclusions and findings about the program. This is an opportunity to provide a brief abstract/synopsis of your program’s current circumstances and needs.

EMSI and Cal-PASS-Plus LaunchBoard both project strong growth in demand for engineering technicians, as shown in the charts below.

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| **EMSI Target Occupations** |
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| Occupation | 2016 Jobs | Annual Openings | Median Hourly Earnings | Growth (2016 - 2021) |
| Electrical and Electronics Engineering Technicians | 737 | 28 | $37.06 | 5.97% |
| Engineering Technicians, Except Drafters, All Other | 521 | 15 | $36.66 | 2.11% |
| Civil Engineering Technicians | 176 | 7 | $27.15 | 6.25% |
| Aerospace Engineering and Operations Technicians | 126 | 7 | $32.68 | 15.87% |
| Surveying and Mapping Technicians | 111 | 4 | $25.58 | 10.81% |
| Mechanical Engineering Technicians | 87 | 4 | $31.21 | 11.49% |
| Industrial Engineering Technicians | 61 | 3 | $40.52 | 11.48% |
|  |  | 68 | $32.98 |  |

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| Cal-PASS-Plus LaunchBoard |  |  |  |  |
| Program Snapshot Export Regional Labor Market Information - 109819 || 092400 || 2015 |
| SOC | Job Title | Projected Average Annual Openings (2014-2019) | Projected5 Year Openings (2014-2019) | Entry Level Salary | MedianSalary |
| 17-3022 | Civil Engineering Technicians | 19.6 | 98 | $41,538 | $60,445 |
| 17-3023 | Electrical and Electronics Engineering Technicians | 32.8 | 164 | $52,000 | $75,026 |
| 17-3029 | Engineering Technicians, except Drafters, all other | 21.4 | 107 | $42,744 | $72,051 |
| 17-3026 | Industrial Engineering Technicians | 5.2 | 26 | $41,288 | $58,032 |
| 17-3027 | Mechanical Engineering Technicians | 7 | 35 | $36,150 | $53,768 |

The A.S. Engineering Technology curriculum was redesigned and the proposal submitted to the curriculum committee by the EIT department chair in 2014-15. In 2015-16 the curriculum committee requested further supporting documentation and the curriculum narrative. Due to the dynamics that come with a department consisting of nine programs the department chair lost sight of this important task and will be completing it in the fall 2016 semester. The goal of the curriculum redesign will be to provide a local focus for the engineering technology program to better meet the needs of local industry with an improved career pathway to develop local talent.