1. Introduction & EPP Bio
2. Definition of Aluminum Brazing
   a. In this section aluminum brazing is differentiated from other metals. An understanding of the nature and role of the ever-present protective aluminum oxide layer is vitally important.
3. Aluminum Alloys, Designation System and Physical Properties
   a. Wrought and cast alloys
   b. Chemical compositions and alloy designation system
   c. Comparison of aluminum and other common metal physical properties
   d. Aluminum product forms – advantages and limitations
4. Typical Mechanical Properties and Tempers
   a. Overview of aluminum alloys, tempers and mechanical properties
      i. Heat treatable and non-heat treatable alloys
5. Durability & Corrosion
   a. Role of aluminum oxide coatings on long term durability
   b. Types of aluminum corrosion and mechanisms
6. Thermal Treatments
   a. Typical thermal treatments to control mechanical properties alloys
7. Solution Heat Treatment
   a. Recovery of mechanical properties in heat treatable alloys
8. Residual Stress Relief
   a. Thermal treatments used to control stress relief induced distortion in post braze machining operations
9. Manufacturing Technologies
   a. Joining
   b. Forming
   c. Machining
   d. Finishing
10. Joining Processes
    a. Aluminum Brazing
       i. Brazeable Aluminum Alloys & Brazing Fillers
       ii. Brazing Processes
          1. Torch Brazing
          2. Salt Bath or Dip Brazing
          3. Furnace Brazing
             a. Fluxless Brazing
                i. History of Fluxless Brazing Development
             b. Vacuum Brazing
                i. Process Mechanics
                ii. Furnace Types
                iii. Furnace Costs, Operation and Maintenance
iv. Furnace Loading, Cycles & Process Control
v. Post Braze Operations
vi. Trouble Shooting Process Problems

iii. Joint Designs for Brazing
iv. Preparation for Brazing
v. Fixturing
vi. Typical Braze Joint Metallographic Cross Sections
vii. Review Customer Specific Braze Product Designs

(Time permitting)

11. Machining & Cutting Processes
12. Finishing Processes