

EURAMET Basic training course on mass measurements

7 – 9 June 2023

RISE, Brinellgatan 4, 50115 Borås, Sweden

Agenda version 2023-06-01

Wednesday, 7 June 2023

9h00	Introduction
9h10	Outline and learning requirements
9h30	World metrology and traceability
10h00	Break
10h30	Density determination techniques for mass standards
10h50	Weight inspection and weight handling (lecture)
11h10	Weight inspection and handling - practical session
12h00	Lunch
13h00	Lab tour (Large mass and Density laboratories)
14h00	Mass standards overview
14h30	Break
15h00	Weighing techniques (basic)
15h20	Practical activity: ABABA weighing exercise
16h30	Automatic weighing using comparators and robot balances
17h15	Review of training material covered and questions

Thursday, 8 June 2023

9h00	Basics of balance installation and maintenance
9h20	Overview of EURAMET cg-18
9h40	Balance assessment
10h00	Break
10h30	Practical task to assess a balance for eccentricity Practical task to assess a balance for hysteresis Practical task to assess a balance for repeatability
12h00	Lunch
13h00	Practical task to assess a balance for linearity
13h30	Review of balance assessment data and discussion
14h00	Mass calibration by sub-division

14h30	Break
15h00	Weighing techniques (advanced)
15h30	Assessment of automatic comparators and robot balances
16h30	Assessment of automatic comparators and robot balances
17h15	Review of training material covered and questions

Friday, 9 June 2023

9h00	Review of (manual) balance assessment data
9h20	Review of automatic mass comparator/robot data
9h40	An introduction to digitisation
10h00	Break
10h30	Air density measurement and buoyancy correction
11h20	E1 mass calibration
11h40	Detailed uncertainty calculation for mass metrology
12h00	Lunch
13h00	Practical weighing including buoyancy correction
13h30	Practical exercise on uncertainty calculations
14h30	Break
15h00	An introduction to key comparisons and CMCs
15h30	History of mass measurement and the future of the kilogram
16h00	Discussion, outstanding issues and feedback

Lecturers:

- Bengt Gutfelt , RISE
- Stuart Davidson, NPL

Practical sessions are indicated by red font colour.

Coffee breaks and lunches will be provided by the host.

There is a certain flexibility in distribution of session's' timeframes - this can be adjusted on the spot (e.g. if some participants have to leave earlier on Friday).