

Table 2. OWM Training requirements

Recognition Level	Training Required	For Whom	How Often
All Measurement Parameters	Regional Measurement Assurance Program (RMAP) Training	At least one staff member; and All staff are recommended when training is conducted virtually or when lab is the local host for the training where no out-of-state travel is required.	Annually
Legal Metrology Limited: ⁱ Conditional Recognition. ⁱⁱ Conditional Approved Signatory Waiver.	<ol style="list-style-type: none"> 1. Fundamentals of Metrology (1 week laboratory seminar) 2. Introduction and Orientation to Mass and Volume Procedures (SOP 8, SOP 19)ⁱⁱⁱ 3. Fundamentals of Metrology, Laboratory Auditing Program (LAP) problems 4. Successful completion of proficiency testing 	Usually all staff, at least one staff member	Once Initially Refresher portions covered during Regional Measurement Assurance Program (RMAP) training
Mass Calibration Echelon III and II	<ol style="list-style-type: none"> 1. All of the above, plus: 2. Mass Seminar (2 week seminar) 3. Successful completion of proficiency testing for each area on the laboratory Scope 	Usually all staff, at least one staff member	Once Initially Refresher recommended every 10 years
Advanced Mass Calibration, Echelon I	<ol style="list-style-type: none"> 1. All of the above, plus: 2. Advanced Mass Seminar (2 week seminar) 3. Successful completion of proficiency testing using weighing designs 4. Advanced Laboratory Auditing Program (LAP) problems 	At least one staff member	Once Initially Refresher recommended every 10 years
Volume Calibration, Echelon I and II	<ol style="list-style-type: none"> 1. Legal Metrology Requirements and Mass Calibration Requirements noted above 2. Volume Calibration Course (1 week seminar) 3. Successful completion of proficiency testing for each area on the laboratory scope using applicable procedures (gravimetric procedures required for Echelon I) 	Usually all staff, at least one staff member	Once Initially Refresher recommended every 10 years
All measurement parameters in addition to mass and volume	<ol style="list-style-type: none"> 1. Documented evidence of training 2. Successful completion of proficiency testing in each area of the laboratory Scope (where available) 	At least one, as needed	At least once; Refresher as needed

ⁱ Staff are not granted full Signatory Status unless they have completed three core seminars: Fundamentals of Metrology, Mass Calibration Seminar, Volume Calibration Seminar. The “Legal Metrology” designation is an exception to full training requirements and may be approved by OWM to grant *Conditional Recognition* only when the laboratory has one staff available and who has completed this level of training. If there is only one staff member in the laboratory, the laboratory will only be fully Recognized they have also successfully completed the Mass Calibration and Volume Calibration courses. It is possible under limited situations for a laboratory with only one staff member to obtain Conditional Signatory Status and gain Conditional Recognition pending completion of all training requirements.

ⁱⁱ Waivers for *Conditional Signatory Status* of staff may be provided by OWM under unique circumstances. Conditional waivers for signatory authority require completion of stated level of training and include submitting a waiver request with objective evidence of mass/volume orientation as noted in Endnote iii, successful completion of Mass and Volume PTs, and successful completion of Laboratory Auditing Program (LAP) problems. Waiver approvals are limited to SOP 8 and SOP 19 calibrations. The intent of interim orientation is to enable completion of proficiency testing and Fundamentals of Metrology, Laboratory Auditing Program (LAP) problems only. Waivers include an expiration date and may be extended by OWM with appropriate justification, if/as applicable.

ⁱⁱⁱ Orientation for Mass (SOP 8) and Volume (SOP 19) may be provided by NIST during other seminars, during on-site laboratory visits, via web-based training (recorded or live with applicable evidence) or may be approved for on-the-job training by qualified staff who have successfully met all other requirements at the designated level. Mass and Volume Calibration courses must be successful completed by at least one person in each laboratory to achieve full (non-Conditional) Recognition and by all staff who have full Signatory Authority for the applicable procedures and Scope. A waiver for Conditional Signatory Status may be issued to students whether they have completed the full Fundamentals of Metrology seminar or an on-line interim course at OWM’s discretion.