APPENDIX A

PRECISION OPTICS MANUFACTURING TECHNICIAN
(Time-Based)

D.O.T. CODE 716.382-018
O*NET CODE 51-2099.99

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, and safety & health issues may result in the need for additional on-the-job or classroom instruction.

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.

DRAFT

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.
6. 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.

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 http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf.

DRAFT

APPENDIX B

PRECISION OPTICS MANUFACTURING TECHNICIAN
(Time-Based)

RELATED INSTRUCTION

Safety/Health/Environment

General Workplace Safety
OSHA 10-hour course
Personal Protective Equipment (PPE)
Right-to-Know/ Safety Data Sheets(SDS)
First Aid & CPR (minimum 6.5hours every 3 years)
Sexual Harassment Prevention Training (minimum 3 hours)
Lock-Out/Tag-Out (LO/TO)

Trade Theory, Science, and Math

Blueprint Reading
Geometric Dimensioning & Tolerancing (GD&T)
Technical Math
Metrology
Optical Instruments and Testing
Geometric (Ray) Optics
Wave Optics and Applications
Technical Writing
Spreadsheet Software

Other Related Courses as necessary

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

DRAFT