[For use in **Action 3.1**]



**Cross-Disciplinary STEM Core Curriculum Matrix**

INSTRUCTIONS

*This Matrix can be used by the Implementation Team to document the integration points for cross-disciplinary STEM core skills. They may wish to refer to the* [*Skill Sets Glossary*](https://www.preparingtechnicians.org/wp-content/uploads/Glossary-Cross-Disciplinary-STEM-Core-Skill-Sets.docx) *during this activity.*

1. **Column 1:** Based on the results of Step 2 activities, edit the skill sets in each of the three broad skill areas to reflect the prioritized list of skill sets that will be integrated into technician programs across disciplines.
2. **Column 2:** Based on the Step 3 activities, note whether prioritized skill sets are taught.
3. **Column 3:** If prioritized skill sets are taught in the program, indicate where.
4. **Column 4:**Indicate whether you have lessons related to the prioritized skill set that can be shared with the team.
5. **Column 5:** If prioritized skill sets are not taught, note integration points where the cross-disciplinary skills could be taught.

*Following completion of the Matrix*

1. Teams are encouraged to explore the [Instructional Cards](https://www.preparingtechnicians.org/instructional-cards/) available through the Preparing Technicians for the Future of Work project.
2. If there are remaining content gaps to be addressed, team members should consider using the scenario development tools as a springboard for creating cross-disciplinary lessons for integration.

WORKSHEET COLOR LEGEND

|  |  |
| --- | --- |
| Canary | Data Knowledge & Analysis |
| Pink | Advanced Digital Literacy  |
| Blue  | Business Knowledge & Processes  |

**DATA KNOWLEDGE & ANALYSIS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DATA KNOWLEDGE & ANALYSIS****SKILL SETS** | **DO WE TEACH THIS SKILL IN OUR PROGRAM?**  | **IF YES, WHERE IN THE CURRICULUM DO WE TEACH IT?** | **DO YOU HAVE LESSONS ON THIS SKILL SET TO SHARE?** | **IF NO, WHERE ARE THE CROSS-DISCIPLINARY INTEGRATION POINTS?** |
| **YES** | **NO** | **YES** | **NO** |
| Analytics tools |  |   |  |   |
| Computational thinking |  |   |  |   |
| Data analysis |  |   |  |   |
| Data backup and restoration |  |   |  |   |
| Databases |  |   |  |   |
| Data fluency |  |   |  |   |
| Data life cycle |  |   |  |   |
| Data management |  |  |  |  |
| Data modeling |  |   |  |   |
| Data storage |  |   |  |   |
| Data visualization |  |   |  |   |
| Query languages |  |   |  |   |
| Spreadsheets |  |   |  |   |
| Statistics |  |  |  |  |

**ADVANCED DIGITAL LITERACY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ADVANCED DIGITAL LITERACY****SKILL SETS** | **DO WE TEACH THIS SKILL IN OUR PROGRAM?** | **IF YES, WHERE IN THE CURRICULUM DO WE TEACH IT?** | **DO YOU HAVE LESSONS ON THIS SKILL SET TO SHARE?** | **IF NO, WHERE ARE THE CROSS-DISCIPLINARY INTEGRATION POINTS?** |
| **YES** | **NO** | **YES** | **NO** |
| Artificial intelligence/machine learning |  |   |  |   |
| Automation/robotics |  |   |  |   |
| Basic programming |  |   |  |   |
| Cloud literacy |  |   |  |   |
| Digital fluency |  |   |  |   |
| Digital twins |  |   |  |   |
| Edge computing |  |   |  |   |
| Function block diagram programming |  |   |  |   |
| Human-Machine Interface (HMI) |  |   |  |   |
| Internet of Things (IoT) |  |   |  |   |
| Network architecture |  |   |  |   |
| Network communication |  |   |  |   |
| Security controls |  |   |  |   |

**BUSINESS KNOWLEDGE & PROCESSES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **BUSINESS KNOWLEDGE & PROCESSES****SKILL SETS** | **DO WE TEACH THIS SKILL SET IN OUR PROGRAM?** | **IF YES, WHERE IN THE CURRICULUM DO WE TEACH IT?** | **DO YOU HAVE LESSONS ON THIS SKILL SET TO SHARE?** | **IF NO, WHERE ARE THE CROSS-DISCIPLINARY INTEGRATION POINTS?** |
| **YES** | **NO** | **YES** | **NO** |
| Business Cycles |  |   |  |   |
| Blockchain |  |   |  |   |
| Communication |  |   |  |   |
| Continuous process improvement |  |   |  |   |
| Customer/stakeholder analysis |  |   |  |   |
| Entrepreneurial mindset |  |   |  |   |
| Ethics |  |   |  |   |
| Lean processes |  |   |  |   |
| Market trends |  |   |  |   |
| Overall Equipment Efficiency (OEE) |  |   |  |   |
| Return on Investment (ROI) |  |   |  |   |
| Risk management |  |   |  |   |
| Supply and demand |  |   |  |   |
| Supply chains |  |  |  |  |
| Vertical and horizontal integration |  |  |  |  |