I. Introduction & Overview –
   a. Safety and Orientation
   b. Course Overview and Introductions
   c. Good Laboratory Practices (Data Integrity)

II. Measurement Systems
   a. Who’s Who in the World of Metrology

III. Traceability (6.5) – GMP 11, GMP 13
   a. Definitions and Essential Elements – and Risk
      i. Supplier Evaluation
   b. Application from Laboratory Measurements
   c. Tools for assessing the laboratory

IV. Measurement Exercise (results to be integrated into remaining topics)
   a. Laboratory “Scope” Addition
   b. Research: Reviewing Specifications and Customer Requirements
   c. Inspection of Laboratory Resources: Facility (6.3), Equipment (6.4), Standards (6.5)
   d. Calibration Items – care, inspection, handling, tracking (7.4), contract review (7.1), sampling (7.3)
   e. Method Validation (7.2)
   f. Measurements

V. Statistics – Foundations for Data Analysis, Measurement Assurance, Method Validation, and Uncertainty Analysis
   a. Terminology and Concepts
   b. Measures of Central Tendency and Variation
   c. Comparative Statistical Tools
   d. Application from Laboratory Measurements – Team Scenario

VI. Measurement Assurance (7.7) – GLP 1
   a. What it is and where it “fits” in the laboratory system
   b. SOP 30: Check Standards and Control Charts (DMAIC)
   c. Application from Laboratory Measurements
   d. Tools for assessing the laboratory

VII. Uncertainties (7.6) – SOP 29, GLP 9
   a. Guide to the Expression of Uncertainty in Measurement (GUM)
   b. SOP 29: 8-step Process
   c. Rounding Results and Uncertainties
   d. Application from Laboratory Measurements

VIII. Proficiency Testing (6.2, 7.7)
   a. Uses of Interlaboratory Comparisons
   b. Statistical Tools
   c. Application from Laboratory Measurements

IX. Software Verification and Validation (7.11)
   a. What it is and where it “fits” in the laboratory system
   b. Tools for assessing the laboratory

X. Calibration Certificates (7.8)
   a. Tools for assessing the laboratory
   b. Application from Laboratory Measurements

XI. Final Exam

Section numbers are references to ISO/IEC 17025:2017.