



**Department
of
Aviation and Aerospace Science**

School of Professional Studies



Curriculum Guidelines

Fall 2009

Seventh Street Classroom

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(Images courtesy of NASA)

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STUDENT CHECKLIST

Follow these steps:

- (1) Apply to the College:** Prospective students can apply for admission by walk-in at the Central Classroom Building, room CN105 or by filling out an application form on-line at www.mscd.edu or by phone at 303-556-3991.
- (2) Have transcripts sent to MSCD:** Contact all High Schools and Colleges attended and request that an official transcript be **sent to MSCD**. Request MSCD evaluation of transcripts. See <http://www.mscd.edu/prospective/transfer.shtml>
- (3) Schedule Orientation and General Advising:** To schedule an orientation and general advising phone Academic Advising at 303-556-3680, or go to Central Classroom Building Room 104 (CN104).
- (4) Schedule appointment with AVS Faculty for Department advising:** Contact the AVS Department at 303-556-2983 to set up an appointment for advising in your major or go to Seventh Street Building Room 102.
- (5) Declare Major and Minor:** New students should declare a major and a minor as soon as possible. With the exception of the Aerospace Maintenance Management Concentration, each concentration requires a minor. Declare your Major/Minor during your first advising session with any full-time Aviation and Aerospace Science professor.
- (6) Register for classes:** After your application for registration has been processed, you are eligible to register in the next semester which opens for registration (Fall, Spring, Summer). Go to MetroConnect (<http://metroconnect.mscd.edu>) for procedures and dates.
- (7) Establish an email account:** Students are provided free email access. All AVS Majors must establish and monitor their MSCD email account. Go to <http://www.mscd.edu/> select Registration/Records and follow directions. See any MSCD computer lab assistant for details. You may retrieve or send email, monitor college information, and access your personal records through MetroConnect at: <http://metroconnect.mscd.edu/cp/home/loginf> .
- (8) Obtain MSCD Catalog:** Students should purchase and review the MSCD Catalog in effect at the time they enter MSCD. Keep this catalog for the duration of your time at Metro.
- (9) CAPP Reports:** All AES majors must have a current CAPP (Curriculum, Advising & Program Planning) Report for advising with any full-time faculty. CAPP reports may be obtained by filling out the CAPP request form in the Department's Office. See <http://www.mscd.edu/~advising/cappreq.htm>.
- (10) FAA Medical Certificate:** Before enrolling as ATV4 or ATV5 majors and before initiating flight training, students should ensure that they can obtain the appropriate FAA medical certificate. See <http://www.faa.gov/pilots/amelocator> .

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DEGREE PROGRAMS

Bachelor of Science

AVIATION TECHNOLOGY (ATV)

Aerospace Operations Concentration (ATV3)

Professional Flight Officer Concentration (ATV4)

General Aviation/Air Carrier Concentration (ATV5)

Air Traffic Collegiate Training Initiative - AT-CTI Concentration (ATV8)

AVIATION MANAGEMENT (AMG)

Aerospace Management Concentration (AMG8)

Minors for AVS Majors

Professional Flight Officer (ATV4) and General Aviation/Air Carrier (ATV5) Concentrations require an MSCD non-AVS minor, or the APL minor

Aerospace Operations Concentration (ATV3) may select any non-AVS minor established at MSCD

Aerospace Management Concentration (AMG8) requires a minor in the School of Business

B.S. AEROSPACE SYSTEMS ENGINEERING TECHNOLOGY - IDP

AVS MINORS

for majors in other disciplines

Aviation Management (AMG)

Aviation Technology (ATV)

Airframe and Powerplant Mechanic (APL)

Private Pilot (PRP)

CERTIFICATE PROGRAMS

Airport Management

Space Commercialization

AVS DEPARTMENT MISSION

The mission of the Aviation and Aerospace Science Department (AVS) is to provide students seeking careers in aviation and aerospace with a high quality education through excellence in teaching, such that our graduates are well prepared to succeed in their chosen professions. Ongoing close contacts with the many aviation and aerospace businesses and entities in Colorado provide employment, cooperative education, and internship opportunities for students and graduates. The Department is dedicated to developing graduates with the intellectual and practical skills needed to succeed. Colorado is a center for innovation in aviation and aerospace, in particular, the development of new types of aircraft and in the development of commercial space applications.

There are four **Aviation Technology (ATV)** concentrations:

- Professional Flight Officer (ATV4)**: if you wish to pursue an airline flight career, requires a minor,
- Corporate and General Aviation (ATV5)***: if you are interested in flight careers related to general business, but not necessarily with an airline, requires a minor,
- Aviation Operations (ATV3)***: if you are interested in the non-flying aspects of aviation operations such as aircraft dispatch, minor required, *and*
- Air Traffic Collegiate Training Initiative - AT-CTI (AVT8)**: if you are interested in a career as an FAA air traffic control, minor required.

Aviation Management (AMG) concentration:

- Aerospace Management (AMG8)*** if you are interested in the management of aviation businesses, from airports to airlines, requires a minor in the Business School.

*A 12 semester-hour **Space Commercialization** emphasis is available for these concentrations.

Certificate programs in **Airport Management** and **Space Commercialization** are offered, as are four minors: Aviation Management, Airframe and Powerplant, Private Pilot, and Aviation Technology.

DEPARTMENT POLICIES

Fill out a Declaration of Major/Minor form, available in the AVS Office or from Central Advising, indicate your major, then, with help from the AVS office staff, choose a faculty advisor. Meet with your advisor within the first four weeks of each semester. Your advisor will be available to assist you throughout your college career. Become acquainted with faculty and staff and do not hesitate to ask questions or seek guidance if problems arise.

Certain FAA pilot certificates and ratings are required for the completion of ATV degrees, except ATV3, ATV8 and some minors. These are listed under each major. College credit for flight courses (AES 1500, 2500, 3520, etc.) may be used if transferred from an accredited college aviation program, such as that at the Colorado Northwestern Community College at Rangely, with whom we have an articulation agreement. Flight training is completed independently. Flight courses (graded as Satisfactory or Unsatisfactory) may be taken to obtain additional financial aid; however, these do not count as part of the degree program; consult your advisor and the financial aid office on your options.

Any MSCD catalog in effect since initial enrollment may be used, provided enrollment is not interrupted by an absence of three consecutive semesters, including summer.

Consult AVS bulletin boards and website at <http://www.mscd.edu/~aviation/> for items of interest (job opportunities, internships, personal messages and general information). *Check Them Often!!*

Metro State is located on the Auraria Campus, which includes the University of Colorado-Denver (UCD) and the Community College of Denver (CCD). This provides the opportunity become involved in diverse campus activities which will enrich your college experience.

AVS STUDENT ISSUES COMMITTEE

Requests for adjustment to AVS program requirements must be in writing. Include a current CAPP Report and written rationale for the requested change. The rationale must be sufficiently complete for faculty to clearly understand the request. Requests are submitted to the AVS Student Issues Committee. See: <http://www.mscd-aviation-aerospace.org/students/studissueproc.htm> .

FAA APPROVED GROUND SCHOOL

We provide FAA Part 141 approved ground schools for Private, Instrument, Commercial and Certified Flight and Ground Instructor certificates and ratings. If you successfully complete AES 1100, *Aviation Fundamentals*, you are eligible for the FAA Private Pilot knowledge exam. AES 1800, *Commercial/Instrument Ground*, prepares you for the Instrument rating and Commercial Pilot knowledge exams. AES 3550, *FAA Instructor Certification - Ground*, prepares for the Fundamentals of Instruction (FOI), Certified Flight Instructor-Airplane, Basic and Advanced Ground Instructor knowledge exams.

FAA ADVANCED GROUND INSTRUCTOR CERTIFICATE

To obtain the FAA Advanced Ground Instructor certificate (required for ATV5 if the CFI is not obtained), present to the FAA Flight Standards District Office (FSDO) satisfactory results of the FAA Knowledge exams: Fundamentals of Instructing (FOI) and Advanced Ground Instructor (AGI). The Denver FSDO is at 26805 E. 68th Ave, Suite 200, Denver, CO 80249 – ph. 303-342-1100, web site http://www.faa.gov/about/office_org/field_offices/fsdo/den/ .

CREDIT FOR FAA CERTIFICATES AND RATINGS and/or PRIOR AVIATION EXPERIENCE

Students enrolling in AVS programs who already have flight certificates and ratings and/or other aviation experience have several options:

- Those with FAA certificates and ratings, but without significant aviation-related work experience, may substitute, with the approval of the AVS Department, more advanced AVS courses for the basic required courses pertaining to the certificates or ratings held.
- Those with a record of aviation-related employment may apply for credit for college-level learning gained through experience by submitting a "prior learning portfolio" to the Center for Individualized Learning. In the portfolio the student describes and documents learning equivalent to specific AVS courses listed in the *Catalog*. The portfolio is evaluated and assessed by the AVS Department and credit is awarded on the basis of this evaluation. The charge for each credit hour requested is one-half the in-state tuition for one credit hour (see *Alternative Credit Options* in the *Catalog*).
- Complete an Individualized Degree Program through the Center for Individualized Learning. This provides an opportunity to design a major or minor program to meet specific educational goals not met by existing AVS programs (see *Special Academic Programs* in the *Catalog*) - www.mscd.edu/~cil/.

AIR TRAFFIC COLLEGIATE TRAINING INITIATIVE (AT-CTI)

MSCD's Aviation and Aerospace Science Department is an FAA designated AT-CTI Program - part of the FAA Collegiate Training Initiative which provides a pathway to a career as an FAA air traffic

controller. Students successfully completing an AT-CTI program and who are recommended to the FAA by the AT-CTI school receive preferential hiring consideration, as do those with military air traffic control experience.

FAA hiring requirements under the AT-CTI program include:

- completing an FAA approved AT-CTI Program
- receiving a degree from an FAA approved AT-CTI school
- receiving a recommendation from an authorized AT-CTI school official (MSCD requires completion of all required AT-CTI courses with a “B” average and completion of an MSCD knowledge exam with a minimum score of 70%)
- holding U.S. citizenship
- attaining a score of 70% or above on the FAA Air Traffic Selection and Training (AT-SAT) test battery (in addition to the MSCD administered knowledge exam)
- being less than 31 years of age when starting duty in an FAA terminal or en route facility
- meeting FAA medical, security, and suitability requirements
- successfully completing an interview to determine whether the candidate possesses the personal characteristics needed for air traffic control work
- being able to speak English clearly enough to be understood over radios, intercoms, and similar communications equipment

Neither completing MSCD’s AT-CTI Program, receiving a recommendation to the FAA from MSCD, nor passing the AT-SAT test battery, guarantees an employment offer from the FAA.

For the courses required for the AT-CTI program, see p. 16. Enrollment in the AT-CTI Program requires completion of special forms. Contact Professor Simmons.

NOTE: AT-CTI for ATV4, ATV5 and ATV3 Majors

ATV 4 and ATV5 majors who complete the ATV4 (p. 12) or ATV5 (p. 13) curriculum plus AES 2200 Fundamentals of Air Traffic Control and AES 4100 Advanced Air Traffic Control and who comply with all the policies and procedures of the AT-CTI Program will have completed the AT-CTI curriculum and will be eligible to be recommended to the FAA for possible hiring as an air traffic controller. ATV3 majors must complete AES 1800, AES 2710, and AES 3460 and AES 2200 and AES 4100 as part of their 29 semester hours of electives (p. 21) to complete the AT-CTI program.

IDP – B.S. Aerospace Systems Engineering Technology & B.S. Aerospace Physics

Students interested in pursuing a Bachelor of Science (B.S.) in the field of *Aerospace Systems Engineering Technology* or *Aerospace Physics* may do so through the Individualized Degree Program (IDP). Suggested coursework across multiple departments is combined with flexibility to meet the needs of individual students. The suggested courses comprise an extended major (requires no minor). The recommended General Studies courses differ from those required of the ATV and AMG programs and are listed with the recommended courses, p. 18 and 19.

Students must work with faculty advisors in the participating departments as well as an advisor from the Center for Individualized Learning to ensure that the proposed Individualized Degree Program meets their own needs and those of industry.

Please contact:

- Center for Individualized Learning: 303-556-8342
- Dr. Jeff Forrest (forrestj@mscd.edu) Chair, Aviation & Aerospace Science Department.

You must also attend an Information Session at the Center for Individualized Learning:

<http://www.mscd.edu/~cil/getstarted.shtml>.

B.S. Aerospace Systems Engineering Technology (ASET) (IDP)

NASA, and many aerospace companies such as Ball Aerospace and Lockheed Martin, anticipates a growing need for employees with a strong background in engineering technology and project management at the bachelor's degree level. Metro is working in collaboration with the Community College of Denver, NASA, and others to prepare students with the varied skills they will need to be successful in this field.

B.S. Aerospace Physics (IDP)

This program is under development. Students interested in pursuing a Bachelor's of Science in the field of Aerospace Physics may do so through the Individualized Degree Program (IDP) which allows for a combination of suggested coursework across multiple departments with the flexibility to meet the needs of the individual student. See p. 8 for more details.

CERTIFICATES

AIRPORT MANAGEMENT

MSCD's Aviation and Aerospace Department is offering a Certificate Program in Airport Management (see p. 20). A student completing this certificate will be prepared for the American Association of Airport Executives (AAAE) Certified Member examination, often required for airport management positions.

SPACE COMMERCIALIZATION

MSCD's Aviation and Aerospace Department is offering a Certificate Program in Space Commercialization (see p. 20). This certificate provide a strong foundation related to opportunities in an important and expanding part of the Colorado and national economy and expand opportunities for those currently employed in the industry. In addition to the certificate, Space Commercialization Emphases are available as part of the Aviation Technology and Aviation Management degrees.

Coordinate with your department advisor on completing the certificate.

FINANCIAL AID and FLIGHT COURSES

You may be eligible for additional financial aid by enrolling in any of the following flight courses: AES 1500, AES 2500, AES 3520, AES 4500, AES 4510, AES 4520 or AES 4530. Consult your faculty advisor and the Financial Aid Office for more information. See <http://www.mscd.edu/financialaid/>.

CREDIT FOR FAA AIRFRAME AND POWERPLANT (A&P) CERTIFICATE

You may receive up to 25 semester hours credit for an A&P certificate if you provide evidence of holding the A&P certificate to the AVS department.

<http://www.mscd-aviation-aerospace.org/students/aandp.htm>.

CREDIT FOR FAA AIRCRAFT DISPATCHER CERTIFICATE

You may receive 12 semester hours credit for a FAA Aircraft Dispatcher certificate if you provide evidence of holding the Aircraft Dispatcher certificate to the AVS department. <http://www.mscd-aviation-aerospace.org/students/dispatch.htm>.

ROBERT K. MOCK WORLD INDOOR AIRPORT LABORATORIES (WIA)

This is a large flight training and simulation laboratory. You will acquire advanced flight skills in single engine FTDs, twin engine FTDs, Garmin 1000 training devices, FMS trainers, CRJ CBT and other large aircraft CBTs, and twin engine Personal Computer-based Aviation Training Devices (PCATD). The WIA has an Air Traffic Control system providing simulation of an operational air traffic control radar facility. The WIA also has a Flight Planning area for preparing and filing flight

plans, complete with charts, maps, approach plates, and other planning materials. Student flight instructors may obtain instructional experience by enrolling in two practica (AES 3570 and AES 4590).

The simulator courses offered are:

- AES 1710 Single Engine Flight Simulation I
- AES 2710 Instrument Flight Simulation I
- AES 3710 Multiengine Flight Simulation I
- AES 4710 Turboprop Flight Simulation

COOPERATIVE EDUCATION/INTERNSHIPS

Many aviation Cooperative Education jobs and Internships are available. You may enroll for 12 semester hours of college credit in Cooperative Education courses (AES 3980), six semester hours of which may apply as electives in your degree. Contact Jeff Forrest, AVS Department Chair, for further information or the COOP office, 303-556-3290; web site is www.mscd.edu/~cooped.

AMERICAN ASSOCIATION OF AIRPORT EXECUTIVES (AAAE)

The MSCD student chapter of the AAAE invites all aviation students to become members. The goal is to promote professional development and instill professional attitudes in students engaged in the study of airport development, administration, management and operation, and related fields of aviation. AAAE is the world's largest professional organization for airport executives, representing thousands of management personnel at public use airports nationwide. The primary goal is to assist airport executives fulfill their responsibilities to the airports and the communities they serve. Details - Professor Jeff Price.

PRECISION FLIGHT TEAM

The precision flight team competes in annual regional and national meets with other members of the National Intercollegiate Flying Association, NIFA. Competition includes ground and flight events. Team members earn the right to compete through competition with each other each semester. Some expenses are met through various fund raising activities. The team also participates in community service activities. Any MSCD students interested in improving their skills as private or commercial pilots are encouraged to become involved by enrolling in AES 2330, Precision Flight and Navigation. Check the following web site: www.mscd.edu/~aviation/fltteam.htm.

Flight Team Membership will help you further develop flight and flight planning skills. It also affords you the opportunity to make your name known on the national stage, as well as placing you in the position to win scholarships, cash awards and flight training awards from the airlines based on your performance. An additional benefit is the lasting friendships with fellow aerospace students at MSCD and across the nation.

CREDIT FOR MILITARY TRAINING

American Council on Education (ACE) www.acenet.edu/calec/, Center for Adult Learning and Educational Credentials serves adult learners through: Corporate Programs, Military Programs, and the GED Testing Service. ACE's Military Programs division evaluates and recommends college credit for military courses and occupations. Students may obtain information concerning these programs from ACE's website <http://www.acenet.edu//AM/Template.cfm?Section=Home> and/or from Metro Transfer Services, 303-556-3774.

PROGRAM REQUIREMENTS for EACH MAJOR

Aviation Technology and Aviation Management programs and the General Studies courses for the AVS majors are listed on the following pages. With each program is a suggested sequence of courses for the eight semesters needed for the Bachelor of Science degree. The course sequence includes general studies and other courses in such a way that prerequisites will be met without impeding progress toward the degree. The notation “**Professional Pilot Documentation**” means that the FAA Commercial Pilot with the Instrument rating is required for the concentration or minor.

You must receive at least a “C” in all 3000 & 4000 level AVS program courses.

NOTE: Before enrolling in ATV4, or ATV5, ensure that you can obtain a first class FAA medical certificate (for ATV8 a second class medical). For a list of FAA medical examiners - <http://www.faa.gov/pilots/amelocator/>.

Selection of Catalog for Requirements (<http://catalog.mscd.edu/>)

You must use a single MSCD Catalog, one in effect while you are enrolled at MSCD, to meet your degree requirements, including the General Studies, major and minor requirements.

If you are transferring from a regionally accredited Colorado community college you may complete degree requirements using an MSCD Catalog in effect while enrolled at the community college, subject to the following conditions:

- The degree Catalog selected does not predate the current MSCD catalog by more than 3 years.
- The degree Catalog selected may have been in use at any time from the time the student was continually enrolled at a regionally accredited Colorado community college to the semester for which the student is enrolling in MSCD.

AES ELECTIVES: The notation “**AES Electives**” in this Guide means any AES course other than AES courses listed as part of your major and **with the exception of the “flight” courses:** AES 1500, AES 2500, AES 3520, AES 4500, AES 4510, AES 4520, AES 4530 and AES 4550.

GENERAL STUDIES & MULTICULTURAL REQUIREMENTS (<http://catalog.mscd.edu/>)

Students seeking a B.S. in AVS programs must complete these General Studies courses:

Level I General Studies (13 SH minimum)

Composition: ENG 1010 & ENG 10206

Math: MTH 1110 College Algebra -or-

MTH 1310 Finite Math for Mgt & Soc. Sciences.....4

Communication: SPE 10103

Level II General Studies (21 SH minimum)

Historical: Approved course*3

Arts & Letters: PHI 1030 *Ethics (recommended for ATV majors)*3

PHI 3360 *Business Ethics (recommended for AMG majors)*3

Approved A&L elective*3

Social Sciences: ECO 2010 Principles of Economics - Macro3

ECO 2020 Principles of Economics - Micro3

Natural Science: PHY 1250 Physics of Aviation**6

* Could also satisfy multicultural requirements.

** AMG8 students see p. 17 for Natural Sciences requirements.

Multicultural Requirement (3 SH minimum)

Multicultural: Approved Elective3

Professional Flight Officer Concentration

B.S. in AVIATION TECHNOLOGY

The Major Code for this Degree is: ATV

The Concentration Code for this Degree is: ATV4

Designed for students planning careers as professional pilots primarily with the airlines. *A student completing this concentration must have an FAA Commercial Pilot certificate with Instrument and Multi-engine ratings and the FAA Flight Instructor (CFI) and Instrument Instructor (CFI-I) certificates OR a Type Rating before graduation. (For aircraft categories other than Airplane, the CFI-I is not required; for the Lighter-than-Air category a student must have the Advanced Ground/Instrument Ground Instructor certificate.)*

REQUIRED COURSES SEMESTER HOURS

AES 1100 Aviation Fundamentals	6
AES 1400 Aviation Weather	3
AES 1710 Single Engine Flight Simulation I	3
AES 1800 Commercial/Instrument Ground.....	6
AES 2150 Avionics for Aviators	4
AES 2710 Instrument Flight Simulation I	3
AES 3000 Aircraft Systems and Propulsion	3
AES 3460 Weather for Aircrews	3
AES 3530 Aerodynamics	3
AES 3710 Multiengine Flight Simulation I -or-	
AES 4710 Turboprop Flight Simulation	3
AES 3850 Human Factors & Physiology of Flgt ..	3
AES 3880 Aviation Security	3
AES 4040 Aircraft Performance	3
AES 4120 Air Carrier Systems	4
AES 4130 Flight Officer Duties& Responsibilities	4
AES 4370 Advanced Navigation Systems.....	3
AES 4860 Aviation Safety	3
AES 4910 Aviation Mgt & Job Targeting.....	3
AES 4930 Professional Flight Standards Seminar	3
Required Professional Pilot Documentation	
<i>Subtotal</i>	<i>66-67</i>
Plus AES Approved Electives for a total of 68 ...	2-1
Total of Required Courses.....	68
General Studies for All AES Majors	34
Minor (non-AES except for Airframe & Powerplant Mechanics minor, which is 31 credits)	18-31
<i>Total Hours Required.....</i>	<i>120-133</i>

NOTE: For additional requirements to complete the AT-CTI program – see page 8.

Course Sequence for ATV 4:

Semester 1	Semester 2
AES 1100	ENG 1010
AES 1400	PHY 1250
AES 1710	SPE 1010
<u>MTH 1110</u>	<u>GS Elective</u>
Total 16 SH	Total 15 SH
Semester 3	Semester 4
AES 1800	ECO 2020
ENG 1020	AES 2150
ECO 2010	AES 2710
GS Elective	Minor
_____	<u>Minor</u>
Total 15 SH	Total 16 SH
Semester 5	Semester 6
AES 3000	Minor
AES 3460	AES 4040
AES 3880	AES 3710/ AES 4710
GS Elec	AES 3850
<u>AES 3530</u>	<u>Minor</u>
Total 15 SH	Total 15-16 SH
Semester 7	Semester 8
AES 4370	Elective
Minor	AES 4120
AES 4910	AES 4130
AES 4860	AES 4930
<u>Minor</u>	<u>Minor</u>
Total 15 SH	Total 17 SH

Corporate and General Aviation Concentration

B.S. in AVIATION TECHNOLOGY

The Major Code for this Degree is: ATV

The Concentration Code for this Degree is: ATV5

This concentration is designed for those seeking a career as a professional pilot in business, corporate, or other types of general aviation flight operations. *A student choosing this concentration must have an FAA Commercial Pilot certificate with an Instrument rating and either the FAA Flight Instructor certificate (CFI) or the FAA Advanced Ground Instructor certificate before graduation.*

REQUIRED COURSES SEMESTER HOURS

AES 1100 Aviation Fundamentals.....	6
AES 1400 Aviation Weather	3
AES 1710 Single Engine Flight Simulation I	3
AES 1800 Commercial/Instrument Ground.....	6
AES 2710 Instrument Flight Simulation I.....	3
AES 3000 Aircraft Systems and Propulsion.....	3
AES 3460 Weather for Aircrews	3
AES 3530 Aerodynamics	3
AES 3710 Multiengine Flight Simulation I -or-	
AES 4710 Turboprop Flight Simulation	4
AES 3850 Human Factors & Physiology of Flgt... 3	
AES 3880 Aviation Security	3
AES 4040 Aircraft Performance	3
AES 4370 Advanced Navigation Systems.....	3
AES 4860 Aviation Safety	3
AES 4910 Aviation Mgt & Job Targeting.....	3
COM 2610 Intro to Technical Writing -or-	
MKT 2040 Business Communication.....	3
AES 4930 Prof Flight Standards Seminar -or-	
COM 4790 Senior Seminar in Tech Comm	3
Required Professional Pilot Documentation	
Total for Required Courses	57 - 58
Plus approved AES electives for a total of 68 .	10-11
<i>The following may be substituted for approved AES electives</i>	
CIS 3270 Adv Computer Apps for Business.....	3
MTH 1210 Introduction to Statistics - 4 -or-	
CIS 2300 Business Statistics.....	3
MTH 1320 Calculus for Mgt & Social Sciences.....	3
Total for ATV5 Concentration.....	68
General Studies for All AES Majors.....	34
Minor (non-AES except for Airframe & Powerplant minor, which is 31 credits)	18-31
<i>Total Hours Required</i>	<i>120-133</i>

Space Commercialization Emphasis* (ATV6)

Required ATV5 Concentration Courses	57-58
AES 3600 Space Flight Operations I.....	3
AES 4601 Space Flight Operations II	3
AES 4602 Aerospace Comm Operations	3
AES 4603 Aerospace Ops Sys Anal & Design	3

Total for Space Commercialization Emphasis . 69 -70
 General Studies for all AES majors 34
 Minor (non-AES except for Airframe & Powerplant minor, which is 31 credits) 18-31
Total Hours Required 121-135
**A student completing this emphasis is eligible for the Space Commercialization Certificate.*

Course Sequence for ATV5:

Semester 1	Semester 2
AES 1100	ENG 1010
AES 1400	PHY 1250
AES 1710	SPE 1010
<u>MTH 1110</u>	<u>GS Elec</u>
Total 16 SH	Total 15 SH
Semester 3	Semester 4
AES 1800	ECO 2020
ENG 1020	AES 2710
ECO 2010	COM 2610
Elective	Minor
<u> </u>	<u>Minor</u>
Total 15 SH	Total 15 SH
Semester 5	Semester 6
AES 3000	Minor
GS Elec	AES 4040
AES 3460	AES 3710/ AES 4710
GS Elec	Minor
<u>AES 3530</u>	<u>Elective</u>
Total 15 SH	Total 15-16 SH
Semester 7	Semester 8
AES 3850	AES 4370
Elective	AES 4860
AES 3880	AES 4930
AES 4910	Elective
<u>Minor</u>	<u>Minor</u>
Total 15 SH	Total 15 SH

NOTE: For additional requirements to complete the AT-CTI program – see page 8.

Aerospace Operations Concentration

ATV3

B.S. in AVIATION TECHNOLOGY

The Aerospace Operations concentration (course listing p. 15) is designed for those seeking careers in aviation or aerospace operations, other than as professional pilots or in aviation management positions.

Apart from the formal Space Commercialization emphasis, this concentration provides the opportunity for you to be exposed to other aspects of the aviation and aerospace professions. You should use your elective hours in this concentration to take AVS courses to enhance your knowledge in the areas in which you are interested.

You may also use credits for the Aircraft Dispatcher or A&P certificate as electives within this option. You may receive up to 12 semester hours credit for an FAA Aircraft Dispatcher certificate and 25 semester hours credit if holding the A&P certificate. To obtain this credit you must provide evidence of holding the pertinent certificate to the AVS department.

Careful selection of electives could qualify you for the Airport Management Certificate (see p. 20), the Air Traffic Collegiate Training Initiative Program (see p. 7 and 16) or the Space Commercialization Certificate (see p. 20).

Credit for the Airframe and Powerplant Certificate may be applied as AES elective credits (see Professor Christian).

Aerospace Operations Concentration

B.S. in AVIATION TECHNOLOGY

The Major Code for this Degree is: ATV

The Concentration Code for this Degree is: ATV3

REQUIRED COURSES SEMESTER HOURS

AES 1100 Aviation Fundamentals.....	6
AES 1400 Aviation Weather.....	3
AES 1710 Single Engine Flight Simulation I	3
AES 2220 Flight Dispatcher and Load Planning ..	3
AES 3000 Aircraft Systems and Propulsion.....	3
AES 3850 Human Factors & Physiology of Flgt...3	
AES 3880 Aviation Security	3
AES 4370 Advanced Navigation Systems.....	3
AES 4860 Aviation Safety - <i>or</i> -	
AES 4870 Aviation Safety Program Mgt	3
AES 4910 Aviation Mgt and Job Targeting	3
COM 2610 Intro to Technical Writing - <i>or</i> -	
MKT 2040 Business Communication.....	3
COM 4790 Senior Sem in Tech Comm - <i>or</i> -	
AES 4930 Prof Flight Standards Sem - <i>or</i> -	
AES 4950 Av & Aerospace Science Mgt Strat	3

Total for Required ATV3 Concentration 39
 Plus a minimum of 29 semester hours of Approved AES Electives..... 29
The following courses may be substituted for approved AES electives

MTH 1210 Introduction to Statistics....4 - <i>or</i> -	
CIS 2300 Business Statistics.....	3
MTH 1320 Calculus for Mgt & Social Sciences.....	3
PSY 1001 Introductory Psychology.....	3
MGT 3000 Organizational Management.....	3
MGT 4530 Organizational Behavior	3
Total for ATV3 Concentration	68
General Studies for All AES Majors.....	34
Minor (non-AES)	18
<i>Total Hours Required.....</i>	<i>120</i>

Space Commercialization Emphasis* (ATV7)

Required ATV3 Courses	39
AES 3600 Space Flight Operations I.....	3
AES 4601 Space Flight Operations II	3
AES 4602 Aerospace Comm Operations	3
AES 4603 Aerospace Ops Sys Anal & Design	3
Plus a minimum of 17 semester hours of Approved AES Electives.....	17
<i>The following courses may be substituted for Approved AES electives</i>	
MTH 1210 Introduction to Statistics....4 - <i>or</i> -	
CIS 2300 Business Statistics.....	3
MTH 1320 Calculus for Mgt & Social Sciences.....	3

PSY 1001 Introductory Psychology	3
MGT 3000 Organizational Management	3
MGT 4530 Organizational Behavior.....	3
Total for Space Operations Emphasis	68
General Studies for all AES majors	34
Minor (non-AES)	18
<i>Total Hours Required</i>	<i>120</i>

**A student completing this emphasis, with the addition of either AES 3530 Aerodynamics or AES 4370 Advanced Navigation, may obtain the Space Commercialization Certificate.*

Course Sequence for ATV3:

Semester 1
 AES 1100
 AES 1400
 AES 1710
MTH 1110
 Total 16 SH

Semester 3
 AES 2220
 ECO 2010
 ENG 1020
 Minor
AES Elective
 Total 15 SH

Semester 5
 AES 3000
 Minor
 AES Elective
 AES Elective
GS Elective
 Total 15 SH

Semester 7
 AES 4040
 AES 4860
 Minor
 AES Elective

AES Elective
 Total 15 SH

Minor

Semester 2
 ENG 1010
 PHY 1250
 SPE 1010
AES Elective
 Total 15 SH

Semester 4
 ECO 2020
 COM 2610
 Minor
 AES Elective
AES Elective
 Total 15 SH

Semester 6
 AES 3850
 AES 3880
 Minor
 AES Elective
GS Elective
 Total 15 SH

Semester 8
 COM 4790/
 AES 4930/ 4950

 AES Elective
 AES Elective
GS Elective
 Total 15 SH

NOTE: For courses required to complete the AT-CTI program – see page 8.

Air Traffic Collegiate Training Initiative (AT-CTI)

B.S. in AVIATION TECHNOLOGY

The Major Code for this Degree is: ATV

The Concentration Code for this Degree is: ATV8

Metropolitan State College of Denver has been designated by the Federal Aviation Administration (FAA) as part of its Collegiate Training Initiative as an approved AT-CTI Program. This concentration is designed to provide a pathway for students interested in becoming FAA air traffic controllers. **See page 8 for eligibility requirements.**

REQUIRED COURSES	SEMESTER HOURS
AES 1100 Aviation Fundamentals.....	6
AES 1400 Aviation Weather.....	3
AES 1710 Single Engine Flight Simulation I.....	3
AES 1800 Commercial/Instrument Ground.....	6
AES 2200 Fundamentals of Air Traffic Control....	4
AES 2710 Instrument Flight Simulation I.....	3
AES 3460 Weather for Aircrews	3
AES 4100 Advanced Air Traffic Control	3
AES 4370 Advanced Navigation Systems.....	3
AES 4860 Aviation Safety -or-	
AES 4870 Aviation Safety Program Mgt.....	3
COM 4790 Senior Seminar in Tech Comm -or-	
AES 4930 Professional Flight Standards Sem -or-	
AES 4950 Av & Aerospace Science Mgt Strat.....	3

Total for Required AT-CTI Concentration 40

(All required AT-CTI courses must be completed with a "B" average and an MSCD comprehensive knowledge exam must be completed with a minimum score of 70%)

General Studies for All AES Majors.....	34
Minor (non-AES except for Airframe & Powerplant minor, which is 31 credits)	18-31
Unrestricted Electives*	15-28
<i>Total Hours Required.....</i>	<i>120</i>

**Suggested Electives*

AES 3220 Aviation Law & Risk Mgt	3
AES 3850 Human Factors & Physiology Flgt ...	3
AES 3880 Aviation Security	3
AES 3870 Aircraft Accident Investigation	3
AES 3890 Cooperative Education	1-6
AES 4040 Aircraft Performance	3
CIS 2010 Computer Applications for Business..	3
MKT 2040 Business Communication	3
PSY 1001 Introductory Psychology	3

Course Sequence for ATV8:

<u>Semester 1</u>	<u>Semester 2</u>
AES 1100	ENG 1010
AES 1400	PHY 1250
AES 1710	SPE 1010
<u>MTH 1110</u>	<u>Elective</u>
Total 16 SH	Total 15 SH

<u>Semester 3</u>	<u>Semester 4</u>
AES 1800	ECO 2020
ECO 2010	AES 2710
ENG 1020	Minor
Minor	AES 2200
<u>COM 2610</u>	<u>Elective</u>
Total 18 SH	Total 15 SH

<u>Semester 5</u>	<u>Semester 6</u>
AES 3460	AES 3850
Minor	AES 3880
Elective	Minor
Elective	Elective
<u>GS Elective</u>	<u>GS Elective</u>
Total 15 SH	Total 15 SH

<u>Semester 7</u>	<u>Semester 8</u>
AES 4370	COM 4790/
AES 4860/4870	AES 4930/4950
Minor	
Elective	Minor
	AES 4100
<u>Elective</u>	Elective
Total 15 SH	<u>GS Elective</u>
	Total 15 SH

Aerospace Management Concentration

B.S. in AVIATION MANAGEMENT

The Major Code for this Degree is: **AMG**

The Concentration Code for this Degree is: **AMG8**

This concentration integrates business and management courses with an aviation curriculum and a business minor to prepare the graduate for any of several aviation or aerospace business professions.

REQUIRED COURSES	SEMESTER HOURS
AES 1100 Aviation Fundamentals	6
AES 1400 Aviation Weather	3
AES 2220 Flight Dispatcher and Load Planning.....	3
AES 3220 Aviation Law and Risk Management.....	3
AES 3230 Airline Management	3
AES 3240 Airline Planning	3
AES 3850 Human Factors & Physiology of Flgt	3
AES 3880 Aviation Security	3
AES 4200 Airport Planning and Management I.....	3
AES 4210 Airport Planning and Management II	3
AES 4230 General & Business Aviation Ops	3
AES 4240 Air Cargo	3
AES 4870 Aviation Safety Program Management.....	3
AES 4910 Aviation Management and Job Targeting..	3
AES 4950 Av & Aerospace Science Mgt Strat -or-	3
COM 4790 Senior Sem in Tech Communications	3
<i>Subtotal</i>	<i>48</i>

Additional Required Courses

MTH 1210 Introduction to Statistics...4 -or-	
CIS 2300 Business Statistics	3
PSY 1001 Introductory Psychology	3
COM 2610 Introduction to Technical Writing -or-	
MKT 2040 Business Communication -or-	
SPE 3100 Business and Professional Speaking	3
Total for AMG8 required courses.....	57-58
Plus a minimum of 11 semester hours of AES Approved Electives	11
General Studies for all AES majors.....	34
Minor in the School of Business	18
<i>Total Hours Required</i>	<i>120-121</i>

Space Commercialization Emphasis* (AMG9)

This emphasis will provide opportunities in an important and expanding part of the economy.

Required AMG8 Courses	57-58
AES 3600 Space Flight Operations I.....	3
AES 4601 Space Flight Operations II	3
AES 4602 Aerospace Comm Operations	3
AES 4603 Aerospace Ops Sys Anal & Design	3
Total for Space Commercialization Emphasis	69-70
General Studies for all AES majors.....	34
Minor in the School of Business	18
<i>Total Hours Required</i>	<i>121-122</i>

*A student completing this emphasis may, with the addition of either AES 3530 Aerodynamics or AES 4370 Advanced Navigation, obtain the Space Commercialization Certificate.

***AMG8 majors ONLY** may fulfill their Natural Sciences from the following courses (must total at least 5 Semester hours)

GEL 1010 General Geology - 4 SH
GEG 1100 Introduction to Physical Geography - 3 SH
ENV 1200 Intro to Environmental Science - 3 SH
CHE 1800 General Chem I & Lab (CHE 1850) - 6 SH
PHY 1250 Physics of Aviation - 6 SH
AST 1040 Introduction to Astronomy - 3 SH
CHE 1100 Prin of Chem & Lab (CHE 1150) - 5 SH

Course Sequence for AMG8:

Semester 1	Semester 2
AES 1100	ENG 1010
SPE 1010	MTH 1210/ CIS 2300
AES 1400	GS Nat. Sci
MTH 1110	<u>PSY 1001</u>
<hr/>	Total 16 SH
Total 16 SH	

Semester 3	Semester 4
AES 2220	Elective
ECO 2010	ECO 2020
ENG 1020	COM 2610/ SPE 3100/ MKT 2040
Elective	GS Elective
<u>GS Elective</u>	<u>Elective</u>
Total 15 SH	Total 15 SH

Semester 5	Semester 6
AES 3220	AES 3240
AES 3230	AES 3850
AES 4910	Business Minor
Business Minor	Business Minor
<u>Business Minor</u>	<u>AES Elec</u>
Total 14 SH	Total 14 SH

Semester 7	Semester 8
AES 4200	AES 4210
AES 4230	AES 4860
AES 4240	AES 4950/ COM 4790
AES 3880	Business Minor
<u>Business Minor</u>	<u>GS Elec</u>
Total 15 SH	Total 15 SH

Aerospace Systems Engineering Technology (ASET)

Individualized Degree Program (IDP)

This program is under development. Students interested in pursuing a Bachelor's of Science in the field of Aerospace Systems Engineering Technology may do so through the Individualized Degree Program (IDP) which allows for a combination of suggested coursework across multiple departments with the flexibility to meet the needs of the individual student. See p. 8 for more details.

Recommended General Studies for ASET

Level I General Studies (13 SH minimum)

Composition: ENG 1010 & ENG 1020	6
Math: MTH 1110 College Algebra	4
Communication: SPE 1010	3

Level II General Studies (21 SH minimum)

Historical: Approved course*	3
Arts & Letters: PHI 1030 Ethics	3
Approved Arts & Letters course*	3
Social Sciences: ECO 2010.....	3
ECO 2020	3
Natural Science: PHY 2311 General Physics I	4
PHY 2321 Laboratory	1

* Could also satisfy multicultural requirements.

Multicultural Requirement (3 SH minimum)

Multicultural: Approved Elective	3
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Recommended Courses for ASET - IDP

AES 2050 Aviation History & Aerospace Dev	3
AES 3000 Aircraft Systems and Propulsion	3
AES 3530 Aerodynamics	3
AES 3600 Space Flight Operations I (-or- MET 190B C-SMARTS)	3
AES 4601 Space Flight Operations II	3
AES 4602 Aerospace Commercialized Ops	3
AES 4603 Aerospace Ops Sys Anal & Design	3
AES XXXX Special Topics in Space Science (SE)	3
CHE 1800 General Chemistry I.....	4
COM 2610 Introduction to Technical Writing	3
EET 2000 Electric Circuits and Machines	3
MET 1010 Manufacturing Processes	3
MET 1200 Technical Drawing I	3
MET 1310 Principles of Quality Assurance	3
MET 2150 Mechanics I - Statics	3
MET 2200 Materials of Engineering	3
MET 3110 Thermodynamics	3
MET 3160 Mechanics II - Dynamics	3
MET 3130 Mechanics of Materials	3
MET 3135 Mechanics of Materials - Laboratory ..	1
MET 3180 Fluids Mechanics I	3
MET 3210 Intro Computer Aided Engineering ...	4
MET 3410 Geom Dimensioning & Tolerances	3
MET 4000 Project Engineering	3

MET XXXX Spacecraft Design I	3
MET XXXY Spacecraft Design II	3
MTH 1120 College Trigonometry	3
MTH 1410 Calculus 1	4
MTH 2410 Calculus II	4
PHY 2331 General Physics II	4
PHY 2341 General Physics II	1

Recommended course sequence for ASET

Semester 1

CHE 1800
ENG 1010
MET 1010
MTH 1110
AES 2050

Subtotal 17

Semester 3

MET 1310
A&L elective
MTH 1410
PHI 1030
COM 2610

Subtotal 16

Semester 5

PHY 2331
PHY 2341
MET 2200
MET 3160
ECO 2020
EET 2000

Subtotal 17

Semester 7

AES 4601
MET 3210
AES 3530
MET 4000
MET XXXX

Subtotal 15

Semester 2

SPE 1010
ECO 2010
ENG 1020
AES 3600/ MET 190B
MET 1200
MTH 1120

Subtotal 18

Semester 4

PHY 2311
PHY 2321
MTH 2410
History elective
MET 2150

Subtotal 18

Semester 6

MET 3110
MET 3130
MET 3135
MET 3180
AES 3000

Subtotal 15

Semester 8

AES 4602
AES 4603
MET 3410
AES XXXX
MET XXXY

Subtotal 15

AVIATION & AEROSPACE SCIENCE MINORS FOR OTHER DISCIPLINES

These are designed to afford majors in other disciplines the opportunity to develop an understanding of the aviation and aerospace industries. AVS majors may not elect an Aviation Management or Aviation Technology minor, with the exception that Aviation Technology majors may minor in Airframe and Powerplant Mechanics.

Aviation Management Minor

Required Courses	Semester Hours
AES 1100 Aviation Fundamentals	6
AES 3220 Aviation Law and Risk Management...3	3
<i>Subtotal</i>	9
Plus 12 hours selected from:	
AES 3000 Aircraft Systems and Propulsion.....	3
AES 3230 Airline Management	3
AES 3240 Airline Planning.....	3
AES 3850 Human Factors & Physiology of Flgt...3	3
AES 4200 Airport Planning and Management I...3	3
AES 4210 Airport Planning and Management II..3	3
AES 4230 General & Business Aviation Ops	3
AES 4240 Air Cargo.....	3
AES 4870 Aviation Safety Program Management3	3
AES 4910 Aviation Mgt & Job Targeting.....	3
<i>Subtotal</i>	12
<i>Total</i>	21

Airframe and Powerplant Mechanics Minor

Required Courses	Semester Hours
Airframe and Powerplant certificate	25
AES 4230 General & Business Aviation Ops	3
AES 4870 Aviation Safety Program Management (or approved elective for ATV majors).....	3
<i>Total</i>	31

Private Pilot Minor

A student must possess at least an FAA Private Pilot certificate before graduation.

Required Courses	Semester Hours
AES 1100 Aviation Fundamentals.....	6
AES 1400 Aviation Weather	3
AES 1710 Single Engine Flight Simulation I	3
AES 2710 Instrument Flight Simulation I.....	3
AES 3850 Human Factors & Physiology of Flgt ..3	3
AES 3000 Aircraft Systems & Propulsion -or-	3
AES 4040 Aircraft Performance	3
Private Pilot Documentation	3
<i>Total</i>	21

Aviation Technology Minor

A student must possess at least an FAA Commercial Pilot certificate with an Instrument rating before graduation.

Required Courses	Semester Hours
AES 1100 Aviation Fundamentals.....	6
AES 1400 Aviation Weather	3
AES 1800 Commercial/Instrument Ground.....	6

AES 3000 Aircraft Systems and Propulsion	3
AES 3460 Weather for Aircrews	3
AES 3850 Human Factors & Physiology of Flgt ...3	3
AES 4860 Aviation Safety	3
Professional Pilot Documentation	3
<i>Total</i>	27

CERTIFICATE PROGRAMS

Students must complete each course in certificate programs with a grade of "C" or better. The courses cannot be taken pass/fail. Both certificates have AES 1100, Aviation Fundamentals, as a prerequisite course which may be waived with appropriate work experience or course work.

Airport Management Certificate

This certificate will prepare a student for the American Association of Airport Executives (AAAE) Certified Member examination, often required for airport management positions.

Required Courses	Semester Hours
AES 3220 Aviation Law & Risk Mgt -or-	3
AES 3230 Airline Management -or-	3
AES 3240 Airline Planning	3
AES 3880 Aviation Security	3
AES 4230 General & Business Aviation Ops.....	3
AES 4200 Airport Planning and Management I...3	3
AES 4210 Airport Planning and Management II..3	3
AES 4870 Aviation Safety Program Mgmt	3
<i>Total</i>	18

Space Commercialization Certificate

This certificate will provide the opportunities in an important and expanding part of the Colorado and national economy and expand opportunities for those currently employed in the industry.

Required Courses	Semester Hours
AES 3600 Space Flight Operations I	3
AES 4601 Space Flight Operations II	3
AES 4602 Aerospace Comm Operations	3
AES 4603 Aerospace Ops Sys Anal& Design	3
AES 3530 Aerodynamics -or-	3
AES 4370 Advanced Navigation	3
<i>Total</i>	15

AES APPROVED ELECTIVES & COURSE PREREQUISITES

Note: the following courses are Approved AES Electives, unless listed in your major as required for the degree emphasis.

“Permission of instructor” means you must contact the instructor in person (not office personnel) with information validating why you believe that you should be able to take the course.

AES 1100-6 Aviation Fundamentals - Corequisite: AES 1710 & AES 1400 (recommended)

AES 1400-3 Aviation Weather - Corequisite: AES 1100 or permission of instructor

AES 1500-1 Private Flight - permission of instructor

AES 1710-3 Single-Engine Flight Simulation I - Corequisite: AES 1100 (recommended)

AES 1800-6 Commercial/Instrument Ground - AES 1100, AES 1400, or permission of instructor

AES 2050-3 Aviation History & Aerospace Development

AES 2150-4 Avionics for Aviators - AES 1100, MTH 1110, PHY 1250 or instructor permission

AES 2200-4 Fundamentals of Air Traffic Control - AES 1100 or instructor permission

AES 2220-3 Flight Dispatcher/Load Planning - AES 1100, AES 1400

AES 2330-3 Precision Flight & Navigation - AES 1100 or Private Pilot certificate

AES 2500-1 Instrument Flight - AES 1100 & permission of instructor

AES 2710-3 Instrument Flight Simulation I – AES 1800, Private Pilot certificate or permission of instructor

AES 3000-3 Aircraft Systems & Propulsion - AES 1100 or FAA Private Pilot Cert., & PHY 1250 or instructor permission

AES 3220-3 Aviation Law & Risk Management - AES 1100 & junior or senior standing

AES 3230-3 Airline Management - junior or senior standing, or permission of instructor

AES 3240-3 Airline Planning - junior or senior standing

AES 3330-2 Intermediate Precision Flight & Navigation - AES 2330

AES 3340-1 Advanced Precision Flight & Navigation - AES 3330

AES 3460-3 Weather for Aircrews - AES 1400, at least junior standing or permission of instructor

AES 3520-1 Commercial Flight - FAA Private Pilot certificate & permission of instructor

AES 3530-3 Aerodynamics - PHY 1250

AES 3550-3 FAA Instructor Certification—Ground - AES 1800 & FAA Comm'l/Instrument cert., or instructor permission

AES 3570-2 Ground Instructor Practicum - FAA Comm'l/Instrument certificate, CFI or AGI or IGI, or permission of instructor

AES 3600-3 Space Flight Operations I - junior or senior standing or permission of instructor

AES 3710-3 Multiengine Flight Simulation I - FAA Commercial/Instrument certificate or permission of instructor

AES 3850-3 Human Factors & Physiology of Flight - junior or senior standing

AES 3870-3 Aircraft Accident Investigation - junior or senior standing or permission of instructor

AES 3880-3 Aviation Security - junior or senior standing

AES 4040-3 Aircraft Performance - AES 1100, AES 3530 & junior or senior standing

AES 4100-3 Advanced Air Traffic Control - AES 2200 or permission of instructor

AES 4120-4 Air Carrier Systems - junior or senior standing, AES 3000, AES 3530, AES 4040 & FAA Comm'l/Instrument

AES 4130-4 Flight Officer Duties & Responsibilities - junior or senior standing, AES 3000, 3530, 4040, & the FAA Commercial cert. with Inst. rating - Corequisite: AES 4120

AES 4150-2 Transport Category Aircraft Systems - senior standing, AES 4120, AES 4130, & FAA Comm'l/Instrument

AES 4200-3 Airport Planning & Management I - junior or senior standing or permission of instructor

AES 4210-3 Airport Planning & Management II - junior or senior standing; AES 4200; or permission of instructor

AES 4230-3 General & Business Aviation Operations - senior standing or permission of instructor

AES 4240-3 Air Cargo - junior or senior standing

AES 4250-3 Formulation of National Aviation Policy - Student must be an aviation & aerospace science major with junior or senior standing & will be pre-approved by the department for enrollment in the course. The pre-approval process includes submitting an application to the department by September 30 before the spring semester in which he/she wants to enroll.

AES 4370-3 Advanced Navigation Systems - AES 1100 & junior or senior standing

AES 4500-1 Flight Multi-Engine - FAA Commercial Pilot certificate & permission of instructor

AES 4510-1 Flight Instructor - FAA Commercial Pilot certificate & permission of instructor

AES 4520-1 Flight Instructor-Instrument - FAA Certified Flight Instructor certificate & permission of instructor

AES 4530-1 Flight Instructor-Multi-Engine - CFI, multiengine rating & permission of instructor

AES 4550-1 Flight Helicopter - permission of instructor

AES 4570-1 Airline Transport Pilot - FAA Commercial Pilot certificate & permission of instructor

AES 4580-4 Turbojet Flight Engineer or Type Rating FAA Flight Engineer Knowledge exam &/or permission of instructor

AES 4590-2 Flight Instructor Practicum - AES 3570, FAA Commercial/Instrument certificate, CFI, Advanced or Instrument Ground Instructor certificate, or permission of instructor

AES 4601-3 Space Flight Operations II – AES 3600, junior or senior standing or permission of instructor

AES 4602-3 Aerospace Comm Operations – AES 3600, junior or senior standing or permission of instructor

AES 4603-3 Aerospace Ops Sys Anal & Design – AES 3600, junior or senior standing or permission of instructor

AES 4710-4 Turboprop Flight Simulation - FAA Pvt. Pilot cert., instrument rating or AES 2710, multiengine rating or AES 3710 required

AES 4760-3 Aerospace Education - permission of instructor

AES 4860-3 Aviation Safety - senior standing

AES 4870 - Aviation Safety Program Management -

Completion of all required 3000-level AES courses & Senior standing

AES 4910-3 Aviation Mgt & Job Targeting – AVS major, senior standing or permission of instructor

AES 4930-3 Professional Flight Standards Seminar - completion of, or concurrent enrollment in, all other Aviation & Aerospace Science core courses & senior standing

AES 4950-3 Aviation & Aerospace Science Management Strategies - completion of, or concurrent enrollment in, all other Aviation & Aerospace Science core courses & senior standing

Major/Minor Codes

1997 – 2009 Catalogs

Note: All Upper Division and all Certificate courses must be completed with a grade of “C” or better.

Catalog Year	Degree Title	Major Concentration	Concentration Code	Minor	Minor Code
1997-98 AND 1998-99	Aviation Management AMG	Airway Science Management	AV2	Aviation Management	AMG
		Airway Science Maintenance Management	AV4	Aviation Technology	ATV
	Aviation Technology ATV	Air Carrier/General Aviation	AT1	Airframe & Powerplant Mechanic	APL
		Aircraft Systems Management	AT2	Private Pilot	PRP
1999-00 AND 2000-01	Aviation Management AMG	General Aviation Air Carrier	AMG5	Aviation Management	AMG
		Airway Science Management	AMG2	Aviation Technology	ATV
		Airway Science Maintenance Management	AMG4	Airframe & Powerplant Mechanic	APL
	Aviation Technology ATV	Air Carrier/General Aviation	ATV1	Private Pilot	PRP
		Aircraft Systems Management	ATV2		
2001-02	Aviation Management AMG	General Aviation Air Carrier	AMG5	Aviation Management	AMG
		Airway Science Management	AMG2	Aviation Technology	ATV
		Airway Science Maintenance Management	AMG4	Airframe & Powerplant Mechanic	APL
	Aviation Technology ATV	Air Carrier/General Aviation	ATV1	Private Pilot	PRP
		Aircraft Systems Management	ATV2		
<i>Minor required Fall 2001</i>					
2002-03	Aviation Management AMG	Aerospace Management	AMG8	Aviation Management	AMG
		Aerospace Systems Management	AMG6	Aviation Technology	ATV
		Aerospace Maintenance Management	AMG7	Airframe & Powerplant Mechanics	APL
	Aviation Technology ATV	Air Carrier/General Aviation	ATV1	Private Pilot	PRP
		Aircraft Systems Management	ATV2		
<i>Minor required Fall 2002</i>					
2003-04	Aviation Management AMG	Aerospace Management	AMG8	Aviation Management	AMG
		Aerospace Systems Management	AMG6	Aviation Technology	ATV
		Aerospace Maintenance Management	AMG7	Airframe & Powerplant	APL

	Aviation Technology ATV	Air Carrier/General Aviation	ATV1	Private Pilot	PRP
		Aerospace Operations	ATV3		
2004-05 AND 2005-06 AND 2006-07	Aviation Management AMG	Aerospace Management	AMG8	Aviation Management	AMG
		Aerospace Maintenance Management	AMG7	Aviation Technology	ATV
	Aviation Technology ATV	Professional Flight Officer	ATV4	Airframe & Powerplant	APL
		Corporate and General Aviation	ATV5		
		Aerospace Operations	ATV3		
	2004-05 AND 2005-06 and 2006-07	Aviation Management AMG	Aerospace Management	AMG8	Aviation Management
Aerospace Maintenance Management			AMG7	Aviation Technology	ATV
Aviation Technology ATV		Professional Flight Officer	ATV4	Airframe & Powerplant	APL
		Corporate and General Aviation	ATV5		
		Aerospace Operations	ATV3		
2007-08		Aviation Management AMG	Aerospace Management	AMG8	Aviation Management
	Aerospace Maintenance Management		AMG7	Aviation Technology	ATV
	Aviation Technology ATV	Professional Flight Officer	ATV4	Airframe & Powerplant Mechanics	APL
		Corporate and General Aviation	ATV5		
		Aerospace Operations	ATV3		
	2008-09	Aviation Management AMG	Aerospace Management	AMG8	Aviation Management
<i>Space Commercialization Emphasis</i>			AMG9	Aviation Technology	ATV
Aerospace Maintenance Management			AMG7	Airframe & Powerplant	APL
Aviation Technology ATV		Professional Flight Officer	ATV4	Private Pilot	PRP
		Corporate and General Aviation	ATV5		
		<i>Space Commercialization Emphasis</i>	ATV6		
		Aerospace Operations	ATV3		
		<i>Space Commercialization Emphasis</i>	ATV7		
Air Traffic Collegiate Training Initiative (AT-CTI)	ATV8				

AFROTC INFORMATION

Students who are interested in joining the Air Force ROTC may do so through the University of Colorado AFROTC Program. Typically this involves weekly attendance at training in Boulder. Some of the requirements are listed here and for more information contact these people at **Det.105 CU/Boulder:**

Capt. Seth Henderson - General Information	303 492-6108
Lynda Smith - University Liaison	303 492-8351
Maj. Alberto Mezarina - General Information	303 492-3130

Flying Requirements:

PILOTS: Vision- distant 20/70 correctable 20/20; near 20/20, meet refraction, accommodation and refraction requirements

Commitment-10 years after completing pilot training

NAVIGATORS: Vision - distant 20/200 correctable to 20/20; near 20/40 correctable to 20/20, meet refraction, accommodation and refraction requirements

Commitment - 6 years after completing navigator training

GENERAL:

- No history of allergies/hay fever after age 12; no history of asthma
- Standing height 64-77 inches; sitting height 34-40 inches
- Pass Flying Class 1 commissioning physical
- Compete Spring junior year
- Be a US citizen
- Be commissioned before 29th birthday

Scholarships:

- 4 year - apply during junior year high school - contact Det. 105
- Tuition (\$15,000 cap), books \$600, stipend (\$2500-4000 varies by college year)
- 3 / 2 year enroll in AFROTC- compete- yearly funds same as 4 year
- Pass Physical fitness test
- 2.5 minimum GPA
- Pass Commissioning physical
- Under age 31 on 31 Dec. of commissioning year

4 Year program requirements

- Freshman* 1 sh course + leadership lab each semester
- Sophomore* 1 sh course + leadership lab each semester, Field Training (summer camp) 4 weeks
- Junior* 3 sh course + leadership lab each semester
- Senior* 3 sh course + leadership lab each semester, commissioning

You can enter as a Sophomore and double up on the Freshman requirements

Commitment- 4 years active duty

TSA REQUIREMENTS FOR FTD (SIMULATOR) TRAINING

The Transportation Security Administration (TSA) requires that all MSCD students enrolling for flight simulator courses beginning Spring 2005 must present AVS with proof of US citizenship or, if non citizen, proof of registration with TSA and other documentation. Please obtain the documents that apply to you, and be prepared to show them to AVS personnel when your simulator class begins.

Proof of US citizenship: This is a one time requirement; an entry in your flight log book will be your proof of compliance. You'll need to show one of the following:

1. Original or government-issued certificated birth certificate (US) AND a government- issued photo ID, such as driver's license;
2. Current, valid (not expired) US Passport (contains photo);
3. Original US Nationalization Certificate with raised seal, & a government-issued photo ID;
4. Original US Citizenship & Immigration Services (USCIS) or Immigration & Naturalization Service (INS) form N-550 (or N-570, Certificate of Naturalization), plus a government-issued photo ID;
5. Original certification of birth abroad with raised seal or US Department of State Form FS-545 (or Form DS-1350), plus a government-issued photo ID;
6. Original certificate of US citizenship with raised seal, USCIS or INS Form N-560 (or Form N-561 or Form N-581), and a government-issued photo ID;
7. DOD or Federal Agency written certification attesting to the Federal employee's US citizenship or nationality, plus their government-issued photo ID.

Non-United States Citizen Students

The following must have been done for or by the student BEFORE simulator training:

1. Photo taken at the beginning of first simulator course, submitted to TSA, by MSCD.
2. The student must submit to TSA required background check information on a form available on-line at <https://www.flightschoolcandidates.gov>. This may be submitted from overseas before entering the US for training.
3. The student must submit fingerprints (10-fingers) to TSA. The American Association of Airport Executives (AAAE) is the clearinghouse for all fingerprint submissions to TSA. Information on AAAE procedures can be obtained at 703-797-2550. No procedures exist to have fingerprints taken at a foreign location.
4. The MSCD AVS Department has a web access code from the local FSDO, and then submit to TSA information that the pilot or student wants to start flight training and the type of training requested.
5. The pilot or student pilot must provide the MSCD AVS Department with a current and valid passport and visa, if appropriate.

Frequently asked questions at www.flightschoolcandidates.gov/student_faq.htm give students detailed information on the application procedure.

Flight simulator training may begin immediately upon submission of all required items to TSA and AAAE. If TSA notifies MSCD to cease training, flight training will be immediately terminated.

Flight training not started within 180-days from submission of required items to TSA and AAAE voids all submitted information and you must resubmit all the information.