**Bakersfield College**

**Comprehensive Program Review**

**I. Program Information:**

Program Name: Computer Science for Transfer

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 Computer Science for Transfer Program, as an integral part of Bakersfield College, supports the mission, core values and vision of the College by providing high quality education to our socially and ethnically diverse students.

The Computer Science for Transfer Program meets the College’s core mission areas by providing career and technical education and transfer courses. The program supports career and technical education by offering courses, and providing training, that are highly sought after by employers. By design, the AS-T degree allows students to seamlessly transfer to a CSU Computer Science program without the need to take additional lower division courses.

Program Mission Statement:

The Associate in Science in Computer Science for Transfer degree (AS-T in Computer Science) is designed to provide students a clear transfer pathway to the CSU computer science major and completion of the computer science baccalaureate degree, to grant guaranteed admission to a CSU to a similar major, with junior standing, and the ability to complete their remaining requirements within 60 semester or 90 quarter units. Students will take courses in computer science and related fields that will provide the theoretical and practical knowledge necessary to work in a variety of computer related fields such as Software Engineering, Computer Engineering, Computer Systems Analysis, Network Engineering, Cloud Computing, Mobile Application Development, Computer Support, Computer Information Systems, Database Administration, Network Security, and Web Development.

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| ***Instructional Programs only:***1. List the degrees and Certificates of Achievement the program offers: AS-T in Computer Science
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. N/A
3. If your program offers a local degree in addition to the ADT degree, please explain the rationale for offering both. N/A
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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. Maintain, and increase enrollments so that the program can exist for the community. | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  | [ ]  Completed: \_\_\_\_\_\_\_\_\_\_ (Date) [ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[x]** Ongoing: \_\_\_\_\_\_\_\_\_\_ (Date) | COMP B11 has 129 students enrolled as of the pre-census date of 8/30/15, compared to 60 last year. This large increase is due to offering 4 sections, vs. 2 last year. The fact that 4 sections could be filled bespeaks student demand for this course. COMP B13 currently has 33 students, compared to 35 last year. Also, we are offering COMP B13 in both Fall and Spring semesters, so that students may better fit into 2 years all 4 COMP courses needed for this AD-T degree. |
| 2. Hire a second faculty member with background to teach in the program. Barring that, increase the skills of the existing faculty member who is minimally qualified. | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  | [x]  Completed: \_May 2015\_ (Date)[ ]  Revised: \_\_\_\_\_\_\_\_\_\_ (Date)**[ ]** Ongoing: \_\_\_\_\_\_\_\_\_\_ (Date) | Hired Richard Miles |

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. We plan to discuss and coordinate assessments and best practices. | [x]  1: Student Learning [x]  2: Student Progression and Completion [ ]  3: Facilities [ ]  4: Oversight and Accountability [ ]  5: Leadership and Engagement  | Set up a regular schedule for Computer Science AS-T instructors to meet.  | Ongoing | Hal Mendoza |
| 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).
2. Changes in enrollment (headcount, sections, course enrollment, and productivity).
3. Changes in achievement gap and disproportionate impact.
4. Success and retention for face-to-face as well as online/distance courses.
5. Degrees and certificates awarded (three-year trend data for each degree and/or certificate awarded).
6. Other program-specific data (please specify or attach).
7. List degrees and certificates awarded (three-year trend data for each degree and certificate awarded). Include targets (goal numbers) for the next three years.

Since the Computer Science AS-T degree program is only one year old, there is no trend information available.

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| Full Name of Degree or Certificate | 2011- 2012 | 2012- 2013 | 2013- 2014 | 2014- 2015 | 2015- 2016 | 2016- 2017 |
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**IV. Program Assessment:**

1. List your Program Learning Outcomes (PLOs)/Administrative Unit Outcomes (AUOs).
2. Identify the appropriate software development technologies, algorithms, and scientific and mathematical principles to apply to a given problem.
3. Effectively design and implement programming constructs, including functions, control structures, arrays/lists, classes and objects for a given programming problem.
4. Effectively implement the appropriate data structures using the principles and techniques of object-oriented programming for a given programming problem.
5. How did your outcomes assessment results during the past three years inform your program planning? Use bullet points to organize your response.

Does not apply. The Computer Science AS-T degree program is only one year old. As such, no assessment data exists. Three out of the four discipline-specific courses are new.

1. How did your outcomes assessment results during the past three years inform your resource requests? The results should support and justify resource requests for this year.

Does not apply. See explanation in part B of IV. Program Assessment.

1. Describe how the program monitors and evaluates its effectiveness.

We will gather data regarding success and retention as well as class enrollment trends as they become available.

1. Describe how the program engages all unit members in the self-evaluation dialog and process.

Up until this (Fall 2015) semester, all courses were taught by one faculty member. With the addition of a new faculty member (see section II.A.2), we plan to discuss and coordinate assessments and best practices.

1. Provide recent data on the measurement of the PLOs/AUS., as well as a brief summary of findings.

Does not apply. See explanation in part B of IV. Program Assessment.

1. What have the program’s PLO’s/AUO’s revealed or confirmed in the past three years?

Does not apply. See explanation in part B of IV. Program Assessment.

1. *If applicable,* list other information, data feedback or metrics to assess the program’s effectiveness (e.g., surveys, job placement, transfer rates, output measurements). N/A
2. How do course level student learning outcomes align with program learning outcomes? Instructional programs can combine questions C and D for one response (SLO/PLO/ILO).

The course level outcomes directly relate to the program level outcomes. Students are measured as they progress through the courses and their skills are honed with each course. All courses in the program have a measurement in the program level, except for the two physics courses – these were required by the TMC and are loosely related to the program.

1. How do the program learning outcomes or Administrative Unit Outcomes align with Institutional Learning Outcomes? All Student Affairs and Administrative Services should respond.

Courses in the AS-T in Computer Science align with Area I and Area III. The skills required to master the PLOs enable students to think critically, abstractly, logically, and algorithmically – especially the latter because Computer Science is an algorithmic based discipline. The skills learned in the program are technology based and form the foundation for many jobs in technical fields.

1. How did your program address Equity, specifically referencing the achievement gap and disproportionate impact, over this comprehensive cycle?

Does not apply. See explanation in part B of IV. Program Assessment.

***Institutional Learning Outcomes***:

*Think: Think critically and evaluate sources and information for validity and usefulness.*

*Communicate: Communicate effectively in both written and oral forms.*

*Demonstrate: Demonstrate competency in a field of knowledge or with job-related skills.*

*Engage: Engage productively in all levels of society – interpersonal, community, the state and the nation, and the world.*

1. Discuss your program’s strengths.

Students with a four-year degree in Computer Science are likely to be well-placed in the job market, and the Computer Science AS-T degree at Bakersfield College gets them half way there. Judging from the growth in the number of students taking the introductory programming course (COMP B11) – growing from 1 section/semester in 2011-2012 to 4 sections in Fall 2015, there is much interest and excitement surrounding this new program. Additionally, we have a new Computer Science club, which seems to be attracting a fair amount of interest.

1. Discuss your program’s weaknesses.

We need to gather assessment data for this new program.

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.
3. Professional Development:
4. 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.

When teaching new classes, instructors may need to hone rusty skills and knowledge and learn new things. This learning is usually not in the form of an organized class, but from reading and doing on one's own. Of course doing so enables us to teach new material to students.

1. What professional development opportunities and contributions can your program make to the college in the future?

None planned.

1. Facilities:
2. How have facilities’ maintenance, repair or updating affected your program in the past year as it relates to student success?

It has not, as far as I know.

1. How will your Facilities Request for next year contribute to student success? I don't know of any.

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? Some computers have been broken since the beginning of the semester (Fall 2015), which makes it difficult for each student to be able to use a computer when the class is full. Also, it can take a long time for students to be able to log in and be ready to work – that can necessitate work-arounds that are not ideal.
2. How will your new or repurposed classroom, office technology and/or equipment request contribute to student success? Faster, more up-to-date computers help remove stumbling blocks for students, so that they can concentrate on learning.
3. Discuss the effectiveness of technology used in your area to meet college strategic goals.

We make full use of in-class computers, projectors, software (compilers, assemblers). In addition, we have a virtual server at the district office that we are using for the COMP B13 class (Computer Architecture and Organization).

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.

Our members have served on the Assessment and Program Review committees. Additionally, we sponsor the *Artificial Intelligence Computer Science Club*.

1. Instruction Only: Discuss how adjunct faculty are included in departmental training, discussions and decision-making. N/A

**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.

**IX. Forms Checklist (place a checkmark beside the forms listed below that are submitted as part of the Annual Update):**

[x]  [Best Practices Form](http://committees.kccd.edu/bc/committee/programreview) **(Required)**

[x]  Curricular Review Form **(Instructional Programs Required)**

[ ]  [Certificate Form](http://committees.kccd.edu/bc/committee/programreview) **(CTE Programs** **Required)**

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[ ]  [Faculty Request Form](http://committees.kccd.edu/bc/committee/programreview) [ ]  [Classified Request Form](http://committees.kccd.edu/bc/committee/programreview) [ ]  [Budget Form](http://committees.kccd.edu/bc/committee/programreview)

[ ]  Professional Development Form [x]  [ISIT Form](http://committees.kccd.edu/bc/committee/programreview) [x]  [Facilities Form](http://committees.kccd.edu/bc/committee/programreview) (Includes Equipment)

[ ]  Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_