

ITEMS FOR DISCUSSION AND ACTION\ACADEMIC AND PERSONNEL

March 17, 2021

ACTION: **Approve Continuation of Computer Science Program at Wayne State College with Annual Monitoring**

Per Policy 4200, existing academic programs shall be reviewed every seven (7) years by each College to determine the quality and effectiveness of each program, the efficiency with which each is delivered, and to avoid unnecessary duplication. Each program is evaluated based on the minimum threshold requirements established by the Coordinating Commission for Postsecondary Education (CCPE). Should a program not meet the established thresholds, Nebraska Statute 85-1414 establishes the expectation for the institution and its governing board to complete an in-depth review. Programs continued by the governing board shall be further monitored by the governing board which shall report the status and process of the monitoring to the CCPE.

During its last review, the Computer Science Program at Wayne State College did not meet the required minimum 5-year mean threshold for number of graduates for baccalaureate programs, which is seven (7). The program has completed an in-depth review and has recommended continuation of the program. The findings of that review are provided to the Board in the attached report for approval and subsequent submission to the CCPE for consideration for continuation of the program.

The System Office and Wayne State College support the findings of the in-depth review and the recommendation for continuation of the program. For each of these in-depth reviews, the Colleges are asked to outline strategies/approaches for continuing to improve enrollments and graduate production in the future, which warrants ongoing assessment and evaluation by the Board. An annual review of enrollment and graduate numbers will be shared with the Board each Spring term to monitor progress of the program's growth related to these recruitment efforts.

The System Office and Wayne State College recommend approval of the Continuation of Computer Science Program at Wayne State College with Annual Monitoring.

ATTACHMENTS:

- 2021 WSC Computer Science Existing Program Review Report with In-Depth Review (PDF)

WSC Existing Academic Program Review Report 2021
Computer Science

1. Section One: Overview of Program Offerings

Program Description Table:

Major	Concentration or Endorsement	Minor	Undergraduate	Credit Hours
Computer Science	Computer Science		BA, BS	57
Computer Science		Computer Science		21
Computer Science	Information Technology Supplemental Endorsement PK-12			15

There is no current state and/or national program accreditation of this program at this time.

2. Section Two (Option A): Analysis of Program, Including Adequacy of Resources and Related Concerns

Analysis of Program:

The Computer Science academic program exceeded one of the CCPE thresholds and missed meeting the other threshold by only a very slight margin:

- The five-year average for student credit hour production per full-time equivalent faculty (SCH/Faculty FTE) is 413, which exceeds the CCPE Revised Threshold of 300. This is considerably higher for this criterion than the 360 value reported in the 2014 program review.
- While the 5-year average of number of undergraduate degrees awarded in the Computer Science program is 6.2, which is slightly below the CCPE Revised Threshold of an average of 7 degrees awarded, the Computer Science academic program has not shown a dramatic drop in number of students completing the program. In fact, the 6.2 value represents considerable improvement from the 4.8 value for this metric found in the 2014 program review.
- The presence of a strong Computer Science program at Wayne State College enhances the real and perceived range of academic programs that are offered by the Nebraska State College System. Peru State College has a program in Computer and Management Information System and Chadron State College has a Business Information Systems Minor, but neither institution has a Computer Science academic program.

The Computer Science academic program has been relatively stable over the past five academic years and recently has exhibited signs of growth. The preliminary snapshot and final reports from Fall 2020 show a considerable recent increase in the number of Computer Science majors, as compared to previous years (numbers in parentheses indicate students with a second major in Computer Science in addition to their primary major):

	CSC Majors	TOTAL
Spring 2015	30 (1)	31
Spring 2016	31 (2)	33
Spring 2017	34 (4)	38
Spring 2018	28 (4)	32
Spring 2019	33 (4)	37
Spring 2020	37 (2)	37
Fall 2020	55 (1)	56

A combination of factors and forces have shown signs of the potential for propelling continued growth in enrollment in computing academic programs, especially in Computer Science:

- STEM (Science, Technology, Engineering, and Mathematics --of which Computer Science is a part) initiatives are generating interest in Computer Science among prospective students.
- A variety of other organizations and initiatives (for example: 4-H youth programs, robotics competitions, Hour of Code, Girls Who Can Code, etc.) are exposing young students earlier in their pre-college years to experiences that will continue to help drive the students' interest.
- Popular culture has continued to elevate access to technology and the requisite expertise to make use of the technology as desirable characteristics, thus driving interest in computing.
- Parents, guidance counselors, and others who have the potential to influence prospective students' choices of career fields have increasingly come to view careers related to Computer Science as significant and potentially lucrative.
- The employment outlook (as discussed in Section 4) for Computer Science careers has been consistently positive and promising.
- The new Growing Together Cooperative Education program has promoted Computer Science and increased interest and awareness in Computer Science at WSC.
- The increasing base of WSC Computer Science alumni has helped to spread the word about the academic program and continues to create opportunities for current students and graduates.

The Computer Science academic program is essential to enrollments in the Computer Information Systems (CIS) academic programs (as well as to other academic programs as described in Section 4):

- Without Computer Science, the successful Computer Information Systems programs at Wayne State College would not be as visible and easily discoverable by prospective students and transfer students. People find WSC CIS programs via the term "computer science".
- Due to the highly integrated nature of the Computer Science program and the Computer Information Systems program, the delivery of Computer Science courses is essential for the CIS program which has a common computing core and has four concentrations. The current computing core in that program contains a mandatory 9 credit-hours of Computer Science courses and each concentration also contains Computer Science credit-hours. In addition, Computer Science courses are options for upper-division, committee-approved electives in the Computer Information Systems degree program. Without the Computer Science courses in the Computer Information Systems program, additional courses would have to be created specifically for the Computer Information Systems program, thus creating the need for additional resources.
- The strong numbers in Computer Information Systems academic programs are due in part to students who came to WSC as Computer Science majors and then switched to CIS programs

because they discovered that their interest and passion falls more within CIS. Below are current number of majors in the CIS program (numbers in parentheses indicate students with a second major in CIS in addition to their primary major).

	CIS Majors	TOTAL
Spring 2015	63 (5)	68
Spring 2016	71 (6)	77
Spring 2017	71 (7)	78
Spring 2018	71 (6)	77
Spring 2019	74 (6)	80
Spring 2020	82 (11)	93
Fall 2020	90 (10)	100

The 5-year average of number of BA and BS undergraduate degrees awarded in Computer Information Systems during the period addressed by the current program review cycle is 18.2, which is well over double the minimum CCPE Revised Threshold of 7 degrees required. Collectively, the two integrated degree programs of Computer Science and Computer Information Systems produced the following levels of graduates in each year of the program review period (BA and BS combined):

	<u>15-16</u>	<u>06-17</u>	<u>17-18</u>	<u>18-19</u>	<u>19-20</u>	5-year Total	5-year Average
Computer Science	5	8	5	7	6	31	6.2
Comp. Info. Syst.	20	16	19	18	18	91	18.2
Total	25	24	24	25	24	122	24.4

- Some Computer Science majors elect to major or minor in Computer Information Systems to enhance their range of academic preparation and provide added employment flexibility.
- Students from a variety of majors, including Computer Information Systems majors, elect to minor in Computer Science, which would not be possible if the Computer Science program did not exist. There are also Computer Science courses in the Information Technology Supplemental Endorsement taken at the undergraduate and graduate levels by educators.

The elimination of Computer Science as an academic program would result in very little direct or indirect cost savings due to how extensively resources are shared between it and the other academic programs with which it integrates. The high level of integration of Computer Science courses within those academic programs makes delivery of all of the integrated programs very efficient and makes it very difficult to restrict or discontinue the Computer Science academic programs without significantly impairing the other successful programs.

Program Resources:

Faculty and faculty-related resources:

Faculty Resources:

The academic programs offered by the Computer Technology and Information Systems (CTIS) Department, including the Computer Science academic program components, are delivered by five full-time faculty members, plus one adjunct faculty member who regularly teaches for the

department. In addition to delivering the Computer Science program components listed above, the department also delivers the Computer Information Systems program, a Management Information Systems minor, and several service courses taken by students from other majors and minors. At the current time, faculty resources for the Computer Science program are adequate.

Faculty-related Resources:

Each full-time faculty member is provided their own faculty office. Each faculty member is provided with appropriate informational resources, technology resources, data resources, instructional resources, and fiscal support (as discussed below). Office support for CTIS faculty (reception, mail handling, ordering, office supplies inventory management, room reservation management, event support, etc.) are provided by the main School of Business and Technology office staff. Wayne State College provides numerous training opportunities for faculty during a typical academic year.

Informational resources (library, technology, data services, etc.):

Library/Information Resources:

General Resources: The Conn Library building underwent a total building renovation that was completed in 2017. The redesigned building now provides a variety of different learning spaces. Features include sixteen small group and individual study rooms that are available for students, three technology-infused, easily reconfigurable teaching classrooms, and tutoring services supervised by the Holland Academic Success Center.

The Library is open approximately 90 hours weekly, serves approximately 224,000 students, staff, faculty and community members annually. The library's information desk provides in person and telephone reference services and instruction 60 hours weekly. Librarians provide over 200 information literacy instruction classes or guest speaking sessions annually to Wayne State College students and area high schools. Interlibrary loan arrangements with state colleges and universities as well as with libraries throughout the nation have ensured that materials not housed in the collection can be made available within an average of two to three working days.

The campus network provides off and on campus access to the library's catalog, Discovery system, and dozens of databases. More than 40,000 journal titles are available in full text from the library's journal database subscriptions. Over 350,000 monographic and 1,200 periodical titles are housed in the Conn Library Collection.

CTIS-Specific Information/Library Resources: In addition to the resources listed above, the CTIS program students and faculty routinely make use of a number of resources that are appropriate for supporting CTIS coursework and other program activities. CTIS students have access to 609 computer science journals in electronic form as well as hundreds of books and e-books.

Library personnel provide both general and discipline-specific instructional sessions to CTIS majors, freshman-level computer literacy courses, capstone senior seminar courses, and several selected courses at levels in between those levels. The CTIS discipline-specific sessions acquaint

CTIS students with the many computing and information system resources available in the various areas of the library. In addition, the library provides individualized advice and assistance to WSC students and faculty.

Each year multiple CTIS faculty participate in the materials selection group for Computer Science. They provide purchase and acquisition recommendations to the Wayne State College Library staff. In addition, several CTIS faculty also participate in a similar group for business resources; many of the reference disciplines for CTIS are represented in the business materials.

Technology Resources:

CTIS faculty are provided with a high-performance office computer equipped with dual monitors. The faculty offices also have the necessary equipment for faculty members to do basic teleconferencing (Zoom, etc.). A digital (Voice-over-IP) telephone with advanced capabilities is provided to each faculty office. Each faculty member also has at least one additional computing device (laptop, tablet, etc.) to support their instructional activities. High-speed Internet access is provided via the campus network and a wide range of general-purpose and specialized software is available to faculty. Printing, scanning, and e-mail capabilities are also provided. A sophisticated Learning Management System (LMS) is provided for delivery of online instruction as well as for support of traditional face-to-face courses and hybrid course delivery. The CTIS Department relies heavily upon the excellent support provided by WSC's Network and Technology Services (NATS) area due to the technologically-dependent nature of the courses that we teach.

Data Resources:

The faculty of the CTIS Department are provided access to a considerable amount of internal data via the various systems and applications accessible through the "My WSC" branded portal available over the college network. Monthly reports regarding departmental budget status are provided to the CTIS Department Chair. Various other reports are provided to the CTIS Department and its faculty throughout the year by a range of functional offices at WSC. The CTIS Department is also able to access a considerable number of external data sources via the Internet and technology capabilities provided to each faculty member. Examples of such internal reports and external data sources include:

- Major-Minor Reports (which show enrollment status of Concentrations and Endorsements)
- QAR reports (that show data and information regarding key institutional and program variables and metrics)
- Admissions Reports
- Course Enrollment History Reports
- Faculty Load Reports
- Student Migrations Between Academic Program Reports
- Print and Photocopying Services Usage Reports
- Academic Calendar Reports (and updates)
- Reports to Support Specific Academic Committee Activities (for example, Promotion and Tenure Applications)

- Reports to Support Specific Departmental Activities (for example, List of Departmental Library Holdings and Utilization Rates, for review of library materials to be continued or discontinued)
- Various Career Services Reports (Internships, Job Placement, Salary Levels of Placed Students, etc.)
- H3 Reports (High Demand, High Skill, High Wage Positions)
- Occupational Outlook Handbook (from United States Bureau of Labor Statistics)
- Reports of the Joint Curriculum Task Force for Computer Science (and other computing degree areas' respective tasks force)
- Nebraska State College System Resources and Policies
- Reports and Resources from the Nebraska Coordinating Commission for Postsecondary Education (CCPE)
- Transfer Evaluation System (TES) Reports and Access
- Various Reports from State of Nebraska Departments and Agencies
- Data sets and Reports from Various US Government Departments and Agencies
- Reports and Resources from the Higher Learning Commission (HLC)
- and numerous other sources

Physical facilities and instructional equipment:

Physical Facilities:

The CTIS Department has its faculty offices in Gardner Hall. At the end of the 2018 calendar year, the new \$15.2 million Center for Applied Technology (CAT) building on the Wayne State College campus was completed. The opening of that new building added a new computer lab, a new networking lab, a new computer hardware lab, and a new robotics lab for the CTIS Department's use. Those facilities were in addition to the excellent facilities that the CTIS Department continues to use in Gardner Hall. The CAT building facilities extend beyond those labs added for the CTIS Department and support other programs.

Instructional Equipment:

The construction and equipping of the new Center for Applied Technology (CAT) building has enhanced the range and quantity of instructional equipment available to the CTIS Department in delivering academic programs. Each of the new laboratory rooms in that building has new instructional furnishings and state-of-the-art audio-visual equipment to support instruction. The CTIS Department, with the support of WSC's Network and Technology Services area, has continued to maintain and periodically upgrade its instructional equipment in Gardner Hall as well. Classrooms in both the CAT building and Gardner Hall have projection capabilities. The new labs in the CAT building have lecture-capture capabilities and sophisticated instructor-student interaction capabilities. WSC currently supports the Canvas Learning Management System (LMS) and it is available for the support of online courses, hybrid courses, and traditional face-to-face courses. Gardner Hall computer labs are equipped with 20 student computers and one instructor computer. The computer lab in the CAT building is equipped with 24 student computing stations and a computer for the instructor. The various other classrooms and labs in Gardner Hall and the CAT building have equipment appropriate for what is being taught in those rooms.

Fiscal resources:

CTIS Department Budget:

The CTIS Department has a modest departmental budget that is used to support the recurring costs, necessary periodic, equipment upgrades, required service contracts, supplies expenditures, faculty travel, and other appropriate costs. When combined with the other fiscal resources (mentioned below), the budget has adequately and successfully supported the CTIS Department during the period addressed by this report's time frame.

Other Fiscal Resources:

The CTIS Department has benefitted from funding allocations from the School of Business and Technology to support important needs and initiatives. In addition, CTIS faculty have been relatively consistent in their ability to successfully pursue internal grant funding opportunities at WSC for strategically important initiatives. At various times in its history, the department has received funding for major initiatives from WSC. The close working relationship that the CTIS Department has with WSC's Network and Technology Services area has allowed for many opportunities for synergistic arrangements that have conserved fiscal resources while enhancing faculty and student access to technologies that enhanced their educational opportunities.

3. Evidence of Demand and Efficiency (per established CCPE standards for 5-year means)

Number of Degrees/Awards in Program		SCH/FTE
Baccalaureate	7	300
Masters	5	300
Specialist	4	300

		15-16	16-17	17-18	18-19	19-20	5 yr avg
Student Credit Hours (SCH)		812	831	893	947	1,104	917
Faculty Full-time Equivalency (FTE)		1.88	1.92	2.31	2.44	2.56	2.22
SCH/Faculty FTE		432	433	387	388	431	413
Number of Degrees and Awards	BA	0	0	0	0	0	0.0
	BS	5	8	5	7	6	6.2

The Computer Science Program exceeds the 5-year average SCH/Faculty FTE threshold of 300 by a considerable margin (413). There has been consistent and significant growth in Student Credit Hours during the 5-year period with 2019-2020 SCH representing a 26.44% increase over 2015-2016 SCH. The 5-year average of the number of Computer Science degrees awarded was 6.2 which falls only very slightly short of the CCPE minimum standards of 7.0 for that metric; however, as stated above, enrollments are growing.

Overall, the presence of a strong Computer Science program at Wayne State College enhances the real and perceived range of academic programs that are offered by the Nebraska State College System. Peru State College has a program in Computer and Management Information System and Chadron State College has a Business Information Systems Minor, but neither institution has a Computer Science academic program.

4. Section 4 (Option A): Justification and Evidence of Need

Program importance to the role and mission of the institution and the State College System:

In addition to its primary role of serving the needs of students and providing a high-quality, affordable educational opportunity to them, the presence of a Computer Science academic program at Wayne State College helps the institution and the Nebraska State College System (NSCS) meet the needs of a variety of other internal and external stakeholders and stakeholder groups:

- The ever-increasing role of computing, information technology, and related technologies in almost all other academic fields, in the operations of almost all organizations, and in daily life in general continues to drive the need for Computer Science academic programs, courses, and educators, as well as for Computer Science professionals to operate, support, and manage the ever-widening range of technologies and uses. As a public institution, Wayne State College responds to such needs. Various external stakeholder companies count on Wayne State College to have students in the area of Computer Science to potentially fill internships and/or cooperative education experiences and to provide graduating students in that area to fill employment opportunities.
- The Computer Science program is an important component in multiple existing articulation agreements with community colleges and other institutions. It also offers the potential for the development of future articulation agreements with other academic institutions. Wayne State College attracts the interest of multiple transfer students each year due to the presence of the Computer Science program.
- The presence of a Computer Science program on the WSC campus provides a vital capability ensuring the potential for development and delivery of service courses for other majors, minors, endorsements, and concentrations on campus as computer science and related technologies continue to play an increasingly important role in life sciences, physical sciences, mathematics, industrial technology, construction technology, criminal justice, pre-professional programs, geography, graphics design, journalism, business administration, education, research, and a variety of other academic areas.
- Career Academies in the WSC Service Region count on Wayne State College to have a Computer Science academic program as an extended pathway component for their students.
- The presence of a strong Computer Science program at Wayne State College enhances the real and perceived range of academic programs that are offered by the Nebraska State College System. Peru State College has a program in Computer and Management Information System and Chadron State College has a Business Information Systems Minor, but neither institution has a Computer Science academic program.
- The Wayne State College Network and Technology Services (NATS) office benefits from the Computer Science academic program on campus both in terms of the program being a potential source of long-term, full-time employees as well as its role in providing a supply of qualified

student workers for NATS part-time employment. Over 80% of NATS employees have been graduates of CTIS Department computing academic programs.

- The presence of a Computer Science academic program at WSC has allowed numerous projects to be performed for real-world clients in the WSC service region using the talents of Computer Science students. A portion of these projects have been for Service Learning projects, thus supporting WSC's Service Learning efforts as well. For example, WSC students did a web development project for a Nebraska tourism promotion and economic development group that promotes the "Outlaw Trail" and Highway 12 Scenic By-Way across northern Nebraska and the towns and businesses along that route. Another project created a website and intranet for a private elementary school that lacked web expertise. A team of WSC students created an intranet and file handling system for an area community action agency. These are just examples. Other projects have been completed as well.

Program contains courses supporting general education or other academic programs:

- Computer Science courses are required courses in:
 - The Information Technology Supplemental Endorsement (for educators)
 - The Masters of Science in Information Technology – Information Technology Management Concentration
 - The Mathematics major – Applied Mathematics Concentration
 - The Mathematics major – Pure Mathematics Concentration
 - The Field Endorsement in Mathematics
 - The Field Endorsement in Industrial Technology
 - The Minor in Management Information Systems
 - The Minor in Geospatial Technology
 - The Minor in Web and Mobile App Design and Development
 - The (ITE) Major in Technology – Computer Occupations Concentration
 - and are possible electives in the Minor in Online and Social Media
- Students minor in Computer Science and the minor is growing in popularity (numbers in parentheses indicate students with a second minor in Computer Science in addition to their primary minor):

	CSC Minors	TOTAL
Spring 2015	3	3
Spring 2016	2	2
Spring 2017	3	3
Spring 2018	5	5
Spring 2019	10	10
Spring 2020	18 (2)	20
Fall 2020	17 (2)	19

- Students majoring or minoring in other areas take Computer Science courses as general electives and/or to enhance their computer literacy. This typically ranges from 6 to 32 students per semester depending upon the number and types of Computer Science electives offered.
- Students from academic areas other than Computer Science take courses in Computer Science to enhance their marketability, improve their employability, or to position themselves for a better fit with their career aspirations. While these numbers are difficult to track, anecdotal

evidence shows that students from criminal justice, geography, mathematics, communication arts, education, art, music, business, and industrial technology have taken Computer Science for those reasons during the program review period.

- The presence of the Computer Science program enhances the range of equipment, faculty expertise, and demonstration opportunities for the courses in Computer Information Systems that are delivered as service courses to a large number of Business Administration students, Industrial Technology students, and students from other academic programs each year.
- In addition to the demands for General Studies courses that Computer Science students create, they also create demands for the mathematics and physics courses that are service courses provided to meet requirements in the Computer Science academic program and increase the credit hour production of the academic units that deliver those service courses. In addition, it is not uncommon for Computer Science students to elect to pick up a second major or a minor in mathematics or some other non-computing major or minor on campus.

Employer demand for program graduates is adequately strong and projected to grow:

Computer Science students graduating from the program have experienced strong interest from employers, not only upon graduation, but also for internship experiences.

- Placement rates for Computer Science students have remained strong during the reporting period. Placement rates between 90 and 99 percent are not uncommon and remain relatively consistent, even in economic downturns. The emergence of the “silicon prairie” concept has created demand for Computer Science students not only in Nebraska, but in surrounding areas as well.
- The employment outlook for Computer Science students continues to remain strong. The United States Department of Labor’s Bureau of Labor Statistics lists (in their Occupational Outlook Handbook found at <https://www.bls.gov/ooh/computer-and-information-technology/home.htm> September 2020 version) many occupations both within Computer Science and closely related to Computer Science that have forecast average to above-average growth rates from 5 to 31 percent for the period from 2019 to 2029. Only one of the many computer and information technology occupations listed showed a forecast negative growth rate. This overall bright outlook for the industry, especially in the midst of a pandemic-induced economic slowdown, should help to fuel prospective student interest in Computer Science and enhance the potential for success of WSC’s Computer Science graduates.
- Computer Science careers and careers related to that field consistently appear prominently in lists of the “H3” occupations (High Skill, High Demand, High Wage) compiled by the State of Nebraska and by other entities and organizations.
- According to a report from the National Association of Colleges and Employers’ (NACE) Center for Career Development and Talent Acquisition (<https://www.nacweb.org/job-market/compensation/computer-science-grads-projected-to-be-top-paid-in-major>, retrieved January 19, 2021), students majoring in Computer Science are projected to have experienced the highest starting salary among graduates of the Class of 2020 who earned bachelor’s degrees in the discipline. The average projected starting salary was \$68,668.

Program provides unique access to an underserved population or geographical area:

In a variety of ways, the Computer Science program fulfills a range of unique needs of the population and geographic region it serves:

- The Computer Science program provides access to a degree program to place-bound students within commuting range of Wayne State College who seek instruction in that field of study.
- A considerable percentage (typically in the 45 to 55 percent range) of first-time, full-time freshman students attending Wayne State College are first generation college students. Some of those wish to study Computer Science at an institution with a reputation for strong student success and a wide range of effective student support services, which WSC provides.
- The minority ethnic background percentage of total student headcount at Wayne State College has grown from 8 percent in Fall 2010 semester to 19% in Fall 2019 semester. Anecdotal evidence suggests that several minority Computer Science students during the program review period have chosen to study at Wayne State College because of the Computer Science program's presence at the institution and because of other institutional characteristics they have found favorable. There are several communities in the Wayne State College service region that have experienced a considerable increase in Hispanic population. There are some areas in the service region that have Native American/American Indian students who attend WSC. A few of the other population centers in the service region have seen increases in the populations of other minority groups.
- The Computer Science program at Wayne State College has provided a pathway to an undergraduate degree for many community college transfer students from several in-state and multiple out-of-state community colleges.
- The Computer Science program at Wayne State College has provided a pathway to an undergraduate degree for many international students.
- As an open-enrollment institution, the Computer Science program at Wayne State College presents a viable option for students who cannot meet entrance requirements at other, more selective, institutions.
- Because of the affordability of education the institution, the Computer Science program at Wayne State College permits some students who could not otherwise afford to do so, to pursue a degree in Computer Science.
- The Computer Science program at Wayne State College provides a blend of theory and practice/skill set development that not only prepares students for a wide range of potential employment opportunities, but also prepares students for the needs of a range of employers in the WSC service region. Some students are place-bound regarding employment and a percentage of the remaining students wish to live and work in rural communities and small-to-medium size cities in the state. Such students find that the WSC program prepares them very well for such aspirations, while also preparing them for opportunities in larger places and organizations.

Plan for continuation of low-performing program:

As the Computer Science program has made improvement since the last program review in 2014, with recent evidence pointing to accelerating enrollment and improvement that is occurring, the primary thrust of the plan to improve this program will be the continuation of efforts and initiatives

that are already in place and seem to be having the desired effects. Those efforts and initiatives will be supplemented with enhancements and the opportunistic pursuit of other possibilities for further enhancing the effort to improve the state of the Computer Science program and to achieve beneficial synergies with what is currently occurring. Specifically, the initiatives to be continued or enhanced, plus the new initiatives to be pursued, include:

- Continue to refine the Computer Science curriculum offerings. The program was updated during curriculum revision efforts in the 2018-2019 academic year. Efforts to keep the program current, relevant, and interesting have shifted from a periodic approach to a continuous approach. Development of additional interesting elective courses is also a part of this approach
- Enhance the initial “exploratory” courses in Computer Science to attract more students who could potentially become Computer Science majors
- Continue outreach to students of other academic majors and minors to promote the advantages of adding Computer Science course work and/or credentials to their academic preparation
- Host additional events for elementary students, middle-school/junior high students, and secondary students to provide additional on-campus or virtual opportunities for exposure to the fascinating spectrum of Computer Science topics
- Continue to work with the CTIS Department’s advisory board and other key stakeholders to ensure that our Computer Science program remains relevant to their needs and that strong employment trends for our Computer Science graduates continue
- Maintain the strong student retention efforts that are a hallmark of Wayne State College, which in turn will help graduation rates among Computer Science students
- Leverage the significant involvement in the Growing Together Cooperative Education program and seek to expand that involvement as the program is replicated and/or adapted in other communities
- Develop a panel-based event in which we bring back WSC alumni of CTIS academic programs to share insights regarding Computer Science careers and encourage degree completion in Computer Science
- Work closely with WSC College Relations and the WSC Admissions office to update the marketing materials and web content for the Computer Science academic program and ensure that marketing efforts remain effective
- Leverage the excellent facilities of the new Center for Applied Technology (CAT) building to provide a venue for exploration of Computer Science concepts and to promote Computer Science academic program pursuit
- Reach out to Secondary teachers, guidance counselors, and other key influencers who play a role in the students’ choices regarding academic programs
- Maintain and enhance articulation agreements currently in place, plus where appropriate create new articulation agreements that make it attractive to potential transfer students to study Computer Science at WSC
- Explore whether any synergies can be attained between recruiting for Computer Science academic programs and the new E-Sports program on the WSC campus
- Use our drone, virtual reality, mobile telepresence, collaborative robot, and other similar technologies, plus other new technologies with a “Wow-factor” yet to be acquired to generate student interest in Computer Science.
- Celebrate and publicize the success of Computer Science students and graduates

A number of institutional and environmental factors are appropriately aligned to help the efforts and initiatives listed above achieve the desired results. The strategic planning processes at Wayne State College and its approach to Assessment of academic programs have positioned the Computer Science program to be well-aligned with the institution's mission, strategic plan, and outcomes. A combination of direct and indirect measures are used annually for assessment of the Computer Science program.

As presented earlier in this report, the Computer Science program at Wayne State College is important to the institution, the Nebraska State College System, the region, and to the state. The outlook for current and future workforce demands for graduates of the program is bright. The program has been shown to contribute to the larger community and the WSC Service region in a variety of ways. Because of its tight integration with the Computer Information Systems academic program at WSC, the Computer Science program can be delivered very efficiently, because most of the faculty, facilities, and indirect costs of the program would need to exist to support the Computer Information Systems program, even if the Computer Science program ceased to exist.

The efforts and initiatives described above are supported by the fact that the Computer Technology and Information Systems (CTIS) Department annually prepares a Recruitment and Retention Plan. As part of that plan preparation, we also address marketing and outreach activities. The efforts aimed at achieving the contents of those plans seem to be working well. In addition, they have been assisted by the completion of the Center for Applied Technology Building on the WSC campus, recent institutional enrollment growth over a multi-year period, the rollout of the new Growing Together Cooperative Education program (for which Computer Science was one of four featured initial academic programs), and a CTIS faculty-led revision of the Computer Science curriculum during the 2018-2019 academic year that was implemented with the 2019-2020 academic year. Recent enrollment growth in Computer Science, plus an increase in the level of interest in our Computer Science academic program by prospective students and transfer students suggest that our efforts to build the program are starting to pick up momentum and the current approach is working.