MECHANICAL & AEROSPACE ENGINEERING
SELF-GUIDED TOUR

1. **Supersonic Wind Tunnel** – *High Bay Building Room 101*
   - Blow-down tunnel (large brown supply tanks outside of High Bay building)
   - Capable of speeds 2-4 times the speed of sound (Mach 2-4)
   - Test section dimensions are 6” x 6”
   - Sixteen (16) channels of pressure measurement
   - Used primarily for a senior-level aerodynamics lab course

2. **Subsonic Wind Tunnel** – *High Bay Building Room 103*
   - Closed circuit tunnel (powered by variable speed 150 hp electric motor)
   - Capable of speeds up to 100 mph
   - Test section dimensions are 33” high x 43” wide x 48” long
   - Used for aerodynamics lab courses and research
   - Available for use by industry at a per hour rate

3. **Anechoic Test Chamber** – *High Bay Building 108A*
   - Used for sound and vibration research

4. **Mechanical Engineering Senior Project Lab (MAE 416)** – *EB3 Room 1209*
   - Machine shop and work space for ME capstone senior design
   - ME senior design is 100% industry sponsored (recent sponsors include Caterpillar, Volvo Trucks, Norfolk Southern, Northrop Grumman, US Army, NASA JPL)
   - Projects are completed in one semester (first half of semester design phase, second half build and test prototype)
   - Typically 3 projects in fall and 4 in spring (each project has about 30 students split up into teams of 5-6)

5. **Aerospace Engineering Space Senior Design Lab (MAE 480 + MAE 481)** – *EB3 Room 1224*
   - Work space for AE capstone senior design focused on space applications
   - Projects are competed in two consecutive semesters (first semester design phase, second semester build and test prototype)
   - Students work in teams of 5-7, each team has a different project
   - Examples of projects include Mars rover, Mars tumbleweed explorer, drop tower, weather balloon, rocket

6. **Aerospace Engineering Aircraft Senior Design Lab (MAE 480 + MAE 481)** – *EB3 Room 1225*
   - Work space for AE capstone senior design focused on aircraft applications
   - Projects are competed in two consecutive semesters (first semester design phase, second semester build and test prototype)
   - Students work in teams of 8-10
   - Each team designs and constructs an aircraft to meet specified criteria (and must successfully fly)

7. **Dynamics, Vibrations & Controls Lab (MAE 405)** – *EB3 Room 2216*
   - Introduces students to principles of dynamics and controls
   - Lab modules include experiments in vibrations, circuits, and PID control

8. **Structural Mechanics Lab (MAE 305)** – *EB3 Room 2208*
   - Introduces students to instrumentation systems and basic components of solid mechanics
   - Lab modules include experiments in rod torsion, beam bending, and use of strain gauges
   - Instruction and practice in technical report writing
9. **Thermal Sciences & Energy Systems Lab (MAE 306) – EB3 Room 2206**
   - Introduces students to the measurements of properties associated with thermal and fluid sciences
   - Lab modules include experiments in temperature, air, and fluid measurements
   - Instruction and practice in technical report writing and oral presentations

10. **Large Class Lecture Rooms – EB3 2201 and 2207**
    - Classrooms where majority of sophomore and junior MAE classes are held

11. **Computer Lab – EB3 2nd floor, hallway to the right of the main staircase**
    - Student computer lab open 24/7 with printers and scanners available

12. **MAE Student Organizations Nooks – EB3 3rd floor (either side of main office, 3002)**
    - ME nook (left of main office)
      - Featuring Formula SAE car (from Wolfpack Motor Sports Club)
      - Other ME student organizations include American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) and Pi Tau Sigma Honor Society
    - AE nook (right of main office)
      - Featuring senior design airplane and rocket from NCSU High Powered Rocketry Club
      - Other aerospace student organizations include Aerial Robotics Club, American Institute of Aeronautics and Astronautics (AIAA), Women in Aerospace, and Sigma Gamma Tau Honor Society

13. **MAE Departmental History – EB3 3rd floor, first hallway on the right from main staircase**

14. **Facts about EB3 and the MAE department**
    - EB3 has 248,291 square feet of lab, classroom, and office space
    - 4th floor occupied by BME, 3rd floor by MAE, 2nd and 1st floors shared between the two departments (but primarily utilized by MAE)
    - The MAE department has approximately 1300 undergraduates (2/3 ME, 1/3 AE), 350 graduate students, 40 tenure track faculty, 4 non-tenure track faculty, and 2 full-time lecturers
    - MAE confers approximately 250 BS degrees, 100 MS degrees, and 20 PhDs per year