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**NATIONAL CONFERENCE  
ON WEIGHTS AND  
MEASURES**

**102<sup>ND</sup> ANNUAL MEETING**

JULY 16 - 30, 2017

PITTSBURGH, PENNSYLVANIA

Registration and lodging information for the meeting is available online at:

[https://www.ncwm.net/sems/event\\_detail/2017-annual-pa](https://www.ncwm.net/sems/event_detail/2017-annual-pa)

The meeting schedule, and supporting documents are located at this web location when they become available.

**OFFICE OF WEIGHTS  
AND MEASURES**

**General Inquiries:** (301) 975-4004

e-mail: [owm@nist.gov](mailto:owm@nist.gov)

**Chief:** Douglas Olson

e-mail: [dolson@nist.gov](mailto:dolson@nist.gov)

**Newsletter Editor:** Linda Crown  
(301) 975-3998

e-mail: [linda.crown@nist.gov](mailto:linda.crown@nist.gov)

# World Metrology Day

## May 20, 2017

**Metrology 2017**  
Measurements for transport

Bureau International des Poids et Mesures  
OIML  
INM Instituto Nacional de Metrología de Colombia  
World Metrology Day  
20 May  
[www.worldmetrologyday.org](http://www.worldmetrologyday.org)

Poster and press announcement compliments of the [2017 World Metrology Day \(WMD\) Team](#), Bureau International des Poids et Mesures (BIPM). The Poster was designed by Luz Madelen Arenas Lugo, Graphic Designer and Norma Carolina Aquite Lima, Team Leader, [Instituto Nacional De Metrología De Colombia](#).

# Welcome to the 2017 World Metrology Day

The theme for World Metrology Day 2017 is Measurements for transport. This theme was chosen because transport plays such a key role in the modern world. We not only move ourselves, but also the food we eat, the clothes we wear, the goods we use and rely on, not forgetting the raw materials they are made from. Doing so safely, efficiently and with minimal environmental impact requires an astonishing range of measurements.

Indeed more widely metrology, the science of measurement, plays a central role in scientific discovery and innovation, industrial manufacturing and international trade, in improving the quality of life and in protecting the global environment.

World Metrology Day is an annual celebration of the signature of the Metre Convention on 20 May 1875 by representatives of seventeen nations. The Convention set the framework for global collaboration in the science of measurement and in its industrial, commercial and societal applications. The original aim of the Metre Convention - the world-wide uniformity of measurement - remains as important today as it was in 1875.

The World Metrology Day project is realized jointly by the BIPM and the OIML. We hope that you enjoy this site and that your Country or Metrology Organization will join us and participate in this year's event.

Warm regards,  
The World Metrology Day Team

## DID YOU KNOW?

NIST has created several YouTube videos for consumers explaining and demonstrating why and how measurements are made of products. You can view these short and interesting videos by accessing the provided links below.

### **Get What You Pay For: Gasoline Pumps**

<https://www.youtube.com/watch?v=ri7j6ttATqA&list=PL8E0CD3D757D25201&index=38>

A brief clip explaining the importance of accuracy at the pumps and the impact individually as well as the multiplication of the impact on a national level. Check the inspection sticker at the pump!

### **Get What You Pay For: Tare**

<https://www.youtube.com/watch?v=w9k1z9-RD0c>

This clip explains "tare" and the impact of tare on the purchase of consumer goods when tare is not deducted from the cost of goods purchased.

### **Get What You Pay for: At the Grocery Store**

[https://www.youtube.com/watch?v=9LroUF\\_ChNc](https://www.youtube.com/watch?v=9LroUF_ChNc)

An explanation is provided on how scales are checked at the grocery store for accuracy.

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## Training and Events Calendar

### 2017

Registration for training in the NIST Office of Weights and Measures is handled by Yvonne Branden at [yvonne.branden@nist.gov](mailto:yvonne.branden@nist.gov).

Course descriptions can be viewed on the Office of Weights and Measures website at - <http://www.nist.gov/pml/wmd/calendar.cfm> and clicking on the name of the course.

May 15 - 26 (10 days)  
Mass Metrology Seminar  
Class No. 5436  
NIST/Gaithersburg, MD

May 22 - 25 (4 days)  
Central Weights and Measures Association (CWMA) Annual Meeting  
Lincoln, NE  
Contact: Sherry Turvey  
E-mail: [sherry.turvey@ks.gov](mailto:sherry.turvey@ks.gov)

May 23- 25 (3 days/20 hr)  
Medium-Capacity Scales  
Class No. 5463  
Held in conjunction with CWMA Meeting  
Lincoln, NE

June 5 - 9 (4.5 days)  
Fundamentals of Metrology  
Class No. 5487  
NIST/Gaithersburg, MD

June 8 (2.5 hr)  
Webinar - Calibration Certificate Evaluation  
2:00 p.m. - 4:30 p.m.  
Class No. 5494

June 12 - 16 (5 days)  
Volume Metrology Seminar  
Class No. 5441  
NIST/Gaithersburg, MD

June 19 - 23 (5 days)  
Volume Metrology Seminar  
Class No. 5501  
NIST/Gaithersburg

June 20 - 22 (3 days)  
Handbook 130, Uniform Packaging and Labeling Regulations, short course  
Class No. 5460  
NIST/Gaithersburg, MD

June 20 - 22 (3 days/20 hr)  
Livestock and Animal Scales  
Class No. 5492  
Manhattan, KS

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## Get What You Pay for: Seafood

<https://www.youtube.com/watch?v=oHJBEwaYtOY>

You can't be charged for the weight of any ice glaze on your seafood? Find out how weights and measures inspectors removes that glaze to make sure you're getting what you paid for.

## Get What You Pay For: Weights and Measures Inspection of Retail Motor Fuel Device

[https://www.youtube.com/watch?v=m9HG\\_3SIsEM](https://www.youtube.com/watch?v=m9HG_3SIsEM)

This video demonstrates and describes the minimum tests of a retail motor fuel dispenser (gas pump) in accordance with NIST Handbook 44. It includes how to select and maintain a standard, wetting the standard, normal and slow flow tests, leveling, reading the meniscus, draining a test measure, and the anti-drain test. State weights and measures field inspectors and others use these procedures to test retail motor fuel dispensers.

# Metrology Training Highlights

## RECOGNITION OF JOSÉ A. TORRES FERRER – NIST ASSOCIATE

José Torres Ferrer has been an invaluable assistant and lead instructor for over 140 seminars and nearly 1500 students in the past twenty-five years covering a full range of laboratory topics covered by the Office of Weights and Measures (OWM) as well as topics covered by field inspection activities. He provides training on-site at NIST and at Regional Measurement Assurance Program training events coordinated throughout the United States. Initially, José was a laboratory metrologist in the Puerto Rico weights and measures program and was engaged in the National Conference on Weights and Measures (NCWM) and NCSL International. Since retiring from the Puerto Rico agency, he solely works part-time on contract for OWM.

Courses José has taught include: Basic Mass Metrology Seminar (English and Spanish), Basic Length/Volume Metrology Seminar, Fundamentals of Metrology (English and Spanish), Intermediate Metrology Seminar, Volume Metrology Seminar, NIST Handbook 133, *Checking the Net Contents of Packaged Goods* – Basic, Introduction to Electronic Weighing and Measuring Systems, Introduction to Handbook 44, *Specifications Tolerances and Other Technical Requirements for Weighing and Measuring Devices*, and Vehicle and Axle-Load Scales. Jose has also travelled on behalf of NIST to provide training in Colombia, South America on basic uncertainty concepts.

In addition to being an excellent instructor who is highly rated by students in course evaluations, José has demonstrated ongoing efforts in continuing efforts to improve and expand his own technical knowledge and skills in instructional design and facilitation of adult learning methods. He was integrally involved in the course redesign process that was instrumental in the IACET accreditation of the OWM training program. He provides extra attention to students who struggle in the courses and mentors new instructors. José serves as the primary instructor for all the OWM seminars that have been presented in Spanish.

In addition, to Jose's instructional efforts, he has been a developer and reviewer of published NIST procedures, which are used in the training seminars including:



**José A. Torres Ferrer, NIST Associate, is presented the NIST, Physical Measurement Laboratory (PML) Distinguished Associate Award by the Office of Weights and Measures Chief, Dr. Douglas Olson.**

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- NIST Interagency/Internal Report (NISTIR) 8028, Selected Laboratory and Measurement Practices and Procedures for Length Calibrations (2014 Ed); and
- NIST Interagency/Internal Report (NISTIR) 6969, Selected Laboratory and Measurement Practices and Procedures to Support Basic Mass Calibrations (2003 Ed).

He was instrumental in the technical review of the NIST Special Publication (NIST SP) 1001, and Special Publication (NIST SP) 1001S, Basic Mass Metrology CD-ROM (English and Spanish). This 40-hour computer based training course was developed in OWM during the 2000 to 2003 timeframe, and it included review of the English version as well as the technical evaluation of the conversion to Spanish, which included international collaboration with Mexico, Uruguay, and NIST. It also included the translation to Spanish of several of the procedures from NISTIR 6969, *Selected Laboratory and Measurement Practices, and Procedures to Support Basic Mass Calibrations*, as noted above.



José shows off this newly received award.

José A. Torres Ferrer has been a key associate and enabled OWM to achieve its mission and objectives efficiently and effectively.

## RECOGNITION OF OWM LABORATORY METROLOGY INSTRUCTORS

The OWM team responsible for laboratory metrology seminars are all passionate about teaching and are devoted to high quality instruction. With the most recent NIST Associate's Award going to Jose Torres. All the OWM team members who regularly teach or oversee seminars/webinars have been recognized with education and training awards or plaques of recognition. These instructors have pursued ongoing professional development in adult learning methodologies and train the trainer efforts in addition to maintaining their knowledge and skills in the technical areas in which they provide instruction.

Some of the team, their training awards and plaques are shown in the photo. Highlights for the team include the following:

- José A. Torres Ferrer, NIST Associates Award, 2017. As noted in the previous description, Jose has been teaching with OWM since the early 1990s and has been an instructor for 140 seminars and nearly 1500 students.
- Val Miller, NCSLI Award Plaque. Val has conducted numerous tutorials at MSC and NCSLI with Mark Ruefenacht on Balance Calibrations and Uncertainties. Val has conducted training for over 160 seminars/webinars and nearly 2000 students since 2000 primarily in Mass Metrology, Volume Metrology, and Advanced Mass Metrology. In addition to metrology training, Val also has been the key driver in presenting laboratory safety topics at regional training for state weights and measures metrologists.
- Elizabeth Gentry, NCSLI Education and Training Award, 2012. Elizabeth joined NIST in 2006 and immediately began assisting in course improvements and in teaching the Laboratory Administration workshops along with many of the OWM webinars that address ISO/IEC 17025 Quality Management Systems. Elizabeth is also the U.S. Metric Coordinator and OWM Metric outreach champion and Metrology Ambassador within OWM. Thousands of teachers, students, parents, and other Metrology Ambassadors have participated in Elizabeth's Metric Estimation Game and received metric resources for teachers and outreach events! See the *Weights and Measure Connection* newsletter article from August 28, 2012, for more information about Elizabeth's NCSLI Education and Training Award.
- Mark Ruefenacht, NCSLI Education and Training Award, 2016. Mark has also received several award plaques for teaching over 15 Balance and Scale Calibration and Uncertainty tutorials with Val Miller at NCSLI and Measurement

Science Conference (MSC). Mark has taught over 35 courses and over 450 students on-site at NIST since he began teaching for OWM in 2008. He has conducted numerous seminars and webinars for the forensic community and the American Society for Crime Laboratory Directors (ASCLD), Laboratory Accreditation Board where he provided instruction to forensic scientists on topics and concepts on metrological traceability, measurement uncertainty, and measurement assurance.

- Georgia Harris, NCSLI Education and Training Award, 2015. Georgia has been conducting seminars at NIST and at regional training sessions since 1990. All the laboratory metrology seminar and webinar topics have been conducted by Georgia at one time or another and includes over 280 learning events and 3700 students. She has also conducted numerous train the trainer seminars and webinars and has a passion for training design and trainer development. Georgia has conducted seminars throughout the United States, Mexico, and Colombia.



**Back Row: José A. Torres Ferrer, Elizabeth Gentry, Georgia Harris, Front Row: Mark Ruefenacht and Val Miller**

Additional state metrologists and retired metrologists have participated in course design, regional training, occasional instruction at NIST, and one-on-one mentoring in state laboratories. These instructors have participated in train the trainer activities and continual improvement activities associated with the OWM metrology training. Current team members include: Tim Osmer (New Hampshire), Van Hyder (North Carolina), Jeremy Nading (Oklahoma), Aaron Aydelotte (Oregon), Kelleen Larson (Arizona, retired), L.F. Eason (North Carolina, retired), and Carol Hockert (NIST, retired).

If you are interested in being a future metrology instructor, you can contact Georgia Harris at [gharris@nist.gov](mailto:gharris@nist.gov). Potential instructors must have successfully completed the metrology training seminars in which they would like to assist, be interested in trainer development opportunities, and be available to assist with two to three seminars or at least one-on-one mentoring opportunities per year. If performing the training as an official part of your job function, the support of your supervisor is required.



## OWM Hosts SIM Participants in 2017 Fundamentals of Metrology Seminar

In January 2017, the Office of Weights and Measures worked with the NIST International and Academic Affairs Office (IAAO) to conduct a Fundamentals of Metrology seminar for participants from National Metrology Institutes of the InterAmerican Metrology System (SIM). Participants successfully completed the course and are now eligible to attend later OWM seminars for which this course is a prerequisite. Participants were from the National Metrology Institutes of: Saint Kitts and Nevis, Costa Rica (2), Dominica, Colombia (2), Mexico, Trinidad and Tobago, Grenada, El Salvador, Brazil, and the Bahamas.

The week-long Fundamentals of Metrology seminar introduces participants to the concepts of measurement systems, units, measurement uncertainty, measurement assurance, traceability, basic statistics and how each of these topics fits into a laboratory Quality Management System. Additional topics include the requirements for proficiency testing, calibration certificate generation and review, software verification and validation, and management reviews. Topics are covered using a variety of measurement disciplines (mass, dimensional, volume, color, qualitative tests) using case studies so participants can apply the concepts to other measurement discipline upon completion. Topics are covered in a mixture of training styles including lecture, hands-on exercises, case studies, discussion, and team projects.

Examples of intended applications from student evaluations included the following:

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- Statistical techniques to evaluate the performance of my measurements and procedures.
- Improved assessment of traceability.
- Better analysis of Certificates for errors.
- Emphasize the validation of software used to process calibration data.
- Closer analysis of uncertainty budget inputs that lead to uncertainty values.

*Note: This was the second Fundamentals of Metrology conducted by OWM for SIM participants. The first seminar was conducted in 2016 for an additional 12 participants. Funds are provided for the SIM training through the NIST IAAO.*



**SIM Participants in the 2017 Fundamentals of Metrology Seminar**

## The Office of Weights and Measures

will gladly include your weights and measures related events in our calendar.

Contact the Editor: [Linda.Crown@nist.gov](mailto:Linda.Crown@nist.gov)

## The NIST Office of Weights and Measures

homepage: <http://www.nist.gov/pml/wmd/index.cfm>

July 16 - 20 (5 days)  
National Conference on Weights and Measures  
Annual Meeting - 102<sup>nd</sup> Annual Meeting  
Pittsburgh, PA  
Contact: [info@ncwm.net](mailto:info@ncwm.net)  
<http://www.ncwm.net/meetings>

August 13 - 17 (5 days)  
NCSL International Workshop & Symposium  
Gaylord National Convention Center  
National Harbor, MD  
information: <http://ncsli.org>

August 16 - 17 (2 days)  
NTEP Grain Analyzer Sector Meeting  
Kansas City, MO  
Contact: Karl Cunningham  
E-mail: [karl.cunningham@illinois.gov](mailto:karl.cunningham@illinois.gov)

August 17 (2 hr)  
Webinar - Contract Review  
2:00 p.m. - 4:00 p.m.  
Class No. 5421

August 21 - 31 (10 days)  
Advanced Mass Seminar (Rev. 2015)  
Class No. 5437  
NIST/Gaithersburg, MD

August 22 - 23 (2 days)  
NTEP Weighing Sector Meeting  
Houston, TX  
Contact: Rob Upright  
E-mail: [rob.upright@vishaypq.com](mailto:rob.upright@vishaypq.com)

August 31 (2 hr)  
Webinar - Document Control and Recordkeeping  
2:00 p.m. - 4:00 p.m.  
Class No. 5422

September 14 (2 hr)  
Webinar - State Laboratory Annual Submission Process  
2:00 p.m. - 4:00 p.m.  
Class No. 5454

September 18 - 21  
Northeastern Measurement Assurance Program (NEMAP)\*\*  
Class No. 5467  
Charleston, WV

September 24 - 28 (5 days)  
Western Weights and Measures Association (WWMA) Annual Meeting  
Scottsdale, AZ  
Contact: Jeri Kahana  
e-mail: [jeri.m.kahana@hawaii.gov](mailto:jeri.m.kahana@hawaii.gov) or  
Michelle Wilson  
E-mail: [mwilson@azda.gov](mailto:mwilson@azda.gov)

October 2 - 5 (32 hr/4 days)  
Southwestern Assurance Program (SWAP)\*\*  
Class No. 5468  
Topeka, KS

October 3 - 4  
NTEP Measuring Sector  
Houston, TX  
[info@ncwm.net](mailto:info@ncwm.net)

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# Training Announcement

## Industry Training on Checking the Net Contents of Packaged Goods

On November 27 and 28, 2017, the NIST, Office of Weights and Measures will be conducting a two-day seminar for Industry on NIST Handbook 133, "Checking the Net Content of Packaged Goods." This seminar will focus on the requirements and basic test procedures for packages labeled by weight and will include, but not be limited to, a review of U.S. Weights and Measures Laws, good quantity control processes, sampling, calculating standard deviation, moisture allowances, inspection reports and calculations, test procedures, tare, relevant court cases, drained weight and ice glazed procedures and more. For additional details and how to register visit this link <https://www.nist.gov/news-events/events/2017/11/5504-nist-handbook-133-checking-net-contents-packaged-goods-basic>.

Link to NIST Handbook 133: <https://www.nist.gov/pml/weights-and-measures/publications/nist-handbooks/handbook-133>.

# Publications

## OWM PUBLICATION UPDATES FOR LABORATORY METROLOGY

*Byline: Georgia L. Harris, Program Leader*

NISTIR 6969 (mass procedures) and NISTIR 7383 (volume procedures) were updated as of March 2017. The front matter of both documents identifies specific recent changes.

### **NISTIR 6969, Selected Laboratory and Measurement Practices, and Procedures to Support Basic Mass Calibrations**

The only update in 2017 is the Good Laboratory Practice (GLP) 1, on "Quality Assurance of the Measurement Process." We are covering concepts from this GLP at the 2017 Regional Measurement Assurance Programs (RMAPs) for those of you who attend. The "Revision Control" document is linked to the publication and inserted immediately after the Table of Contents. Other updates were covered in previous announcements/notifications and newsletter articles. The official date of the publication is still 2014, with 2017 updates.

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October 8 - 11  
Southern Weights and Measures Association  
(SWMA) Annual Meeting  
Little Rock, AR  
<https://ncwm.net/meetings>  
Contact: Tim Chesser  
E-mail: [tim.chesser@aspb.ar.gov](mailto:tim.chesser@aspb.ar.gov)

October 10 - 11  
Handbook 130, Price Verification  
Class No. 5476  
Held in conjunction with the SWMA Meeting  
Little Rock, AR

October 16 - 18 (3 days)  
Central Weights and Measures Association  
(CWMA)  
St. Charles, MO  
<https://ncwm.net/meetings>  
Contact: Sherry Turvey, [sheery.turvey@ks.gov](mailto:sheery.turvey@ks.gov)

October 16 - 19 (4 days/32 hr)  
MidAmerica Measurement Assurance Program  
(MidMap)\*\*  
Class No. 5469  
Lansing, MI

October 19 (2 hr)  
Webinar - Internal Auditing Best Practices  
2:00 p.m. - 4:00 p.m.  
Class No. 5423

October 23 - 27 (5 days)  
Handbook 133 - *Checking the Net Contents of  
Packaged Goods* - Basic  
Class No. 5507  
Sonoma, CA

October 23 - November 3 (10 days)  
Mass Metrology Seminar  
Class No. 5456  
NIST/Gaithersburg, MD

October 25 - 26 (2 days)  
Northeastern Weights and Measures Association  
(NEWMA)  
Portland, ME  
<https://ncwm.net/meetings>  
Contact: [jcassidy@cambridgema.gov](mailto:jcassidy@cambridgema.gov)

November 27 - 28 (2 days)  
NIST Handbook 133 - *Checking the Net Contents  
of Packaged Goods* - Basic (Industry Only)  
Class No. 5504  
NIST/Gaithersburg, MD

December 4 - 8 (40 hr/5 days)  
Fundamentals of Metrology  
Class No. 5505  
NIST/Gaithersburg, MD

## 2018

January 21 - 24  
NCWM Interim Meeting  
St. Pete Beach, FL  
[info@ncwm.net](mailto:info@ncwm.net)  
[https://www.ncwm.net/sems/event\\_detail/2018-interim-fl](https://www.ncwm.net/sems/event_detail/2018-interim-fl)

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## NISTIR 7383, Selected Procedures for Volumetric Calibrations

There is a new Standard Operating Procedures (SOP) 31, for the calibration of neck scales on volumetric provers. This content was removed from SOP 19 for large volume prover calibrations and from SOP 21 for LPG prover calibrations. Because there was a new SOP, we had to reapprove the entire publication with a new date of March 2017. GLP 10 also had minor updates to ensure consistency with an ISO water quality standard, but there were no changes in the calculations of water density. Changes to SOP 21 and the new SOP 31 are being reviewed in detail at the RMAP training events this year. Other updates since the 2013 version of the publication were covered in previous announcements/notifications and newsletter articles. Official dates for all SOPs, GLPs, and Good Measurement Practices (GMPs in this publication are now March 2017.

A special thank you to Dan Wright for testing the new procedures and providing updated Excel files as job aids to go with the SOPs - they are posted with the SOPs. If you have questions or concerns about the Excel files, be sure to contact Dan right away at: [dwright@agr.wa.gov](mailto:dwright@agr.wa.gov).

If you have questions about the SOPs, GLPs, or GMPs, please feel free to contact Georgia Harris at [gharris@nist.gov](mailto:gharris@nist.gov).

### Recommended Actions:

- Be sure to review the latest procedures and revision control document, update your Quality Management System master file (if these measurements are on your laboratory Scope), and implement them into your normal operations.
- Verify/validate any associated spreadsheets that you download and use in your laboratory.

## New Publications Released

Recently updated document:

- NIST Handbook 159, 2017 edition, *Examination of Grain Moisture Meters Using Air-Oven Reference Method Transfer Standards*  
Part 1: Laboratory Grain Sample Preparation and Testing  
Part 2: Field Inspection and Examination

<http://nvlpubs.nist.gov/nistpubs/hb/2017/NIST.HB.159-2017.pdf>

- NIST Handbook 155, 2017 edition, *Weights and Measures Program Requirements - A Handbook for the Weights and Measures Administrator*

Document to be released in a few days and will appear here:

<https://www.nist.gov/pml/weights-and-measures/publications/nist-handbooks>

February 5 to 8 (4 days)  
NIST Handbook 133 - *Checking the Net Contents of Packaged Goods* - Volumetric  
Class No. 5511  
San Diego, CA

February 15 (2 hr)  
Webinar - Conducting an Effective Management Review  
2:00 p.m. - 4:00 p.m.  
Class No. 5424

March 1 (2 hr)  
Webinar - Internal Auditing Best Practices  
2:00 p.m. - 4:00 p.m.  
Class No. 5425

March 12 - 15 (32 hr/4 days)  
NIST Handbook 130, *Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality* - Uniform Packaging and Labeling Regulations  
Class No. 5509  
Orange County, CA

May 14 - 18 (5 days)  
Handbook 133 - *Checking the Net Contents of Packaged Goods* - Basic  
Class No. 5512  
Pompano Beach, FL

July 15 - 18  
NCWM 103rd Annual Meeting  
Tulsa, OK  
Information not available at this time.  
<https://ncwm.net/meetings>

August 9 (2 hr)  
Webinar - Contract Review  
2:00 p.m. - 4:00 p.m.  
Class No. 5426

August 30 (2 hr)  
Webinar - Document Control and Recordkeeping  
2:00 p.m. - 4:00 p.m.  
Class No. 5427

\*State W&M labs only or invitation only.  
\*\*Regional Measurement Assurance Program "MEMBERS" (State and Industry RMAP member laboratories.)