

**Proposal to Revise ASC Requirements for Social Science:  
Air Transportation Bachelor of Arts Program**

Submitted by Nancy Ettliger  
Chair, Undergraduate Studies Committee, Department of Geography

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**SEPARATE ATTACHMENTS:**

- Curriculum Map for the Air Transportation Major in Geography (referenced in section IV)
- New Advising Sheet, Air Transportation (referenced in section VIII)
- Old Advising Sheet, Air Transportation (referenced in section VIII)

**Proposal to Revise ASC Requirements for Social Science:  
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**I. Relation Between the Geography Department and the Center for Aviation Studies (CAS)**

***General Information***

This proposal is to revise the existing Social Sciences: Air Transportation major, which was last updated in Autumn 2012. These suggested changes reflect recent curricular revisions and a refocusing of core courses in consultation with the Center for Aviation Studies (CAS).

***Rationale***

The Social Sciences: Air Transportation Bachelor of Arts Degree program (referred to as Air Transportation from here on) was designed by the prior department Chair, Morton O’Kelly (now Professor Emeritus), and Assistant Dean of Curriculum and Instruction, Deborah Haddad. The goals of the prior revision noted the value of a liberal arts baccalaureate for professionals entering the aviation industry, particularly in the development of critical thinking and analytical skills.

The prior ASC core in the degree were designed to complete a narrow set of Geography core courses specifically related to Weather and Climate (Geog 5900) and the spatial analysis of transportation systems. Dr. O’Kelly is an expert in Transportation Geography and Geographic Information Science (GIS). Thus, the design of the Geography core reflected his research priorities, resulting in a curriculum for a well-trained transportation geographer with an emphasis on Geographic Information Systems (e.g., in a spatial database environment using ArcGIS). We want to retain the GIS courses as options but recognize that not every Air Transportation graduate will need these highly technical skills.

Eight years in, the program has matured, and the Air Transportation students have been fully integrated into our Geography department. We wish to build on this success and renew and refresh the most obvious points of connection with our discipline. We have scrutinized feedback from graduation surveys, our advisors who work closely with Air Transportation students, and the faculty who teach the required Geography core.

The Social Science: Air Transportation major has two options: pilot and non-pilot. Staff and advisors in CAS and Geography have agreed that deeper engagement across human and physical geography can build skills toward richer and systematic options for air industry professionals. This logic fits well with the more focused set of options we want to propose on our side: a little more structure and deeper training in Human Geography (the study of people and place) and atmospheric science.

***Process***

Starting in Autumn 2018, the Center for Aviation Studies staff and the Undergraduate Studies Committee (UGS) in the Department of Geography both began parallel curricular revision processes. Brian Strzempowski of CAS regularly attended UGS curriculum meetings, and Darla Munroe (Chair, Department of Geography) attended two CAS curriculum meetings. In Spring

2019, we shared our overall curricular maps with a careful eye to how the major matched the evolving needs of the Air Tran students.

## **II. Proposal to Institute a Pre-Major**

### ***General Information***

Recent deliberations among Geography, the Center for Aviation Studies, the OSU Flight Education Program, Andrew Martin (Associate Vice Provost of Academic Affairs), and Bernadette Vankeerbergen (Assistant Dean, Curriculum), and David Tomasko (Associate Dean for Undergraduate Education and Student Services in Engineering) in November 2021 resulted in a recommendation to institute a pre-major.

### ***Rationale***

Due to an unprecedented increase in majors over the past 10 years and resulting strain on the resources at the Center for Aviation Studies/Flight Education, the Geography Department and Center for Aviation Studies request that the Social Sciences Air Transportation major be restructured to include a Pre-Major. This change will serve to stem the flow of students who wish to add the Professional Pilot Certification (PPC) to the major by implementing a competitive process to add the PPC. A finite number of flight slot spaces will be made available for Air Transportation students, and the Pre-Major will provide a transparent and fair process for students to become eligible to add the PPC specialization to their major.

### ***Present and Proposed Curriculum***

Instituting the Pre-Major will not have any curricular effect on the current major. The only change will be the coding of the major that prospective students will encounter on the Common App. The Pre-Major for Social Sciences Air Transportation will be the only option, and there will be a rubric in place to decide which students are eligible to progress to the Social Sciences Air Transportation major with the PPC specialization. Students will also have the option to progress to the major without the PPC specialization – this will *not* have a competitive process.

### ***Process***

#### **Social Sciences Air Transportation with Professional Pilot Certification Specialization**

Decisions regarding eligibility for the PPC Pre-Major are made after completion of the foundational courses and requirements.

The Pre-Major requires:

- A grade of B- or above in AVIATN 2100 (repeatable once)
- A passing grade of C- or above in AVIATN 2000, Geog 2400, and Geog 3300
- Minimum OSU GPA of C- or above

Eligible students selecting the *flight version of the Air Transportation major* are permitted to move from the Pre-Major into a rubric created and administered by CAS. Students will be ranked quantitatively each semester based on the following quantifiable criteria:

- Overall GPA
- Aviation GPA
- Class rank
- Grade in AV 2100

Students can improve their flight lab waitlist by improving their overall GPA and Aviation GPA; their class rank will increase each year and thereby improve their position on the list as well. All eligible students who 'graduate' from the pre-major into the flight version of the major will then be entered into Aviation's rubric and ranked each semester.

Flight education courses have a standardized incomplete policy that is used for contingencies such as bad weather that compromises a student's flight schedule. The incomplete policy requires a specific amount of course work in each of the flight laboratories to be complete in order to qualify. Should a student meet those requirements then they are awarded an incomplete and follow normal University timelines.

Students who move successfully from the Pre-Major and into the Air Tran major with flight will remain on the "list" for flights until they receive a flight slot. The previous application process has been removed. Students who do not meet the requirements to move from the Pre-Major into the major with flight (eg by scoring below a B- in AV 2100) have one more opportunity to enroll in 2100 and pass with a B- or above OR move into the Air Tran major without flight.

Students changing majors and transfer students must complete the foundational courses of the Pre-Major similarly as 1<sup>st</sup> year students. Students who already have completed a Private Pilot License will be managed by CAS at their discretion.

#### Social Sciences Air Transportation *without* the Professional Pilot Certification

Any student with passing grades (C- or above) in their foundational courses (AV 2000, 2100, GEOG 2400 & 3300) are eligible to progress to the non-PPC version of the major.

### **III. Summary of Proposed Changes to Core Requirements**

The logic and justification of the proposed changes to the ASC core and elective requirements is as follows:

- Retain the Geography core classes that continue to serve student needs best
- Move the two GIS methods classes (Geog 5210 Fundamentals of GIS, and Geog 5200 Cartography and Map Design) to Social Science electives
- Increase the number of Geography course offerings in the Social Science Elective category and require that students take at least 2 Geography courses to complete the Social Sciences Elective requirement. Students will have more flexibility and choices, and the Geography Department will maintain the same number of credits.
- Narrow the list of Social Science Electives outside the Geography Department to courses that Air Transportation students take regularly and find useful.

- Modify the content of courses to accommodate interests of Air Transportation students (elaborated below)

#### **IV. Major-specific Learning Goals for the Air Transportation Major in Geography & Curriculum Map (SEPARATE ATTACHMENT)**

The 7 learning goals for the Air Transportation major are the same as in the 2012 proposal (Appendix G) except for #'s 4 and 5, which are similar to those in 2012 but have been slightly revised to broaden the goals to transportation systems (including, but not limited to air transportation) by instructors of Geog. 3300 and Geog. 5300, two of the Core Geography courses in the Air Transportation major and the courses for which rubrics have been provided in this proposal. Below are the 7 goals; the 2012 goals are indicated for the revised goals ( #'s 4 and 5) following each. Geography courses focus on LG 4 and 5; the other disciplines in the collaborative Air Transportation major cover the other goals. See **SEPARATE ATTACHMENT** for the **curriculum map**.

LG1. Students acquire and apply foundational knowledge from the introductory courses in the core of the major to explain flight performance as well as federal and international aviation laws and policies.

LG2. Students acquire and apply statistical skills to critically evaluate data and research findings in the literature (e.g. geospatial data analyses).

LG3. Students apply quantitative skills to understand the management and operations of aviation-specific organizations, such as aircraft manufacturers, airlines, airports, and the air traffic management system.

LG4 (current). Students acquire knowledge about the social, political, economic, and/or physical structures of transportation systems and apply it to explain individual and organizational behaviors.

LG4 (2012) Students comprehend and critically assess the social, political, economic, and/or physical structures of air transportation systems to explain individual and organizational behaviors.

LG5 (current). Students explain performance, law, regulations, and policies related to transportation systems.

LG5 (2012) Students know aviation regulations and policies and are able to anticipate their ramifications under different scenarios.

LG6. Students comprehend the structure of industry and communications flows and are able to pinpoint sources of and remedies for administrative disagreements.

LG7. Students are able to demonstrate how knowledge of advanced aircraft performance has implications for decision-making by management for airports, airlines, and aviation service providers.

## V. Rubrics for LG4 and LG5, Geog. 3300 and 5300

LG4. Students acquire knowledge about the social, political, economic, and/or physical structures of transportation systems and apply it to explain individual and organizational behaviors.

LG5. Students explain performance, law, regulations, and policies related to transportation systems.

	Developing	Emerging	Proficient
Knowledges of transportation systems and their applications	Identifies basic elements of transportation systems and their physical, social, economic, and political impacts	Recognizes physical, social, economic, and political issues and various perspectives surrounding them	Articulates problems of, and prospects for, transportation systems in society
Transportation performance, law, regulations, and policies	Identifies performance indicators, as well as law, regulations, and policies related to transportation systems	Recognizes the performance of transportation systems and policies, and compliance with laws and regulations	Articulates the effectiveness of policies, laws, and regulations of the transportation systems

## VI. Assessment plan for the Air Transportation major in Geography

### ***Assessing LG4 and LG5***

LG4. Students acquire knowledge about the social, political, economic, and/or physical structures of transportation systems and apply it to explain individual and organizational behaviors.

Direct – Embedded testing - Assignments and quizzes will be given to all students in the core courses in the Air Transportation major (e.g. GEOG 3300, GEOG 5300).

Indirect – Survey (Student) - Graduating Senior Survey

Criteria: We expect that 80% of students feel their preparation from Transportation security and Transportation Geography as adequate for success in the major.

LG5. Students explain performance, law, regulations, and policies related to transportation systems.

Direct – Embedded testing - Assignments and quizzes will be given to all students in the core courses in the Air Transportation major (e.g., GEOG 3300, GEOG 5300).

Indirect – Survey (Student) - Graduate Senior Survey

Criteria: We expect that 80% of students feel their preparation from Transportation security and Transportation Geography as adequate for success in the major.

***Use of Data*** (how the program uses or will use the evaluation data to make evidence-based improvements to the program periodically)

- Analyze and discuss trends with the unit's faculty
- Analyze and report to college
- Make improvements in curricular requirements (e.g. add, subtract courses)

- Make improvements in course content
- Make improvements in course delivery and learning activities within courses
- Periodically confirm that current curriculum and courses are facilitating student attainment of program goals

## **VII. Courses in the Air Transportation major in Geography**

### ***New Course Proposals*** – None

### ***Changes to Existing Courses***

Darla Munroe and members of Geography's Undergraduate Studies Committee met with CAS staff and advisors to discuss the interests of Air Transportation majors in Geography. As a result, we moved two GIS courses from the required/core category to the Social Science Elective category. The remaining required/core courses are ones that Air Transportation students have reported to be useful and interesting.

The content of one course, Geog 5300 (Geography of Transportation) has changed to focus more on applications than methods, as elaborated below.

### ***Course Descriptions***

#### REQUIRED COURSES

##### GEOG 5300, Geography of Transportation

This course previously served both Air Transportation majors and Geography graduate students focused on advanced methods in transportation geography such as spatial interaction, network analysis, allocation, and demand modeling. Based on a discussion with CAS on the broader context of Air Transportation training, professional development, and the need for certain skills and knowledges, we updated GEOG 5300 to better serve the Air Transportation majors. The course now focuses on transportation applications rather than methods, and covers multimodal transportation systems, including air, land, freight, and passenger transportation. Students learn the theories, applications, and real-world issues related to transportation in connection to social, environmental, and economic systems. The course lays the foundation for a broad perspective in transportation and complements aviation courses in the Air Transportation curriculum.

#### ELECTIVE COURSES

##### Geog 2200.01, Mapping Our World

This course is an introduction to the power of maps, covering spatial representation, visual literacy, and geographic information technology in a global society. For students who desire basic spatial analysis and mapping skills, this course builds geographic literacy (this course is a more basic version of the content of 5200 and 5210, listed below).

##### GEOG 3750, Geography of North America

This course focuses on geographical analysis of North America; spatial patterns and processes associated with culture, politics, economy, and social difference at international, national, regional and urban scales. Similarly, this course builds experience analyzing current trends in North America and should be broadly useful to industry professionals.



Geog 3900, Global Climate Change: Causes & Consequences

This course examines the natural and human factors that force changes in our climate and environment and explores strategies for a sustainable environment in the future. CAS staff and advisors indicated that CAS staff and advisors indicated that adding an additional elective for further knowledge on climate change and sustainability strategies is desired by Air Transportation students.

Geog 5200, Cartography & Map Design

A study of the cartographic techniques of map compilation and design including generalization, symbolization, reproduction, and GIS-based mapping with an emphasis on thematic mapping. This course formerly was required; we are moving it to the elective list for those students who wish to build skills in digital mapping.

Geog 5210, Fundamentals of GIS

Basic principles of geographic and land information systems and their use in spatial analysis and information management. This course formerly was required; we are moving it to the elective list for those students who wish to build skills in geographic databases.

GEOG 5301, Sustainable Transportation

A module was added to this course on aviation, specifically sustainability aspects of aviation in intercity transportation.

**VIII. Implementation Plan for Changes**

***Reallocation of Credit Hours from Old to New Advising Sheets***

GEOG 5200 and 5210 have been removed from the Core/Required section of the old advising sheet, and have been added to the Social Science Elective part of the major along with other geography courses. Air Transportation majors enroll in 4 Social Science Electives courses, two of which must now be from Geography; the remaining 2 are from two of the other 3 categories.

Aviation electives are increased from 9 to 12 specifically for students *not* pursuing Professional Pilot Certification. Increasing the electives from 9 to 12 is a means to provide more opportunity for students to develop appropriate knowledges and experience. As part of accreditation through the Aviation Accreditation Board International, CAS has been collecting data and feedback from aviation students for a number of years. Students commonly have suggested increasing the number of required aviation courses for the degree to enable expanding their knowledge of the rapidly changing air transportation industry as well as to increase their marketability for careers. In the last 5 years CAS created 7 new options for students. One example is the Dispatch course sequence, which leads directly to a student being able to sit for their exam with the FAA and potentially receive their Dispatch certificate.

See **SEPARATE ATTACHMENTS** for the new and old advising sheets

***Implementation Plan for Existing Students***

Only new Air Transportation students (incoming freshmen, transfer, or major changers) will be allowed to follow the updated curriculum beginning the semester of implementation. All current Air Transportation students will continue to follow the old curriculum.

**Sample 4-Year Timeline for Bachelor of Arts Degree in Social Sciences Air Transportation  
(for students *not* pursuing the pilot certification option)**

<b>First Year</b>	<b>Autumn</b>		<b>Spring</b>	
	Aviation 2000	3	Aviation 2200	3
	Aviation 2100	5	Geography 3300*	3
	Geography 2400	3	Foreign Language GE	4
	English 1110	3	Math GE	3
	ARTSSCI 1100.14	1		
	<b>Total Credit Hours</b>	<b>15</b>	<b>Total Credit Hours</b>	<b>13</b>
<b>Second Year</b>	<b>Autumn</b>		<b>Spring</b>	
	Aviation 2300	3	Aviation 3000	3
	Foreign Language GE	4	Foreign Language GE	4
	2 <sup>nd</sup> Writing GE	3	Social Science Elective	3
	Data Analysis GE	3	History GE/Global Studies GE	3
	Aviation Elective	3	Aviation Elective	3
	<b>Total Credit Hours</b>	<b>16</b>	<b>Total Credit Hours</b>	<b>16</b>
<b>Third Year</b>	<b>Autumn</b>		<b>Spring</b>	
	Aviation 3200	3	Aviation 3300	3
	Geography 5300*	3	Visual & Performing Arts GE	3
	Natural Science GE w/Lab	4	Social Science Elective	3
	Social Science Elective	3	Open Options GE	3
	Aviation Elective	3	Natural Science (no lab)	3
	<b>Total Credit Hours</b>	<b>16</b>	<b>Total Credit Hours</b>	<b>15</b>
<b>Fourth Year</b>	<b>Autumn</b>		<b>Spring</b>	
	Geography 5900*	3	Aviation 4500	3
	Social Science Elective	3	Cultures & Ideas/Global Studies GE	3
	Natural Science (no lab)	3	Open Options GE	3
	Social Science GE	3	Aviation Elective	3

Literature/US Diversity GE	3	Social Science GE	3
<b>Total Credit Hours</b>	<b>15</b>	<b>Total Credit Hours</b>	<b>15</b>

*Note: Students should plan carefully to overlap Social Diversity GE and Global Studies GE with other GE categories to allow more flexibility if pursuing a minor.*

***Impacts on other courses***

In consultation with CAS staff and advisors, we deleted several courses from the list of electives from other ASC departments (outside Geography) because Air Transportation infrequently enroll in these courses; accordingly, we anticipate no impact. The deleted courses include PSYCH 4309 and 4508; SOC 3302, 2370, 3315; and ECON 3048, 4600, 4700, 5850. We have a refocused (smaller) set of ASC GE electives that reflect courses that Air Transportation students have found most useful per our discussions with CAS staff and advisors.