

GEORGIA INSTITUTE OF TECHNOLOGY
SCHOOL OF AEROSPACE ENGINEERING

AE- 4803B SPRING SEMESTER (T - TH, 1:30 - 3PM)

Micro/Mini Air Vehicle Technologies

Credit: 3 Credit Hours (Graduate students and graduating Seniors only)

Prerequisites: Undergraduate Physics

Dates/Times: Spring Semester 2003, Tuesdays and Thursdays, 1:30 to 3:00 PM

Course Number: AE 4803B (open to both Graduate and UnderGrad students)

Grades Based On: 1 pre-drop date quiz, 15% 1 design paper, 35%
1 mid-term quiz, 25% 1 final exam 25%

Teacher: Robert C. Michelson,

- Adjunct Associate Professor, School of A.E. (ret),
- Principal Research Engineer *Emeritus*, Georgia Tech Research Institute,
- Past President of the Association for Unmanned Vehicle Systems, Intl.,
- Originator of the International Aerial Robotics Competition,
- Director of the Institute's "Entomopter" (Micro Air Vehicle) program.
- Winner of the Pirelli Top Award for work on biologically-inspired MAVs for planetary exploration.
- Winner of the Pioneer Award (highest level of recognition within the unmanned systems industry for technical contributions to advance the state-of-the-art)

Micro/Mini Air Vehicle Technologies

With the advent of micro-electromechanical systems (MEMS), increased computational power, and miniaturized sensors, the possibility of creating tiny bird-sized or even insect-like aerial robots has become reality. Such vehicles behave differently in our atmosphere and are constrained by principals differing from those of conventional manned aircraft.

This is particularly true for the new area of Micro Air Vehicles (MAV), many of which are too small to be remotely controlled by an external human pilot, and due to physical constraints are unable to support traditional stability-and-control or navigation aids. Autonomy of flight will be key, and this will require new concepts in inertial and remote sensing. Propulsion and energy storage at these small scales is an even greater challenge.

Students from all disciplines are encouraged to attend this 3-credit hour class, especially those wishing to be involved in aerial robotics or having aerospace, electronics, or computer engineering interests and backgrounds. The class is intended to give the student a practical working knowledge of avionics design criteria, limitations, and enabling technologies that are geared toward the next revolution in unmanned aircraft: the Micro Air Vehicle.