SKILLS for the **FUTURE**
W I S C O N S I N
Y O U T H   A P P R E N T I C E S H I P

Science, Technology, Engineering, and Math (STEM) Skill Standards Checklist

Student Name**.**	School District East Troy High School
YA Coordinator	YA Consortium
High School Graduation Date	

Certification Areas Completed:

Required Skills - For EACH Pathway
Check ✓ completed areas
- ☐ Core Skills
- ☐ Safety

Engineering & Technology Pathway
- ☐ Engineering Drafting Unit- REQUIRED FIRST
- ☐ Mechanical/Electrical Engineering Unit
- ☐ Civil Engineering Unit

Science & Math Pathway
- ☐ Bioscience Lab Foundations Unit- REQUIRED FIRST
- ☐ Bioscience Applications Unit

Level One Requirements:

Students must complete ALL listed below
Check ✓ completed areas
- ☐ Required Skills
- ☐ Minimum of **ONE** Pathway Unit
- ☐ Minimum of 2 semesters related instruction
- ☐ Minimum of 450 work hours

Level Two Requirements:

Students must complete ALL listed below
Check ✓ completed areas
- ☐ Required Skills for EACH pathway
- ☐ Minimum of **TWO** Pathway Units
- ☐ Minimum of 4 semesters related instruction
- ☐ Minimum of 900 work hours

Total Hours Employed	Company Name	Telephone Number
		( )
		( )

Instructions for the Worksite Mentor(s) and Instructor(s)

The Skill Standards Checklist is a list of the competencies (tasks) to be achieved through mentoring and training at the worksite.

- The worksite mentor should rate each competency as the student acquires and demonstrates the skill *according to the performance criteria.*
- A competency may be revisited and the score raised as the student becomes more proficient at the worksite.
- The mentor and student should go over this checklist together on a regular basis to record progress and plan future steps to complete the required competencies.

I certify that this student has successfully completed the competencies required in my department. Circle your YA role, sign and print your name, and complete with the date signed and the department name.

SIGN this page IF you have been a mentor, trainer, or instructor of this student

Mentor/Trainer/Instructor Signature	Mentor/Trainer/Instructor Signature
Printed Name	Printed Name
Department	Department
Date Signed	Date Signed

Mentor/Trainer/Instructor Signature	Mentor/Trainer/Instructor Signature
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Operational Program Notes for Skill Standards Checklist

1. **Science, Technology, Engineering, and Math Youth Apprenticeship Curriculum**
   - Definitions:
     - o Competency- The worksite skill to be performed
     - o Performance Standards- How to assess skill performance as applicable to worksite
     - o Learning Objectives- Content knowledge recommended to learn these skills; may be taught by the employer, school district and/or technical college.
     - o Skill Standards Checklist- The documented list of competencies completed by the YA student
     - o W/S- Listed after a skill indicates that skill performance may be learned and assessed at the worksite OR in the classroom in a simulated setting. However, a simulated setting should ONLY be used IF there is no possibility of skill performance at the worksite.
   - Performance Standards & Learning Objectives are located in applicable Appendices of the **Program Guide for this Youth Apprenticeship.**

2. **ALL** Youth Apprentices **MUST** complete the Required Skills (Core Skills and Safety) competencies **for each Pathway** they are enrolled in.
   - The Required Skills competencies may be completed concurrently with the specific Pathway process technical competencies.
   - The Required Skills are common skills specific to all Science, Technology, Engineering, and Math sub-sectors. These skills are *aligned with* the National States' Career Clusters standards for the Science, Technology, Engineering, and Math Career Cluster.

3. **Youth Apprenticeship choices** (depending on job placement)
   - Competencies have been reviewed by the Department of Workforce Development for Child Labor Laws. Contact the Department of Workforce Development's Equal Rights Division/Labor Standards Bureau at 608-266-6860 for questions regarding child labor laws. SEE Appendix A for special Child Labor Law considerations in this YA Program.
   - Students will complete a **Minimum Rating** in the Required Skills and in one pathway unit for a Level One Science, Technology, Engineering, and Math YA and a **Minimum Rating** in the Required Skills and two pathway units for a Level TWO Science, Technology, Engineering, and Math YA.
   - **Units within each Pathway are unique to that Pathway.** Therefore, switching between pathways, after the successful completion of the first year, is not allowable.
   - The Department of Workforce Development Occupational Certificate will indicate "Science, Technology, Engineering, and Math" attained when the program is completed.

4. **Competency Ratings**
   - Rate the student on the competencies regularly and revisit the competencies with the student periodically to offer the opportunity for an improved rating
   - Arrangements must be made to ensure that the student learns, practices, AND performs each competency **even if** that competency is not part of their regular job function
   - "Entry Level" criteria should be interpreted to mean "able to do the task satisfactorily."
   - "Assist" in front of a skill indicates that the student should perform the skill *as indicated in the curriculum* "while assisting a worksite professional." Training should go beyond "observation only" for these skills. It will be up to the employer to determine the criticality of each specific task, training completed, and the actual level of supervision required. See curriculum details for requirements.

Required Skills

Required of **ALL** Science, Technology, Engineering, and Math YA Students

Copy this page **FOR EACH** pathway to be completed

CORE SKILLS	Minimum rating of 2 for EACH **Check Rating**		
	1	**2**	**3**
1. Apply academic knowledge	☐	☐	☐
2. Apply career knowledge	☐	☐	☐
3. Communicate effectively	☐	☐	☐
4. Act professionally	☐	☐	☐
5. Demonstrate customer service skills	☐	☐	☐
6. Cooperate with others in a team setting	☐	☐	☐
7. Think critically	☐	☐	☐
8. Exhibit regulatory and ethical responsibilities	☐	☐	☐
9. Use basic technology	☐	☐	☐
10. Use resources wisely	☐	☐	☐

SAFETY	Minimum rating of 2 for EACH **Check Rating**		
	1	**2**	**3**
1. Follow personal safety requirements	☐	☐	☐
2. Maintain a safe work environment	☐	☐	☐
3. Demonstrate professional role to be used in an emergency	☐	☐	☐

Rating Scale:

3 = Exceeds entry level criteria | Requires minimal supervision | Consistently displays this behavior

2 = Meets entry level criteria | Requires some supervision | Often displays this behavior

1 = Needs improvement | Requires much assistance & supervision | Rarely displays behavior

Additional Comments –

Engineering and Technology Pathway

Engineering Drafting Unit – REQUIRED FIRST	Minimum rating of 2 for EACH Check Rating		
	1	**2**	**3**
1. Apply engineering principles	☐	☐	☐
2. Interpret technical drawings	☐	☐	☐
3. Use measuring devices accurately	☐	☐	☐
4. Organize databases, files, & drawings	☐	☐	☐
5. Reproduce documents & plans	☐	☐	☐
6. Use engineering drafting software	☐	☐	☐
7. Develop one-view drawings	☐	☐	☐
8. Develop 2D (orthographic) view drawings	☐	☐	☐
9. Develop 3D view models	☐	☐	☐
10. Prepare auxiliary views	☐	☐	☐
11. Prepare section views	☐	☐	☐
12. Dimension drawings	☐	☐	☐
13. Apply lettering & basic annotation to drawings	☐	☐	☐
14. Check, revise, & record drawings	☐	☐	☐
15. Participate on an engineering project	☐	☐	☐

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   2 = Meets entry level criteria | Requires some supervision | Often displays this behavior
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Additional Comments –

Engineering and Technology Pathway

Mechanical/Electrical Engineering Unit	Minimum rating of 2 for EACH Check Rating		
	1	2	3
1. Apply manufacturing & mechanical/electrical systems principles	☐	☐	☐
2. Interpret mechanical/electrical technical drawings	☐	☐	☐
3. Develop the engineering problem & plan with team	☐	☐	☐
4. Research physical limitations	☐	☐	☐
5. Research required materials properties	☐	☐	☐
6. Research manufacturing/assembly process & limitations	☐	☐	☐
7. Design prototype with team	☐	☐	☐
8. Prepare prototype technical drawings	☐	☐	☐
9. Assist to build prototype	☐	☐	☐
10. Assist to test & revise prototype	☐	☐	☐
11. Assist to calculate & analyze prototype test results	☐	☐	☐
12. Finalize part/process technical drawings	☐	☐	☐
13. Apply quality concepts to project	☐	☐	☐

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  2 = Meets entry level criteria | Requires some supervision | Often displays this behavior
  1 = Needs improvement | Requires much assistance & supervision | Rarely displays behavior

Additional Comments –

Engineering and Technology Pathway

Civil Engineering Unit	Minimum rating of 2 for EACH Check Rating		
	1	2	3
1. Apply structural & building principles	☐	☐	☐
2. Interpret civil engineering technical drawings	☐	☐	☐
3. Research codes & site requirements	☐	☐	☐
4. Conduct site analyses with team	☐	☐	☐
5. Assist to compile & analyze site measurements & other data	☐	☐	☐
6. Research structural requirements	☐	☐	☐
7. Assist to create materials specifications	☐	☐	☐
8. Design site structure(s)	☐	☐	☐
9. Draw a working site plan	☐	☐	☐
10. Construct a Bill of Materials	☐	☐	☐
11. Assist to create a project plan	☐	☐	☐
12. Assist to coordinate project activities	☐	☐	☐
13. Apply quality concepts to project	☐	☐	☐

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Additional Comments –

Science and Math Pathway

Bioscience Lab Foundations Unit	Minimum rating of 2 for EACH Check Rating		
	1	**2**	**3**
1. Apply Bioscience Lab knowledge	☐	☐	☐
2. Use aseptic technique	☐	☐	☐
3. Clean & prepare glassware & instruments	☐	☐	☐
4. Prepare reagents, solutions, and/or buffers	☐	☐	☐
5. Perform calculations and conversions	☐	☐	☐
6. Weigh and measure accurately	☐	☐	☐
7. Operate lab equipment properly	☐	☐	☐
8. Conduct testing according to protocol	☐	☐	☐
9. Record results of testing accurately	☐	☐	☐
10. Maintain accurate records	☐	☐	☐
11. Monitor & maintain lab &/or personal inventory	☐	☐	☐

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Additional Comments –

Science and Math Pathway

Bioscience Applications Unit – Required Competencies	Minimum rating of 2 for EACH Check Rating		
	1	**2**	**3**
1. Assist to organize & analyze data	☐	☐	☐
2. Prepare a Bioscience presentation (W/S)	☐	☐	☐

Bioscience Applications Unit – Additional Competencies	Minimum rating of 2 for EACH Check Rating		
	1	**2**	**3**
Choose **at least 6** from 22 below			
1. Grow &/or care for plants &/or lab animals	☐	☐	☐
2. Collect plant or animal tissues from source	☐	☐	☐
3. Isolate &/or purify cells, microbes, nucleic acids, &/or proteins	☐	☐	☐
4. Quantify &/or identify cells, microbes, nucleic acids, &/or proteins	☐	☐	☐
5. Culture cells &/or microbes	☐	☐	☐
6. Harvest cells &/or microbes	☐	☐	☐
7. Perform spectroscopy (light, uv, IR, mass, fluorescence)	☐	☐	☐
8. Perform chromatography (gas, TLC, HPLC)	☐	☐	☐
9. Perform flow cytometry	☐	☐	☐
10. Perform microscopy	☐	☐	☐
11. Perform restriction digests	☐	☐	☐
12. Hybridize nucleic acids	☐	☐	☐
13. Perform gel electrophoresis	☐	☐	☐
14. Perform amplification (PCR, RT-PCR)	☐	☐	☐
15. Perform blot assays (Southern, Western, Northern)	☐	☐	☐
16. Perform nucleic acid sequencing	☐	☐	☐
17. Perform cellular assays	☐	☐	☐
18. Perform immunoassays (ELISA)	☐	☐	☐
19. Perform protein assays (Bradford, Lowry)	☐	☐	☐
20. Perform transfection/transformation	☐	☐	☐
21. Perform basic cloning	☐	☐	☐
22. Run expression cloning tests	☐	☐	☐

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Additional Comments –

Additional Certifications, Training, Seminars and Projects

Please list in detail any additional certifications earned, any training and seminars attended, and/or any projects completed during the course of the Science, Technology, Engineering, and Math Youth Apprenticeship.

Description		
Notes/Comments		
Date Completed	Mentor/Trainer/Instructor Signature	Date Signed

Description		
Notes/Comments		
Date Completed	Mentor/Trainer/Instructor Signature	Date Signed

Description		
Notes/Comments		
Date Completed	Mentor/Trainer/Instructor Signature	Date Signed

Other Notes or Comments