PRECISION OPTICS MANUFACTURING TECHNICIAN
(Time-Based)

APPENDIX A

O*NET CODE 51-2099.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	Approximate Hours
A. Workplace Orientation	**100**
1. Demonstrate knowledge of workplace policies, procedures, etc.	
2. Work safely around equipment.	
3. Follow workplace safety plans; use appropriate Personal Protective Equipment (PPE).	
B. Materials Selection	**220**
1. Determine material(s) requirements from blueprint specifications.	
2. Review incoming material specifications and data.	
3. Follow correct material handling procedures.	
4. Maintain documentation of bulk materials.	
C. Planning and Verifying Fabrication Processes	**260**
1. Demonstrate an understanding of processing techniques for various optics, including plano, cylindrical, spherical, aspheric, and freeform optics.	
2. Select appropriate fabrication process, including procedures and equipment.	
3. Recommend process changes to reduce production costs.	
D. Shaping and Finishing	**3250**
1. Use appropriate power tools, such as diamond-bladed bandsaws, core drills, and internal diameter (ID) saws to initiate optical component production.	
2. Handle optical materials properly.	

3. Measure and record dimensionality.
4. Operate all manner of machinery, from hand beveling wheels to 5-axis CNC grinding machines (e.g., satisloh) in production.
5. Maintain clean work area. Follow prescribed equipment maintenance procedures, such as Total Productive Maintenance (TPM).

E. Measuring, Inspecting, and Packaging **1750**

1. Adhere to inspection plans.
2. Use appropriate metrology tools to inspect and confirm dimensionality, surface quality, etc., through use of test plates, interferometers, micrometers, and scales, etc.
3. Document final inspection results.
4. Package and protect optics for storage or shipping.
5. Adhere to prescribed instrument calibration system (calibrating performed by others).

F. Optical Component Assembly **210**

1. Interpret assembly drawings.
2. Use proper cleanroom and air-flow workbench procedures (if applicable).
3. Clean and inspect optical surfaces prior to assembly.
4. Properly align optical components for assembly.
5. Mount optical components in mechanical assemblies.
6. Measure performance of optical assemblies.

G. Thin Film Coatings **210**

1. Interpret drawings for coating specifications.
2. Clean and inspect optics prior to coating.
3. Load and operate coating equipment.
4. Test coating performance.

Approximate Total Hours **6000**

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impacton classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to https://dol.ny.gov/public-work-and-prevailing-wage

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APPENDIX B

RELATED INSTRUCTION

Safety/Health/Environment

1. General Workplace Safety
2. OSHA 10-hour course
3. Personal Protective Equipment (PPE)
4. Right-to-Know/ Safety Data Sheets (SDS)
5. First Aid & CPR (minimum 6.5hours every 3 years)
6. Sexual Harassment Prevention Training – must comply with Section 201-g of the Labor Law
7. Lock-Out/Tag-Out (LO/TO)

Trade Theory, Science, and Math

1. Blueprint Reading
2. Geometric Dimensioning & Tolerancing (GD&T)
3. Technical Math
4. Metrology
5. Optical Instruments and Testing
6. Geometric (Ray) Optics
7. Wave Optics and Applications
8. Technical Writing
9. Spreadsheet Software

Other Related Courses as necessary

A Minimum of 144 Hours of Related Instruction is Required for Each Apprentice for Each Year.

Appendix B topics are approved by New York State Education Department.