

PROGRAM REVIEW CERTIFICATION

Institution: University of Maryland Eastern Shore

Academic Unit: School of Business and Technology
Engineering and Aviation Sciences

Program Reviewed: Bachelor of Science – Engineering and
Aviation Sciences

**Year in which the review
process was completed
and name of the External
Reviewer:** August 2009
Tim Brady, Ph.D., Dean, College of Aviation;
Embry-Riddle Aeronautical University,
Daytona Beach Campus.

Submitted by:



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Vice President for Academic Affairs

**UNIVERSITY OF MARYLAND EASTERN SHORE
SCHOOL OF BUSINESS AND TECHNOLOGY
ENGINEERING AND AVIATION SCIENCES**

**PROGRAM REVIEW – 2009
EXTERNAL REVIEWER SUMMARY**

MISSION

The mission of the Department of Engineering and Aviation Sciences is to provide quality professional degree programs, to prepare students for employment in their chosen field, to establish close partnerships with and facilitate technology transfers to industry and government, to prepare students for advanced studies, to contribute to economic development of the State, and to provide related service to the campus community and the community at large.

Five Year Enrollment and Degree Data

Aviation Sciences

	2003-4	2004-5	2005-6	2006-7	2007-8
Enrollment	59	60	58	65	74
Graduates	9	9	8	5	12

Engineering

	2003-4	2004-5	2005-6	2006-7	2007-8
Enrollment	55	19	30	39	89
Graduates	0	0	0	0	1

GOALS

The programs in the Department of Engineering and Aviation Sciences aim to produce graduates capable of excelling in industry and in graduate school. The faculty and staff of the department pursue a "customer focused" approach to higher education where the needs, interests, and career goals of the individual students are primary concerns.

OBJECTIVES

The objectives of the programs offered in the Department of Engineering and Aviation Sciences are as follows:

- To provide students with academic curricula that develop a strong background in Engineering and Aviation Sciences concentration areas.
- To prepare students for life long learning.
- To expose students to social, historical, and ethical issues involving Engineering and Aviation Sciences.
- To promote interaction between the university and the community through

- departmental activities by faculty and students.
- To encourage, through recruitment, outreach, and intervention programs, minorities and women to pursue careers in the Engineering and Aviation Sciences programs.
 - To provide students in the department opportunities for scholarship, work- study arrangements, summer employment, and jobs.

Aviation Program Description

The Aviation Sciences program consists of 120 total credit hours. Students complete 34 credit hours of Aviation Core courses and choose one of four concentrations, each of which consists of 33 credit hours. The curriculum includes 41 credit hours of general education courses, 6 credit hours of support courses and 6 hours of Aviation electives.

Engineering Program Description

The Engineering program consists of 124 total credit hours. Students choose 17 credit hours of specialization from one of the four different areas in Engineering and 47 credit hours of core engineering courses. The specialization areas are Aerospace, Computer, Electrical, or Mechanical. The curricula include 28 credit hours of general education courses in English, arts and humanities, social and behavioral sciences, and emerging issue. An additional 12 credits in mathematics and physical sciences are required under the General Education program, which are included as a part of the requirements for the Engineering major. This makes the total credits for General Education to be 40 credit hours.

Outcomes of Student Learning and Achievement For Aviation Sciences

The Aviation Sciences Program aims to professionally train pilots, technical and management graduates to fulfill the critical aviation needs of government and industry and be capable of excelling in graduate studies. Upon completion of course requirements, students will:

- Be prepared for graduate studies in the field of Aviation Sciences
- Demonstrate critical thinking and problem-solving skills in the field of aviation
- Demonstrate knowledge of the inner workings of the aviation industry as well as practical career applications within their specific concentration.
- Demonstrate the skills necessary to be employed in the field of aviation.
- Demonstrate familiarity with the state of the aviation industry and its procedures and operations
- Demonstrate understanding of social, historical, and ethical issues involving the Aviation Sciences field.
- Demonstrate the ability to work as an intern or work in a cooperative program in their area of concentration.

Outcomes of Student Learning and Achievement For Engineering

By completing the Engineering program, students will be able to:

- Apply knowledge of mathematics, sciences, and engineering in real life;
- Use the techniques, skills, and modern and scientific tools necessary for engineering practice;
- Design and implement experiments and numerical simulations;
- Analyze and interpret general scientific and engineering data;
- Design a system, component, or process to meet desired needs;
- Solve multidisciplinary problems;
- Identify, formulate, and solve engineering problems;
- Understand professional and ethical responsibilities;
- Have a basis and motivation to engage in life-long learning and continuing education;
- Have a knowledge of contemporary issues;
- Incorporate interdisciplinary concepts from mathematics, basic sciences, and other disciplines into engineering solutions and vice-versa.

Comprehensive examinations, research papers, lab reports, and oral/audio-visual presentations along with individual, team, and senior design projects will be utilized in assessing each student's progress in meeting the program and institutional goals and objectives.

On May 6, 2008, the Federal Aviation Administration (FAA) reviewed our application to determine our eligibility to participate in the Air Traffic Collegiate Training Institute. Our program was 50 points shy of the 380 points required to receive the AT-CTI certification. This external review identified the following strengths and weaknesses within the program:

Recommendations and/or Findings From FAA Program Review

1. There is a need for clearer guidelines for annual review of faculty.
2. No specific source was identified for obtaining necessary funding to support the program changes.
3. No targeted growth and goals are articulated to increase diversity.
4. There is a lack of entrance requirements for the aviation students.
5. There is no current faculty with ATC experience.
6. Assessment and testing processes has not been clearly delineated.
7. A student retention plan was not evident.
8. The current program curriculum is lacking and does not meet the new AABI accreditation standards.

Recommendations and Improvements Made Based on the FAA Review

1. Departmental Peer Review and Annual review policies are created.
2. Additional grants are being pursued to increase outreach efforts.
3. Outcome assessment plan is included in our new application.
4. Entrance and exit exams are being developed for aviation students.

5. Department hired a qualified lab assistant to teach the AT-CTI courses.
6. An aviation testing center has been established with a monitoring system in the department; a computer lab has been established for students in the department; and ATC lab has been established, which is equipped with simulators.
7. In support of department efforts for student retention, a departmental policy is created for referring students to Academic Access and Success office.
8. The following two new core courses were added to the Aviation Sciences Curriculum in 2008. AVSC 305 was added in response to new AABI accreditation standards.
9. New Air Traffic courses were developed.

<i>New Course Code</i>	<i>Course Title</i>
AVSC 305	Aviation Career Preparation
AVSC 421	Aviation Psychology

Changes Made to Management Courses

Management courses that were taught outside of the department have been replaced by internal management courses that are taught in the department. Now, the new course topics and contents reflect aviation subject matter.

<i>New Course Code</i>	<i>Course Title</i>
AVSC 132	Intro. to Aviation Business
AVSC 226	Air Traffic Control Operations
AVSC 261	Aviation Organization and Leadership
AVSC 431	Maintenance Management
AVSC 432	Airline Management II
AVSC 442	Safety Management

Changes Made to Professional Pilot Courses

Professional pilot flight training requirements have been refined to reflect current AABI (accrediting body) guidelines. In the past, students had difficulty completing coursework when courses outside of the department were not offered in sequence or were discontinued. Now, students in Professional Pilot concentration not only take AVSC 112 Aviation Fundamentals with management students but also they take an additional 1 credit Private Pilot Ground course as an additional lab. This avoids departmental depletion of subject matter and aids students who chose to change concentrations.

Changes Made to Aviation Electronics Courses

AVSC 361 Communications Electronics was a course that previously existed in the catalog but was not being utilized by the department for Aviation Electronics students. The goal of the program is to develop aviation specific coursework in all concentrations.