Maryland CTE Program of Study

**Project Lead The Way Computer Science Program Proposal**

Submitted to the Maryland State Department of Education

Division of Career and College Readiness

200 West Baltimore Street

Baltimore, Maryland 21201-2595

This agreement is between the Division of Career and College Readiness (DCCR), Maryland State Department of Education (MSDE), and the local school system listed below.

**LOCAL SCHOOL SYSTEM INFORMATION –** Complete the information requested below, including the original signature of the CTE Local Director.

|  |  |
| --- | --- |
| Local School System (LSS) and Code: |  |
| Name of CTE Local Director: |  | Phone: |  |
| LSS Career Cluster: | Information Technology |
| LSS Program Title: | Project Lead The Way Computer Science Program |
| Pathway Options: | 1. | 2. | 3. |
| Value Added Options: | [x]  yes [ ]  no | This program provides students the opportunity to earn early college credit. The academic and technical course sequences for both secondary and postsecondary programs are included herein. |
| [ ]  yes [ ]  no | Enclosed is a copy of the articulation agreement (Copy required for CTE program approval if the program is articulated with a postsecondary education provider). |
| [ ]  yes [ ]  no | This program provides students with the opportunity to earn an industry-recognized credential. The credential is identified herein. |
| Program Start Date: |  |  |  |
| Signature of CTE Local Director: |  | Date: |  |
| Signature of Local Superintendent: |  | Date: |  |

**TO BE COMPLETED BY MSDE/DCCR**

|  |  |
| --- | --- |
| Date Program Proposal received by CTE Systems Branch: |  |
| CTE Control Number: |  | Fiscal Year: |  |
| CIP Number: | Program: 110255  | Pathway Option 1:  | PathwayOption 2:  | PathwayOption 3: |
| MSDE Cluster Title: | Information Technology |

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| --- | --- | --- |
| **Approval Starts FY: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |  |  |
|  |  |  |
| Signature, Assistant State Superintendent, Career and College Readiness |  | Date |

**CTE Secondary Program Proposal Contents**

**STEP 1A: PROGRAM ADVISORY COMMITTEE MEMBERS AND THEIR AFFILIATIONS**

**Complete the list of the Program Advisory Committee (PAC) members. Members should include employers, local workforce development representatives, economic development personnel, business, or labor representatives, and the remainder should include secondary and postsecondary, academic and technical educators and other stakeholders. Place a check in the appropriate box to indicate the role each person plays. Include all of the information requested for each entry. Use this form or a locally developed form – either one is acceptable as long as all information is provided.**

# Program Advisory Committee List

|  |
| --- |
| **Membership: First entry should be the industry representative who is leading the PAC.** |
| PAC Leader Name: |  | Representation: |
| Title: |  | [ ]  Industry [ ]  Secondary [ ]  Postsecondary  |
| Affiliation: |  |
| Address1: |  |
| Address2: |  |
| City, State, Zip: |  | State: |  | Zip |  |
| Phone: |  | Fax: |  |
| Email: |  |
| Area of Expertise: |  |
| Role: | [ ]  Work-based Learning [ ]  Curriculum Development [ ]  Skills Standards Validation [ ]  Staff Development |
| [ ]  Program Development  | [ ]  Other (specify):  |  |

|  |  |  |
| --- | --- | --- |
| Name: |  | Representation: |
| Title: |  | [ ]  Industry [ ]  Secondary [ ]  Postsecondary  |
| Affiliation: |  |
| Address1: |  |
| Address2: |  |
| City, State, Zip: |  | State: |  | Zip |  |
| Phone: |  | Fax: |  |
| Email: |  |
| Area of Expertise: |  |
| Role: | [ ]  Work-based Learning [ ]  Curriculum Development [ ]  Skills Standards Validation [ ]  Staff Development |
| [ ]  Program Development  | [ ]  Other (specify):  |  |

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| --- | --- | --- |
| Name: |  | Representation: |
| Title: |  | [ ]  Industry [ ]  Secondary [ ]  Postsecondary  |
| Affiliation: |  |
| Address1: |  |
| Address2: |  |
| City, State, Zip: |  | State: |  | Zip |  |
| Phone: |  | Fax: |  |
| Email: |  |
| Area of Expertise: |  |
| Role: | [ ]  Work-based Learning [ ]  Curriculum Development [ ]  Skills Standards Validation [ ]  Staff Development |
| [ ]  Program Development  | [ ]  Other (specify):  |  |

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| --- | --- | --- |
| Name: |  | Representation: |
| Title: |  | [ ]  Industry [ ]  Secondary [ ]  Postsecondary  |
| Affiliation: |  |
| Address1: |  |
| Address2: |  |
| City, State, Zip: |  | State: |  | Zip |  |
| Phone: |  | Fax: |  |
| Email: |  |
| Area of Expertise: |  |
| Role: | [ ]  Work-based Learning [ ]  Curriculum Development [ ]  Skills Standards Validation [ ]  Staff Development |
| [ ]  Program Development  | [ ]  Other (specify):  |  |

|  |  |  |
| --- | --- | --- |
| Name: |  | Representation: |
| Title: |  | [ ]  Industry [ ]  Secondary [ ]  Postsecondary  |
| Affiliation: |  |
| Address1: |  |
| Address2: |  |
| City, State, Zip: |  | State: |  | Zip |  |
| Phone: |  | Fax: |  |
| Email: |  |
| Area of Expertise: |  |
| Role: | [ ]  Work-based Learning [ ]  Curriculum Development [ ]  Skills Standards Validation [ ]  Staff Development |
| [ ]  Program Development  | [ ]  Other (specify):  |  |

|  |  |  |
| --- | --- | --- |
| Name: |  | Representation: |
| Title: |  | [ ]  Industry [ ]  Secondary [ ]  Postsecondary  |
| Affiliation: |  |
| Address1: |  |
| Address2: |  |
| City, State, Zip: |  | State: |  | Zip |  |
| Phone: |  | Fax: |  |
| Email: |  |
| Area of Expertise: |  |
| Role: | [ ]  Work-based Learning [ ]  Curriculum Development [ ]  Skills Standards Validation [ ]  Staff Development |
| [ ]  Program Development  | [ ]  Other (specify):  |  |

|  |  |  |
| --- | --- | --- |
| Name: |  | Representation: |
| Title: |  | [ ]  Industry [ ]  Secondary [ ]  Postsecondary  |
| Affiliation: |  |
| Address1: |  |
| Address2: |  |
| City, State, Zip: |  | State: |  | Zip |  |
| Phone: |  | Fax: |  |
| Email: |  |
| Area of Expertise: |  |
| Role: | [ ]  Work-based Learning [ ]  Curriculum Development [ ]  Skills Standards Validation [ ]  Staff Development |
| [ ]  Program Development  | [ ]  Other (specify):  |  |

**STEP 1B: DOCUMENTED LABOR MARKET DEMAND – Check the appropriate box below.**

[x]   **Demand exists**

The PAC will review labor market information on a local, regional and/or state basis. Check this box if demand exists for the identified occupations. The labor market information does not need to be provided with the proposal as long as there is a demand for employees according to data provided by the Department of Labor, Licensing and Regulation (DLLR) or documented by employers in letters or other correspondence.

[ ]  If evidence for labor market demand is not readily available, attach documentation to the proposal.

Check this box if there is a unique labor market demand for a program and data are not available from the DLLR. If the occupation is new or emerging and no data exist, supporting evidence is submitted with the proposal (i.e., document local, national, or regional trends, local circumstances, or provide letters from employers or local economic/workforce development offices documenting employment demand including the projected number of openings by pathway).

**STEP 2A: PROGRAM OVERVIEW – After determining the cluster and pathway options, identify the standards used to develop the CTE program of study. Describe the program to be developed in detail based on what students are expected to know and be able to demonstrate as a result of participating in the program.**

|  |
| --- |
| **Program Overview:**The Project Lead the Way (PLTW) Computer Science program of study engages high school students in computational thinking and prepares a computationally aware and capable workforce. PLTW Computer Science empowers students to become creators, instead of merely consumers, of the technology all around them. The program’s interdisciplinary courses engage students in compelling, real-world challenges. As students work together to design solutions, they learn computational thinking – not just how to code – and become better thinkers and communicators. This program is comprised of four courses. * Computer Science Essentials
* Computer Science Principles
* Computer Science A
* Cybersecurity

Students who take the Computer Science Principles and Computer Science A courses can also sit for the Advanced Placement Computer Science exams for one or both of the courses. **Students are Expected to:**1. Apply computational thinking to solve problems;
2. Use Python to create apps and produce simulations;
3. Design and implement user interfaces and Web-based databases;
4. Create and share solutions and computing resources to protect and secure privacy; and
5. Work in teams to complete challenging, self-directed projects.

**Schools and School Systems are Expected to:**1. Ensure the PLTW CS program has the required computer hardware. See the PLTW CS Computer Specs on page four (4) of the [PLTW Resource](https://www.pltw.org/mypltwresources) web page. Note that the PLTW CS program requires a 1:1 ratio of laptops to students, a laptop for each PLTW CS teacher, a 2:1 ratio of students to tablets, and a tablet for each teacher.
2. Select teacher(s) with baccalaureate degree(s) who are knowledgeable in Computer Science or other Science, Technology Engineering and Mathematics (STEM)-related content. PLTW instructors must hold the minimum of a bachelor’s degree. They must agree to participate in PLTW Summer Core Training for each course they intend to teach. The PLTW Summer Core Training is a two-week professional development experience offered at the University of Maryland, Baltimore County.
3. Agree to pay the $2,000 annual participation fee to Project Lead The Way. (Perkins formula dollars or Reserve Fund Grants may be used to cover this cost).
4. Submit to MSDE data pertaining to the Perkins Core Indicators of Performance.

To download the course outlines and standards alignment documents, access the PLTW Computer Science [curriculum web page](https://www.pltw.org/our-programs/pltw-computer-science-curriculum#curriculum-1).  |

**STEP 2B: COURSE DESCRIPTIONS AND END OF COURSE ASSESSMENTS – Insert each CTE completer course title. Describe each course based on what students are expected to know and be able to demonstrate as a result of their participation. Check the assessment instrument(s) that will be used to document student attainment of the knowledge and skills included in each course and specify additional information as appropriate.**

|  |
| --- |
| **Course Title: Computer Science Essentials (CSE) 1 credit****Course Description:** Computer Science Essentials is an excellent entry point for new high school computer science (CS) learners. CS Essentials is designed with strong connections to the Computer Science K12 Frameworks (CS K12), the Computer Science Teachers Association K-12 Computer Science (CSTA K-12 CS) Level 3A Standards, and the Advanced Placement Computer Science Principles (AP CSP) Frameworks. CS Essentials will boost student success for those who continue in CS courses. These intentional connections to widely accepted standards will help students gain confidence and reinforce essential concepts and skills that build toward life-long success in the computer science pathways beyond just PLTW courses. CS Essentials introduces students to coding fundamentals through an approachable, block-based programming language where they will have early success in creating usable apps. As students sharpen their computational thinking skills, they will transition to programming environments that reinforce coding fundamentals by displaying block programming and text based programming side-by-side. Finally, students will learn the power of text-based programming as they are introduced to the Python® programming language. The course engages students in computational thinking practices and collaboration strategies, as well as industry standard tools authentic to how computer science professionals work. Students will learn about professional opportunities in computer science and how computing can be an integral part of all careers today. Students are expected to: * Work in teams to solve problems and achieve a common goal;
* Learn essential computational thinking practices, such as developing abstractions; collaborating around computing; and communicating as they create, test, and refine computational artifacts;
* Create basic apps that rely on the concepts of event-driven programming, branching, iteration, variables, and abstraction;
* Develop independent and collaborative strategies that will help them communicate around computing;
* Apply an Agile development process and task decomposition to solve a problem that meets the needs of others;
* Apply development strategies and user-centered research to create an app that has value to others;
* Explore the impacts of computer science on our society and bring coding off the screen and into the physical world;
* Connect code developed using blocks and seeing the same code in a text-based language;
* Investigate the wide range of careers in computer science and how computational thinking is an important part of the majority of professions today and in the future;
* Create a game simulation and reinforce what is learned about functions, arguments, and return values;
* Explore how websites are designed and viewed on the client side, as well as how they connect, manage, and share data on the server side;
* Collaboratively design, create, and connect a secure website based on an interest or need that the student group defines;
* Apply computational thinking practices and a strategic development process to create computational artifacts that solve problems and create value for others. Students will collaborate the way computing professionals do as they pursue solutions to authentic needs; and
* Apply the collaboration, technical, and communication skills that they have developed to solve an authentic problem that is relevant to them.

**End of Course Assessment**Check the assessment instruments that will be used to document student attainment of the course knowledge and skills.[ ]  Teacher-designed end-of-course assessment:      [ ]  School system-designed end-of-course assessment:      [ ]  Partner-developed exam: (specify)      [ ]  Licensing exam: (specify)      [ ]  Certification or credentialing exam: (specify)      **[x]** Nationally recognized examination: (specify)PLTW End-of-Course Assessment |
| **Course Title: Computer Science Principles (CSP)****Course Description:** Project Lead the Way (PLTW) has partnered with the College Board to offer AP level courses as part of the PLTW program. The Computer Science Principles (CSP) course covers all learning objectives in the College Board’s new Computer Science Principles Framework. This approach provides the opportunity for students to get AP credit for earning a qualifying score on the AP Computer Science Principles exam. Additional information about the partnership between PLTW and the College Board can be found here on the [College Board-PLTW web page](https://lp.collegeboard.org/ap-project-lead-the-way).CSP aims to develop computational thinking, generate excitement about career paths that use computing, and introduce professional tools that foster creativity and collaboration. The course also aims to build students’ awareness of the tremendous demand for computer specialists and for professionals in all fields who have computational skills. Each unit focuses on one or more computationally intensive career paths. The course aims to engage students to consider issues raised by the present and future societal impact of computing. Students use Python® as a primary tool and incorporate multiple platforms and languages for computation. Students practice problem solving with structured learning experiences and progress to open-ended projects and problems that require them to develop planning, documentation, communication, and other professional skills. Problems aim for ground-level entry with no ceiling so that all students can successfully engage the problems. Students with greater motivation, ability, or background knowledge will be challenged to work further. The course contains the following four units: 1) Algorithms, Graphics, and Graphical User Interfaces; 2) The Internet; 3) Raining Reigning Data; and 4) Intelligent Behavior. Students are expected to:* Explore career paths tied to computing;
* Build algorithmic thinking and use abstraction;
* Learn and use a variety of programming languages to tell graphical stories, publish games, and explore various development environments and programming techniques;
* Create original code and read and modify code provided from other sources;
* Evaluate policy questions about the ownership and control of digital data;
* Examine the implications for creative industries and consumers;
* Use PHP and SQL to structure and access a database hosted on a remote server;
* Learn how HTML and CSS direct the client computer to render a page;
* Experiment with JavaScript to provide dynamic content;
* Examine protocols that allow the Internet to function securely;
* Understand the availability of large-scale data collection and analysis;
* Visualize techniques and work to recognize opportunities to apply algorithmic thinking; and
* Explore the emergence of intelligent behavior.

**End of Course Assessment**Check the assessment instruments that will be used to document student attainment of the course knowledge and skills.[ ]  Teacher-designed end-of-course assessment[ ]  School system-designed end-of-course assessment[ ]  Partner-developed exam: (specify)      [ ]  Licensing exam: (specify)      [ ]  Certification or credentialing exam: (specify)      **[x]  Nationally recognized examination: (specify) AP Computer Science Principles Exam and PLTW End of Course Assessment** |
| **Course Title: Computer Science A (CSA)****Course Description:** PLTW has partnered with the College Board to offer AP level courses as part of the PLTW program. The Computer Science A (CSA) course covers all student learning outcomes and topics addressed in the College Board’s AP Computer Science A course description. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design using Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. By the end of the course, students will be able to:* Design, implement, and analyze solutions to problems;
* Use and implement commonly used algorithms;
* Develop and select appropriate algorithms and data structures to solve new problems;
* Write solutions fluently in an object-oriented paradigm;
* Write, run, test, and debug solutions in the Java programming language, utilizing standard Java library classes and interfaces from the AP Java subset;
* Read and understand programs consisting of several classes and interacting objects;
* Read and understand a description of the design and development process leading to such a program; and
* Understand the ethical and social implications of computer use.

**End of Course Assessment**Check the assessment instruments that will be used to document student attainment of the course knowledge and skills.[ ]  Teacher-designed end-of-course assessment[ ]  School system-designed end-of-course assessment[ ]  Partner-developed exam: (specify)      [ ]  Licensing exam: (specify)      [ ]  Certification or credentialing exam: (specify)      **[x]  Nationally recognized examination: (specify) AP Computer Science A Exam and PLTW End of Course Assessment** |
| **Course Title: Cybersecurity (SEC)**Course Description: SEC introduces the tools and concepts of cybersecurity and encourages students to create solutions that allow people to share computing resources while protecting privacy. Nationally, computational resources are vulnerable and frequently attacked; in SEC, students solve problems by understanding and closing these vulnerabilities. This course raises students' knowledge of and commitment to ethical computing behavior. It also aims to develop students' skills as consumers, friends, citizens, and employees who can effectively contribute to communities with a dependable cyber-infrastructure that moves and processes information safely. Cybersecurity will be available fall 2018.**End of Course Assessment**Check the assessment instruments that will be used to document student attainment of the course knowledge and skills.[ ]  Teacher-designed end-of-course assessment[ ]  School system-designed end-of-course assessment[ ]  Partner-developed exam: (specify)      [ ]  Licensing exam: (specify)      [ ]  Certification or credentialing exam: (specify)      [x]  Nationally recognized examination: (specify) **PLTW End of Course Assessment** |

**STEP 2C: END-OF-PROGRAM ASSESSMENT** - **Check the assessment instruments that will be used to document student attainment of the program knowledge and skills. Include and identify assessments leading to industry recognized credentials if available and appropriate.**

[ ]  Teacher-designed end-of-program assessment

[ ]  School system-designed end-of-program assessment

[ ]  Partner-developed exam: (specify)

[ ]  Licensing exam: (specify)

[ ]  Certification or credentialing exam: (specify)

[x]  **Nationally recognized examination: (specify) AP Computer Science Principles Exam, AP Computer Science A Exam and PLTW End of Course Assessments.**

 The CTE program matrix defines a planned, sequential program of study that consists of a minimum of four credits in CTE coursework in high school including work-based learning and/or industry-mentored projects. Work-based learning (WBL) experiences or industry-mentored projects must be included in the program to obtain approval. The program matrix includes the recommended academic and CTE courses identified for the pathway and postsecondary linkages (i.e., dual enrollment, transcripted and articulated credit).

**STEP 2D: Program Sequence Matrix (Include the program sequences for High School, Associate’s Degree, and Bachelor’s Degree programs) Identify the pathway options. Complete the matrix for the 9-12 CTE program of study, and the articulated program sequence in the matrix for the two- or four-year college program of study. Indicate which courses receive CTE credit by placing the number of credits in parentheses after each CTE course title. Place an asterisk (\*) next to the course identified as the concentrator course indicating that the student has completed 50% of the program**.

CTE programs typically begin after ninth grade and do not include career exploration courses. Courses such as computer applications and keyboarding are not included in the completer sequence because they provide prerequisite skills for both academic courses and CTE programs. Academic courses are counted only if they are tailored to serve mainly CTE students and have been revised to reflect industry skill standards. Technology Education or Advanced Technology Education and Personal Financial Literacy courses are not acceptable for credit in the career and technology education program sequence.

| **The LSS program title should be the same one that appears on the cover page. If more than one pathway option is offered in the program, complete a matrix for each program option (MSDE will insert the CIP number). Example: An Academy of Information Technology program may include options in web design & programming.** |
| --- |
| **Pathway/Program:** | **PLTW Computer Science**  | **CIP Number (For MSDE Use)** | **11.255** |
| **Graduation Requirements** | **Grade 9** | **Grade 10** | **Grade 11** | **Grade 12** |
| English - 4 | English 9 | English 10 | English 11AP Language | English 12AP Literature |
| Social Studies - 3 | US Government | World HistoryAP European | US HistoryAP US History | GovernmentAP Government |
| Mathematics - 3  | Algebra I | Geometry | Algebra II | Trigonometry, Pre-Calculus, Calculus, or AP Calculus |
| Science - 3 | Earth or Physical Science | Biology or AP Biology | Chemistry or AP Chemistry | Physics or AP Physics |
| Physical Education -.5Health Education - .5 | .5 Physical Education | .5 Health |  |  |
| Fine Arts - 1 | .5 Fine Arts | .5 Fine Arts |  |  |
| Technology Education - 1 | FoT, PLTW IED, or PLTW POE |  |  |  |
| CTE Completer Program – 4 \*concentrator course | Computer Science Essentials (CSE) (1 credit) | Computer Science Principles (CSP)(1 credit | \*Computer Science A (CSA) (1 credit) | Cybersecurity (SEC) (1 credit) |
| World Language - 2 and/orAdvanced Tech Ed - 2 | World Language  | World Language  | Adv. Tech | Adv. Tech |
| **Provide a list of examples of careers students are preparing to enter and postsecondary options:** Software Applications Developer, Computer Systems Analyst, Computer Systems Engineer, Network Systems Administrator, Database Administrator, Business intelligence analyst, Web Developer, Computer Programmer, Software Engineer, Database Administrator, and Security Analyst |

|  |
| --- |
| **Two Year College Program Sequence – Program Overview****Many local school systems provide postsecondary matrices in their program of study guides to inform students, parents, and counselors of the opportunities available to those enrolled in the program. Section 2E must be completed before an articulated CTE program of study can be approved. *A copy of the Articulation Agreement is also required to be submitted with the proposal prior to program approval.*****Describe the program to be developed in detail based on what students are expected to know and be able to demonstrate as a result of participating in the program.**  |
| **Program Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****College/Institution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Recommended Sequence – Complete the program matrix for the postsecondary sequence for the articulated CTE program of study. Indicate which courses receive articulated or transcripted credit by PLACING THE NUMBER OF CREDITS IN PARENTHESES after each course title.**  |
| **Semester 1** | **Semester 2** |
|  |  |
| **Semester 3** | **Semester 4** |
|  |  |
| **Provide a list of career options for students who complete the program:**  |

|  |
| --- |
| **Four Year College Program Sequence – Program Overview****Complete this matrix if the program includes a four year degree option****Many local school systems provide postsecondary matrices in their program of study guides to inform students, parents, and counselors of the opportunities available to those enrolled in the program. Section 2E must be completed before an articulated CTE program of study can be approved. *A copy of the Articulation Agreement is also required to be submitted with the proposal prior to program approval.*****Describe the program to be developed in detail based on what students are expected to know and be able to demonstrate as a result of participating in the program.**  |
| **Program Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****College/Institution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Recommended Sequence – Complete the program matrix for the postsecondary sequence for the articulated CTE program of study. Indicate which courses receive articulated or transcripted credit by PLACING THE NUMBER OF CREDITS IN PARENTHESES after each course title.**  |
| **Semester 1** | **Semester 2** |
|  |  |
| **Semester 3** | **Semester 4** |
|  |  |
| **Provide a list of career options for students who complete the program:**  |

**STEP 2E: VALUE-ADDED OPTIONS – Fill in the name of the partnering college or agency. Specify the credential that students will earn. Under value-added, indicate the number of credits or hours granted. This information is required before a program can be designated as a CTE articulated program of study.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Option** | **Partner** | **Credential** | **Value added for CTE completers** |
| Dual Enrollment |  |  |  |
| Transcripted Credit |  |  |  |
| Articulated Credit |  |  |  |
| Credit by Exam |  |  |  |
| Advanced Placement | College Board Course Titles:AP Computer Science Principles and AP Computer Science A | AP Credit (PLTW Courses)Computer Science Principles and Computer Science A | AP Credit  |
| Apprenticeship Approved by MATC\* |  |  |  |
| Certification(s) |  |  |  |
| License |  |  |  |
| Degree |  |  |  |
| Other (specify) |  |  |  |

\*MD Apprenticeship and Training Council

**STEP 2F: INDUSTRY-MENTORED PROJECT OR WORK-BASED LEARNING OPPORTUNITIES -- Check each box that applies.**

PAC members and other industry partners provide supervised WBL experiences and/or industry-mentored projects for all students who demonstrate performance of the competencies necessary to enter into this phase of the program. Supervised work-based learning experiences are required for all students demonstrating readiness to participate. For the few who do not participate, alternative capstone experiences should be provided (i.e., in school work experiences, a culminating project, or another experience comparable in rigor). Each type of work-based learning is defined in the glossary. Job shadowing is **not** acceptable for credit in a CTE program.

1. [ ]  Integrated WBL 2. [ ]  Capstone WBL 3. [ ]  Registered Apprenticeship

4. [ ]  Internship 5. [x]  Industry-Mentored Project 6. [ ]  In-school clinic or school-based enterprise

**STEP 2G: STUDENT ORGANIZATIONS PROVIDED TO STUDENTS IN THE PROGRAM – Check each box that applies or specify if “Other” is selected.**

Students will develop and apply technical and academic skills, as well as Skills for Success, through participation in:

[ ]  DECA [ ]  FFA [x]  SkillsUSA

[ ]  FBLA [ ]  OTHER (specify)

STEP 3: COMPLETE THE INSTRUCTIONAL PROGRAM DATA SHEET

|  |  |
| --- | --- |
| Local School System (LSS) and Code: |  |
| Name of CTE Local Director: |  | Phone: |  |
| LSS Program Title: |  | CIP Code: |  |

STEP 3.1: PATHWAY OPTIONS

|  |  |
| --- | --- |
| **1.** | PLTW Computer Science |
| **2.** |  |
| **3.** |  |
| **4.** |  |

STEP 3.2: INSTRUCTIONAL PROGRAM CREDIT BY GRADE(S)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credits per year per pathway option as reflected by Course Sequences** | **9** | **10** | **11** | **12** | **TOTAL** |
| 1. PLTW Computer Science
 | 1 | 1 | 1 | 1 | 4 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Total number of credits for program completion: 4**

STEP 3.3: CAREER AND TECHNOLOGY EDUCATION PROGRAM SITES

Step 3.3:

|  |  |  |
| --- | --- | --- |
| **Pathway Options** | **School Name(s) Sites** | **School Number** |
|  |  |  |
|  |  |  |
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