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To: Randy Smith
Vice Provost, Office of Academic Affairs

From: Ed McCaul
Secretary College of Engineering Committee on Academy Affairs

Subject: New Undergraduate Track in Aviation

Attached is a copy of the Department of Aviation's proposed new Undergraduate Track in Aviation. After a review and discussion the College's Committee on Academic Affairs (CCAA) unanimously approved this proposal on the 8th of March 2007. If you have any questions concerning this proposal please let me know.

Proposed NEW Undergraduate Track in Aviation

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Proposed NEW Undergraduate Track in Aviation

The following major paragraphs and subdivisions are in accordance with Suggested Guidelines for the University Council on Academic Affairs (CAA)'s Proposal Creation and Submissions, as downloaded on 22 Sep 2006.

Executive Summary

The Department of Aviation in the College of Engineering wants to secure CAA approval to offer a new track for the Bachelor of Science in Aviation. This proposal has been prepared in response to the reorganization of Aviation curricula following the re-formation of the Department of Aviation with the separation of the Aviation Program from the combined Aerospace Engineering and Aviation Department in January 2005. Earlier, a Task Force on Aviation appointed by the Dean then, James Williams, strongly recommended an autonomous Department of Aviation and the establishment of both undergraduate and graduate programs in Air Transportation Systems (ATS). That study noted a national and international need for qualified professionals to work in the air transportation system. ATS graduates would fill a critical need for people who know how to appropriately design the organization, do the systems engineering, perform operations management, and implement the technological innovations required to meet current and future demands. This need is distinctly different from the design of new aircraft and the training of pilots; this unmet need to provide ATS specialists is believed to be a principal cause of the troubled operation of current air transportation systems.

Further, this proposal is in support of the current Dean's direction (Dr. Baeslack) to better align the Aviation academic program with the College's mission, by providing instruction more compatible with undergraduate engineering students. This program would have strong emphasis on analysis, design, and engineering as it relates to Aviation. This new program will focus on overall systems and operations engineering rather than the design of component products or processes. Industrial and systems engineering serves as a core disciplinary model for this program; that relationship is not unlike the one between mechanical and aerospace engineering. However, aviation is the most heavily regulated industry in the world. Our students also need to be grounded in the federal regulatory process that affects design, manufacturing, repair, and personnel certification as well as the economic and policy issues that strongly influence Aviation. Finally, the ATS track being proposed here is being developed to meet the requirements for possible ABET (Accrediting Board of Engineering and Technology) accrediting in Systems Engineering.

The proposed curriculum also provides the analysis and design foundation for our complementary proposal to establish a graduate program of study for the M.S. in Air Transportation Systems. A separate and related Graduate Program proposal has been prepared and is being submitted in parallel to this undergraduate proposal. Courses in the undergraduate program may eventually become prerequisites for graduate courses, and some of the proposed upper-level undergraduate courses may be used as technical electives in graduate programs in this or other departments.

An important link between the undergraduate and graduate programs will be the faculty. All present tenured / tenure track faculty (and all future tenure track faculty will) have engineering degrees. The current faculty in the Aviation Department consists of 6 full time faculty (incl. 2 Lecturers). The department has already been awarded one additional faculty position by the College to support the staffing of our proposed M.S. program (being separately submitted) and a new track in the undergraduate level (this proposal). This undergraduate track will be in Air Transportation Systems. Accordingly, new faculty additions will be hired into areas that will contribute to both the BS and MS programs. The recruiting for the one approved new faculty member has already begun. With the total number of anticipated faculty available being 7, if initially (on an interim basis) each taught 2-3 graduate courses per year, the basic curriculum needs would be met. As the program attracts students and funded research support, faculty loads will be adjusted accordingly. Normal faculty assignments in undergraduate course teaching and research are compatible with the faculty that have been planned for and budgeted.

Corollary Issues with Implementation

The rationale for this proposal, along with discussion of collegiate aviation programs at other institutions is presented in the body of our proposal and is not repeated here.

- Effect on Constituencies

A track in ATS fills a need not found elsewhere, either in collegiate aviation programs or in engineering curricula. It should therefore enhance the reputation of OSU's Aviation program as providing national leadership in this academic area. Collegiate aviation programs are not presently part of the ABET structure. So, our existing tracks for pilots and managers do not presently impact, positively or negatively, the College's accreditation process. The Department plan and the preliminary evaluation of CCAA are consistent in planning for ABET accreditation of the ATS track as an engineering curriculum from the very outset. We have endeavored to do that in the materials presented.

Historically, ABET accrediting was not appropriate for aviation programs. The principal concern ABET had was who could serve as the national authority on the engineering content of this field. Then as today, non-engineering collegiate aviation programs were being accredited by the Council on Aviation Accreditation (recently renamed the Aviation Accreditation Board International (AABI)) and there was no single engineering-based authority. However, since that time several new initiatives related to air transportation systems engineering have emerged in professional societies. In particular, some from within the American Institute of Aeronautics and Astronautics (AIAA) align extremely well with our current proposal (as further explained below).

In the preparation of the current proposal, the faculty anticipated eventual ABET accreditation. We recognized the functional similarity between the curriculum that we are proposing and the current Industrial and Systems Engineering curriculum, which is accredited, and built our curriculum along the lines of the existing ISE bingo sheet for

Industrial and Systems Engineering undergraduates. Course topics for the air transportation systems track, however, are specific to aviation.

Faculty input was organized through the formation of an Undergraduate Studies Committee, which functioned over the last year and a half for the purpose of reviewing national trends and problem areas and defining critical areas of faculty expertise. Potential new courses that could be offered by existing faculty that would support the new track in ATS were identified, as well as new courses which would require original development. One example of this is an engineering content course in Aircraft Manufacturing, which is not offered in any US university. There was unanimous agreement of the full faculty to reorganize our College of Engineering tracks. The Human Factors track was eliminated because of a long-term lack of student enrollment.

We also recognized that much of component engineering assumes design in compliance with a given technical specification. Our design emphasis is on a larger issue: how to translate primitive customer needs into the appropriate technical design specifications that component designers expect to begin their work. Aviation is not only heavily regulated, it requires enormous capital outlays and substantial risks for investors. For example, *The Economist* (13 Jan 2007) in reviewing John Newhouse's text (published by Knopf) on *Boeing versus Airbus: The Inside Story of the Greatest International Competition in Business*, states that "The struggle over the world market ... makes for epic narrative ... there is nothing quite like it in global business ... Only big oil comes close. ... In the civil aircraft business ... make one bad bet, or suffer a single flop, and you have to live with the consequences for years." Further, Newhouse (2007) states "Nor is it lost on various government agencies that the aircraft industry operates at the cutting edge of more high technologies than any other and its product historically earns more foreign exchange than any other single U. S. export." (p. 214)

Specific Course Structure Related to ABET Accreditation

A 'bingo' sheet was prepared which reflected the 8 new recommended courses in the ATS track. Courses were also added in MSE and Statistics to strengthen the basic engineering and science cores. Also, because of the difference in curricular needs of management and professional pilot tracks, a new version of AVN 310 will now also be offered (Designation will be 310.02 – for Aviation Management majors). This will be more suitable to students who have no intention of learning to fly but need the topical content of AV 310.01 for pilots. Students taking the ATS track may take either version.

As the question of content as it relates to eventual ABET accreditation is critical, Table 1 is an aid to understanding the relative organization of the propose ATS curriculum and that for ISE.

- The first year course experience is the same for all students in the College, including those now enrolled in the two existing Aviation tracks, so those courses are not shown in the table.

- The second year curriculum is very similar with a few exceptions. We propose CSE 230 instead of ME 420 because air transportation systems involves software intensive systems (like avionics) and our students have less need for the content of ME 420. Also, while ISE students take ISE 311 Manufacturing Engineering in their second year, we would prefer to offer a new course, AVN 570 Influences on Aircraft Production . Our emphasis is on WHY aircraft get designed the way they do (rather than how that is done). Much of component engineering assumes design in compliance with a given technical specification. Our emphasis is on how to translate primitive customer needs into the technical design specifications component designers expect to begin their work (see Norris, Thomas, Wagner, and Forbes (2005), *Boeing 787 Dreamliner – Flying Redefined*, Aerospace Technical Publications International, Perth, Australia).
- The third and fourth years are the upper level, analysis and design courses that typify the engineering content of a specialty area within engineering. Table 1 shows how we have drawn upon and paralleled the industrial engineering curriculum. Both programs have an introductory level course for all their majors, although Aviation offers AVN 300 to the University community at large, meeting a need for basic information on aircraft and flight. As with other curricula, many students do not know the content and career potential of Aviation and Air Transportation until after they arrive at OSU.

Following is some specific discussion of the content of courses in Table 1. While ISE's take Accounting 501 as a fundamental underpinning to later coursework (e.g. engineering economics: assessment of capital outlays, etc.), AVN 550 introduces all aviation majors to business concepts as they occur in aviation (e.g., RASM/CASM – revenue / cost per aviation seat mile). ISE Operations Research is a three quarter sequence in history, methods, and field application. AAE 200 and 201 are the first two courses in the Aeronautical Engineering sequence, and ALL engineering students in Aviation take these courses now: they are required of engineering students whether they are in the aircraft systems track (professional pilots) or the management track (airline / airport). The ATS track will simply impose that same requirement on engineering students.

Similarly, all aviation students take AVN 310 since it covers the fundamentals of flight operations in the National Airspace System (NAS). While ISE emphasizes work physiology and biomechanics in ISE 503, AVN 540 gives little attention to that topic while more broadly covering human factors issues in aviation as a whole (in the context of operations, maintenance, and management). ISE 573 covers Cognitive Engineering, deepening substantially what is covered briefly in AVN 540, Aviation finds it necessary to include a fundamental course on Aviation Safety (AVN 560) instead. So AVN 540 and 560 are Aviation's parallels to ISE 503 & 573, albeit quite different in content. While ISE allows a technical elective, Aviation requires Physics 133, since weather phenomena are largely the result of thermal dynamics, and wave theory applies in several contexts.

Production System Design is another 3 course sequence in ISE. While the sequence may not be apparent from the titles, the Aviation equivalent is: AVN 520, AVN 674, and AVN 590. AVN 520 covers the communications, navigation, and surveillance techniques

that provide the infrastructure for operations in the NAS. AVN 674 addresses one of the major system constraints on throughput and capacity: airport design and operation. AVN 590 and 591 then address the practices and options air carriers have to optimize operations, this includes not simply current constrained optimization, but the evaluation of propose alternatives such as ‘Free Flight’ as a means to fly direct rather than on the conventional airways.

While there is no direct equivalent to ISE 517 Materials Handling, AVN 591 draws on similar analytic techniques, but applies them in a very different context, with different parameters and constraints. CE 570 is meant to equip ATS students with an appreciation for multi-modal transportation system issues and analysis techniques adopted in these other applications contexts with which aviation interfaces. Again, we do not offer an equivalent to ISE Project Management. However, we would encourage students to consider that course as a recommended technical elective, since it complements what we offer and adds to that we want our students to know.

ISE 608.01 and .02 is another two quarter sequence that is roughly equivalent to what we hope to achieve with AVN 570 and AVN 575. AVN 575 is more focused on what must be done to capture and translate primitive industry ‘needs statements’ into specific technical design specifications (what component engineers could then use to design airplanes or their component parts). AVN 570 then treats the additional economic, regulatory, and policy issues that influence “why” airplanes get designed, assembled, and supported (by manufacturers) the way they do.

Since no equivalent to ISE 610 is offered, it is recommended as another technical elective, particularly for anyone expecting to do empirical studies of proposed operational changes. AVN 597 is required of ATS students to bring together all of the preceding coursework into a capstone design project that focuses on the integration and interaction among aviation system components. Hopefully, this shows the focus and forward looking orientation of what we have proposed, as reflected in more detail in the course syllabi. Given that this is a dynamic area of study, we expect faculty to supplement existing texts with other materials reflecting their professional and technical experience, all of whom do have experience in the aviation industry as well as having appropriate academic credentials.

General Curriculum Organization Related to ABET Accreditation

Three of our four tenured faculty have served as Dept. Chairs during ABET accreditation of the Aeronautical and Astronautical Engineering program. They had a major role in contributing to the design and refinement of this proposal. We have studied the ABET Policies and Procedures Manual as well as the Criteria for Accrediting Engineering Programs.

It will simply be noted here that all programs in (non-engineering) aviation curricula are evaluated by the Aviation Accreditation Board International (AABI). In general, ABET’s

procedures appear similar in nature. Both organizations are members of the Council on Higher Education Accreditation (CHEA). However, the ABET standards for science, analysis, and design courses differ, since AABI is for non-engineering aviation programs.

The presently proposed curriculum is designed to largely satisfy the requirements for analysis and design courses (as well as general education requirements). However, further refinements in specific course syllabi may be required as our self-study for ABET accreditation matures. There is a point to be made about the emergence of Air Transportation Systems as a specific discipline in aerospace industrial and professional activity. In recent years, there has been the addition of 13 technical committees to the approximately 60 technical committees in the American Institute of Aeronautics and Astronautics (AIAA). Faculty members have been actively engaged in one of these, the Aviation Operations Technical Committee (AOTC) which interacts strongly and consistently with the Air Transportation TC. Dr. Chubb serves as a reviewer for and the AOTC representative to the *AIAA Journal of Aircraft*.

This initiative to establish an Air Transportation Systems program should have no major impact on staff, other than the student advisor, who would be able to offer engineering students a new option better aligned with their career interests.

Table 2 shows the present allocation of courses to faculty and staff, the bottom portion indicating which specific faculty will be assigned additional teaching duties for the proposed curriculum. The graduate program will require some further adjustments in loading but those assignments are separately addressed in that proposal, which is being submitted independent of this one. However, faculty loading across both programs has been, is, and will continue to be considered as we move forward. For example, while it was necessary to offer AVN 540 twice per year when our enrollment peaked at 520 students, it appears that one offering would be sufficient for our current and near term anticipated enrollment. (Note that in Table 1 AVN 694 A is Air Transportation Systems - Demand & Supply Analysis and AVN 694B is Research and Analysis Methods in Air Transportation Systems. Both are offered now as technical electives in anticipation of the new curriculum and graduate program.)

- Internal Programmatic Changes

No changes are envisioned, apart from hiring faculty on existing allocated budget authorizations, and even then no new faculty are required to start offering the undergraduate courses proposed here. Realignment of present faculty loads will accommodate all proposed courses. We are presently seeking to fill a position previously vacated and have college approval to fill another position if a suitable candidate is found. Six of the 8 proposed courses can be accommodated within the workload constraints existing faculty commitments. Three courses (AVN 590, AVN 591, and AVN 610) are being accepted by the assigned faculty (Taneja and Lee) as an additional teaching load. Should new faculty not be found in a timely fashion, additional adjustments in load could be made to accommodate these two courses and reduce this temporary extra load. All the

Table 1. Comparison of 3rd & 4th Years of ISE and ATS Curricula.

Third Year Coursework

ISE Curriculum

ISE 500 Introduction to Industrial Engineering (3)
 Accounting 501 (3)
 ISE 521 Operations Research I (5)
 ISE 522 Operations Research II (3)
 ISE 503 Phys. Of Biomech. Work (3)
 ISE: an additional science elective (4)
 ISE 523 Operations Research III (3)
 ISE 531 Production Sys I (3)
 ISE 517 Applied Matls Handling (3)
 ISE 573 Cognitive Engineering (3)
 Technical Elective (3)

Aviation Curriculum

AVN 300 Introduction to Aviation (3)
 AVN 550 Aviation Management (3)
 AAE 200 Aircraft Performance (3/5) *
 AAE 201 Acft. Stab. & Cntrl. (3/5) *
 AVN 540 Aviation Human Factors (3)
 Physics 133 Thermal, Waves, ... (5)
 AVN 310 Fundamentals of A/C Sys. (5)
 AVN 520 Intro to Avionics (CNS) (3)
 CE 570 Transp. Sys. Anal. (4)
 AVN 560 Aviation Safety (3)
 Technical Elective (3)

Fourth Year Coursework

ISE Curriculum

ISE 509 Statistical Process Control (3)
 ISE 532 Production Systems II (4)
 ISE 533 Production Systems III (4)
 ISE 640 Project Management (3)
 ISE 608.01 Ind. Prac. Sys. Design (4)
 ISE 608.02 Ind. Prac. Sys. Design (4)
 ISE 610 Plng. Engr. Experiments (3)
 ISE 614 Lab (2) & 615 Lab (2)

Aviation Curriculum

AVN 610 Simulation of Air Transp Sys. (3)
 AVN 674 Airport Sys. & Operations (3)
 AVN 590 Airline Practices & Design (5)
 AVN 591 Flt. Network Opt. & Anal. (3)
 AVN 570 Influences on Acft Production (3)
 AVN 575 Dev. & Dsgn. Of Acft Sys. (5)
 AVN 597 ATS Design (5)
 AAE 200 Lab (2) & AAE 201 Lab (2) *

* Note: in ISE the Labs are independent courses whereas in AAE the labs are integral to the course; AAE 200 & 201 consist of 3 hours of lecture and 2 hours of lab, for 5 hours for the total course.

Comment: The arrangement of courses for aviation does not match the bingo sheet shown later for 3rd & 4th year studies, nor do we imply there is an exact match between the kinds of courses in ISE versus aviation; the parallels are explained better in the accompanying text

Table 2: Faculty Course Loading

<u>Current Loading:</u>	<u>Autumn</u>	<u>Winter</u>	<u>Spring</u>
G. P. Chubb	AVN 540	AVN 560	AVN 540
G. Doernhoefer			AVN 530
G. Gregorek	none	none	none
D. Hammon	AVN 552		AVN 552
E. Hardick	AVN 415	AVN 410	none
C. Lee	AVN 694A		AVN 694B
R. Litvay	AVN 300	AVN 300	AVN 300
	AVN 410	AVN 310	AVN 310
J. Oppermann	AVN 550	AVN 652	AVN 550
	AVN 650	AVN 654	AVN 650
C. Roby	AVN 413		
	AVN 421		
AND AS REQUIRED:	AVN 461	AVN 461	AVN 461
	AVN 462	AVN 462	AVN 462
	AVN 463	AVN 463	AVN 463
Flt. Ed. Staff	AVN 341	AVN 341	AVN 341
(All Av. Flt. Labs.)	AVN 342	AVN 342	AVN 342
	AVN 441	AVN 441	
	AVN 442	AVN 442	
	AVN 443	AVN 443	AVN 443
	AVN 444	AVN 444	AVN 444
	AVN 445	AVN 445	AVN 445
	AVN 446	AVN 446	AVN 446
	AVN 447	AVN 447	
N. K Taneja	none	AVN 750	none
T. York	AVN 593	AVN 322	AVN 593
<u>Proposed Load(s):</u>	<u>Autumn</u>	<u>Winter</u>	<u>Spring</u>
G. Chubb	as above	as above	as above
G. Doernhoefer	as above	as above	as above
G. Gregorek	none	none	<u>AVN 597</u>
D. Hammon	AVN 552	<u>AVN 674</u>	as above
E. Hardick	as above	as above	as above
C. Lee	AVN 694A	<u>AVN 610</u>	AVN 694B
R. Litvay	as above	as above	as above
J. Oppermann	as above	as above	as above
C. Roby	as above	as above	as above
Flt. Ed. Staff	as above	as above	as above
N. K Taneja	<u>AVN 590</u>	AVN 750	
		<u>AVN 591</u>	
T. York	<u>AVN 570</u>	AVN 322	<u>AVN 520</u>
		<u>AVN 575</u>	

New assignments / additional courses are Underlined; (AVN 493, AVN 489 (Professional Practices in Industry), and AVN 693H (Avn. Honors) not shown: assigned as required)

proposed courses are within the academic capabilities of current faculty, who individually prepared the course syllabi.

- Affect on Those Outside the Dept.

We see no negative impact on programs outside the department. While Civil Engineering 570, Transportation Systems Analysis which will be a required part of the proposed new track / concentration, this track may in fact attract freshman engineering students into this program that might have otherwise chosen some other major within the college. We hope to recruit students with an interest in Aviation who would not normally consider a traditional engineering degree, students attracted to a new and different technical with greater emphasis on a mix of technical, operationally oriented content. Clearly, Aviation's willingness to teach AVN / CE 674 as a jointly listed course does offer students in Civil Engineering an elective option that has not been available for a number of years but may still be of interest if offered again.

- Overlap with Other Units

As just mentioned, one of the proposed courses (AVN 674) is to be joint listed with civil engineering – the course on Airport Planning, Design, and Development. While a course on simulation is also proposed, its emphasis is on aviation applications, not simulation in general – the emphasis is on analysis of aviation operations and maintenance activities.

Since our original proposal submission, Industrial, Welding, and Systems Engineering (IWSE) has expressed interest in working with us in the development of the new, proposed course on aircraft manufacturing (AVN 570). They may also have interest in other possible joint ventures, such as future technical electives on Aviation Quality Control and Assurance, Project Planning and Management, and other courses of mutual interest.

- Concurrence of Other Units

Faculty in civil engineering have already supported the teaching of the Airport Planning course if offered as AV 694 this coming Winter Quarter. The Chair of IWSE proposed giving us assistance with developing AVN 570 and proposed the title we have now assigned, until a revised syllabus is prepared as we develop this course further.

- Process Prior to Submission to CAA

This proposal was reviewed and approved by the faculty of the department, and has been shown to student groups (AHP and Flight Team members) and representative alumni (professional pilots, airport managers, etc.), all of whom have reacted favorably since the Aviation Task Force's initial recommendations were shared with these same groups.

A. Title of Major: Aviation

B. Title of Proposed NEW Track: Air Transportation Systems

C. Rationale for Proposal Initiation

Aviation eliminated the Human Factors track / area of concentration due to low enrollment and the need for graduate education in this specialty area, when Aviation at present has no graduate program and Industrial, Welding, and Systems Engineering already has a Human Factors program certified by the Ergonomics and Human Factors Society.

The Aviation Task Force established by Dean Williams not only recommended Aviation again be made a separate and independent program, but that same Task Force recommended the establishment of this proposed new track / concentration in Air Transportation Systems. This was predicated on NASA Langley's having looked for such a program and not finding one anywhere in the United States. Dr. Holmes concept of this kind of program was presented in a previous edition of the University Aviation Association's (UAA) Newsletter (Vol. 30, No. 2 – Spring 2006) and is included as Attachment 5.

Also, Dean Baeslack asked that the department take steps to attract more engineering students into the Aviation program and better align the curriculum to the vision and mission of the college. This proposal is the first step in that process.

D. Relation to Mission of the Department and College

College Mission: To educate professionals in engineering and architecture, and to create and disseminate knowledge and technology, and to provide innovative solutions to societal problems.

Air Transportation Systems provides a vital service to the global economy, a major national resource affecting balance of trade, and a major employment opportunity in both the state and the nation. While many engineering disciplines contribute to design of component subsystems (aircraft, engines, airport facilities, etc.), the emphasis in this track will be on the efficiency and effectiveness of the overall system as a whole, to include its interface to other parts of the intermodal transportation network.

Department's Mission:

The mission of The Ohio State University Department of Aviation is to serve the University's teaching, research and public service missions as

a nationally and internationally recognized interdisciplinary university aviation program.

1. We will provide a progressive learning experience for students of diverse backgrounds to lead, develop, and operate tomorrow's global aviation system with baccalaureate and graduate degree programs.
2. We will assist practicing professionals to improve their effectiveness in a dynamic aviation industry.
3. We will conduct research leading to progressive concepts for expanding aviation applications, eliminating barriers to the growth of aviation, and advancing aviation safety and efficiency.
4. We will operate superior facilities and associated services to fulfill and enhance all three aspects of the Department's mission (teaching, research, and public service).

E. Proposed Implementation Date: Autumn 2007, with selected courses being introduced as early as WI 07.

F. Responsible and Supportive Departments: Aviation will be responsible for this track, and while students may take related electives, support is not requested from other departments or programs

G. Description of the Aviation Program and the ATS Concentration

See attached materials:

Attachment 1: Overall Aviation Program Description and Specifics on the Proposed Air Transportation System (ATS) Engineering track

Attachment 2: DRAFT Bingo Sheet for ATS Option

Attachment 3: New Course Proposal Forms (catalog information)

Attachment 4: Syllabi for New Courses

Attachment 5: Air Transportation Systems Innovation Concept Paper

H. Details Regarding Source of Students and Estimated Numbers (FTE) for the Next Four Years

While Aviation at Ohio State has attracted students from literally across the world, the major percentage of our students come from Central Ohio, Western New York and Pennsylvania, and Eastern Indiana. Students North of us tend to go to Kent State or Bowling Green, and those South of us tend to go to Ohio University or the University of Cincinnati. Those further West of us tend to go to Purdue, U of IL, or SUIC.

Prior surveys of our students indicated that many did not hear about OSU’s Aviation program until after they arrived on campus. Alpha Eta Rho and the OSU Flight Team have both been encouraged to increase their efforts during Welcome Week to attract new first quarter freshman into the Aviation program, and both have done so.

The Dean has asked that increasing attention be given to attracting more engineering students into the Aviation program. Promotional brochures have been revised and recruiting efforts are being changed to address that issue. We believe this proposed concentration will help achieve the objective of attracting more engineering students.

However, internal to the program, nearly half of all entering students think they want to be professional pilots. Once they learn the cost and discipline required to complete the series of required Aviation Flight Laboratories, half of those students migrate into another area of concentration. Right now, the only option is Aviation Management. The proposed new track would provide yet another option.

FTE Historical Numbers of Students

Years:	02-03	03-04	04-05	05-06
ENG	39	46	32	32
ASC	200	177	163	140
BUS	4	4	7	6
Subtotals:	243	227	192	178

These data reflect the 15th day enrollment statistics. Data by program track are not available. However, for future enrollment, we show the data by track, not college.

* Separately, we are proposing to change the name of “Aircraft Systems” (Acft. Sys. -- AVS) concentration to “Aircraft Operations” – the name used for an associated American Institute of Aeronautics and Astronautics (AIAA) Technical Committee (TC), and the name most frequently used by airlines to identify flight operations and associated flight crews. The following table therefore uses this new designation in future projections.

Future FTE Estimates

Years:	07-08	08-09	09-10	10-11
AvOps.*	140	142	148	152
AvMgt.	5	6	7	8
ATS	35	42	45	50
Subtotals:	180	190	200	210

The current downturn reflected in these numbers is affected by a: 1) general decline in OSU enrollment, and 2) depressed aviation industry. The aviation industry has begun to expand, although further airline consolidation / mergers are anticipated. The Air Transport Association has already expressed its concern over the potential for seeing a large increase in Very Light Jets (VLJs), with a subsequent impact on the Air Traffic Management system. The introduction of VLJs later this year will fuel at least two new air taxi startups, and it is estimated that 1,000 aircraft are needed by each to reach an economic 'break even' point. Therefore, demands for professional pilots and many other kinds of aviation professionals to support that surge, are anticipated. Additionally, the introduction of Uninhabited Aerial Systems (UAS) into the National Airspace System (NAS) as Air Force Guard Units, the Department of Homeland Security (DHS), and various police agencies are attracted to using this new class of aviation vehicle.

I. Availability of the Aviation Major at Other Universities

The University Aviation Association (UAA) represents 115 collegiate aviation programs, in this country, in Canada, and in other parts of the world. Aviation programs exist at two other Big Ten institutions: Purdue University and the University of Illinois. Purdue's program is offered in the School of Technology which has strong ties to the College of Engineering in various research efforts. At the University of Illinois, the program is operated in a separate Aviation Institute, the equivalent of a college, offers a Masters degree in Human Factors, is world renowned for its research in Aviation Psychology and Human Factors Engineering, and has ties with both the Industrial Engineering and Mechanical Engineering Departments as well as Psychology. The largest collegiate aviation programs are at Embry Riddle Aeronautical University (ERAU – which has Daytona Beach, FL and Prescott, AZ campuses, as well as a world-wide Extension Program), the College of Aviation at the University of North Dakota, and the College of Aviation at Western Michigan University. Dr. Holbrook served on the Board of Trustees for ERAU.

No one has the kind of ATS program proposed here. Its closest parallels are at MIT in the US and Cranfield in the UK. The need for the program proposed here was identified and suggested by Dr. Bruce J. Holmes of NASA Langley Research Center while serving on Dean Williams' Aviation Task Force. His definition of Air Transportation Systems appeared in a recent issue of UAA's *Collegiate Aviation News* (Spring 2006) and is attached (Attachment 5). Dr. Holmes' organization has previously sponsored a number of NASA funded research efforts completed by both the Aeronautical and Astronautical Engineering and the Aviation Departments. OSU's offering an ATS track would therefore represent a leadership position in the community Collegiate Aviation educators, a role we have played many times in the past.

J. Impact on Facilities, Faculty, and Support Services

a. Facilities Impact:

Aviation currently uses Room 201 in the Aviation Building for most of its classes; when time / scheduling conflicts occur, Room 200 is also used. Both rooms are open

(i.e. unused) during portions of the day, as are adjacent classrooms. It is anticipated that these classrooms will suffice, and at most, one additional classroom may be needed (beyond 200 & 201) for some new classes if they are to be scheduled concurrent with existing classes.

While OSU’s Department of Aviation also operates the OSU Airport under Part 139 of the Federal Aviation Regulations, no changes to the airport are required to support this proposed area of concentration. However, the airport will serve as a suitable ‘laboratory’ for related studies, analyses, and research.

b. Faculty Impact:

Existing faculty can handle this load. With the addition of only one new faculty member (already authorized by the Dean), even the minor proposed overload of 3 courses disappears. When Aerospace Engineering became a separate department, one of their faculty requested transfer to Aviation (Dr. York) and has been teaching a variety of optional, elective courses. In this proposal, he will instead teach three of the courses in the new proposed track. We have recently hired one new faculty member (Dr. Lee, hired on a retiring faculty member’s position—Dr. Jensen). However, with the Dean’s permission, we are already in the process of hiring not one, but two new faculty members, not only to support this new area of concentration but a graduate program we plan to propose as well, but which will be proposed separately. Other faculty members will be sought as current faculty retire (e.g., Drs. Chubb, Gregorek, and York, who are eligible and may retire in the next few years).

c. Support Services Impact:

There is no envisioned need for special or additional support services.

K. Estimated Total Costs Above Current Level of Operation for Next Four Years

Although the courses will be allocated to a number of existing as well as new faculty members, it is estimated that the incremental load is the equivalent of one assistant professor.

	06-07	07-08	08-09	09-10	Total
Salary*	\$70,000	\$72,800	\$75,712	\$78,740 =	\$297,252
Overhead	<u>\$21,000</u>	<u>\$21,840</u>	<u>\$22,714</u>	<u>\$23,622 =</u>	<u>\$89,176</u>
Subtotals	\$91,000	\$94,640	\$98,426	\$102,362 =	\$386,428
One-time start-up package: \$63,572					<u>\$63,572</u>
				Overall Total:	\$450,000

*Salary for this new position has been provided by the College of Engineering and is included in our Permanent Budget Allocation (PBA).

Over head was estimated at 30% and annual wage adjustments at 2.5%

L. Faculty Participation and Area of Specialization Relative to Proposed Track

Faculty support for this area of concentration is presented in Attachment 1 and duplicated here.

Anticipated Teaching Loads for ATS Courses

Faculty:	Taneja(1/2), Chubb, York, Lee, Gregorek (1/3)	4
	Oppermann, Litvay	2
	+ 2 new faculty @ 1 U (& 1 G) course/quarter/faculty	2

So, <u>Supply</u>	New Undergrad. Teaching	8 courses/yr
And, <u>Demand</u> :	New ATS Curric. - 8 courses/yr	
	(Approx. 3 courses/quarter)	

Projected Faculty Needs for MS (& ATS) Programs

ATS Concentration:

1.	Communications/ATC Information Technology (IT)	New Areas, New Fac. (1)
2.	Human Factors Security Issues Operations	Existing Areas, Replace Fac (1)
3.	Aircraft Systems ATSystems Anal & Synthesis	Existing Areas, Replace Fac.(1.5)
4.	Aviation Policy and Fed Regs. FAA , NTSB, & Airport Policies Aviation Regulatory Issues	New Areas, New Fac. (1)

NOTE: The proposed assignment of the 2 New Faculty needed (for a separately proposed MS in Aviation and Proposed New Undergraduate Major in Air Transportation Systems). Also noted are the areas where replacements will be needed as current faculty retire.

Attachment 1: Overall Aviation Program Description and Specifics on the Proposed Air Transportation System (ATS) Track

Aviation Department
The Ohio State University

Description of Undergraduate Programs

The programs of study being offered in the Aviation Department offer the prospective student choices that allow a range of educational opportunities that prepare the graduate to enter today’s employment market, while satisfying personal goals for a sound education. The programs allow concentration in **Aircraft Operations (Professional Pilot), Aviation Management, and Air Transportation Systems**

The student may study in three colleges: **Social and Behavioral Sciences (SBS), Fisher College of Business (CoB)** and the **College of Engineering (CoE)**. All programs are incorporated in (four year) study which results in Bachelor of Science or Bachelor of Arts degrees. The foundation for each program rests on the basic, core degree requirements of the college.

Programs in SBS emphasize a broad education within the requirements set down for all the Colleges of the Arts and Sciences. “They draw upon the full tool kit of the modern-day social and behavioral sciences (including experimental, observational, survey, interpretive, game theoretic, and statistical methods of analysis) to study people, groups, and their institutions in the United States and other countries. SBS majors develop the analytical and communication skills and the knowledge that enable them to address issues that also will serve them well in a variety of careers, including work in both the private and public sectors, as well as further training.”

“The baccalaureate program in the Fisher College of Business provides quality, nation-ally recognized opportunities for students to develop the knowledge, skills, and global perspectives to be effective leaders in business, government, and other organizations. The program also provides a strong foundation for graduate or professional study.”

Programs in the College of Engineering have a number of educational goals; they are based in science and engineering. They are described as follows. “Integrating strong engineering education and research programs into all aspects of the College of Engineering continues to be our commitment. This effort is clearly recognized by our industry partners, who fund research in our laboratories and then recruit and hire our students. We continually strengthen our traditional engineering programs while investing in emerging fields, thereby preparing our students for the workforce of the future.” Within the framework of the college degree programs, students may specialize in the following concentrations:

Social and Behav. Sci.:	Aircraft Systems	BA or BS in SBS
	Aviation Management	BA or BS in SBS
Fisher College of Business:	Aviation Management	BS in Bus. Admin
College of Engineering:	Aircraft Systems	BS in Aviation
	Aviation Management	BS in Aviation
	Air Trans. Systems	BS in Aviation

Description of Programs of Study, College of Engineering

College Course Framework:

All programs of study in the College of Engineering share a common grouping of courses that comprise approximately 150 credits of the total of 190 credits for the degree. That common grouping of courses includes 87 credits of Freshman Engineering courses, mathematics, physics and chemistry and other basic engineering courses common to engineering curricula. There is also a block of about 30 credits in Aviation courses which are common and provide the foundation in topics such as the National Aviation System, Introduction to Aircraft Operation and Performance, Project Management, Human Factors, and Aviation Safety. There are 38 credits of General Education Curriculum (GEC) requirements. All graduates receive the B.S in Aviation from the College of Engineering

Aircraft Operations (Professional Pilot Track): (40 credits of specialization)

Students may choose to participate in OSU's quality flight education program, which is the professional pilot track. For those students planning on becoming professional pilots, and who wish to complement their flight education with a general engineering education, the Aircraft Operations program of study through the College of Engineering provides this solid foundation. Graduates are FAA certificated commercial pilots with a multi-engine rating or a flight instructor certificate, and have the additional advantage of a general engineering education.

Aviation Management: (40 credits of specialization)

The Aviation Management Program in the College of Engineering offers a Management perspective to the coordination of the Physical and Capital resources that make up the Aviation infrastructure. The analysis and calculation skills of an Engineering education is an ongoing need for an infrastructure that is constantly evolving and growing.

Air Transportation Systems: (40 credits of specialization)

The proposed Air Transportation Systems track is designed to meet the needs of aerospace industry operators and manufacturers of aircraft. Emphasis is placed on the application of engineering theory to the particular demands of the aviation industry, such as detailed knowledge of commercial airplanes including preliminary layout and design, structures as they relate to unique manufacturing processes and life-cycle, systems integration and vehicle certification. The Air Transportation Systems track will focus on the analysis and design of interacting elements of the National Airspace System (NAS): synthesis and integration of the vehicle into the multi-aircraft operating system (commercial and military) in order to suggest the optimal Next Generation Air Transportation System (NGATS). This differentiates the program from aerospace engineering where emphasis is placed on detailed analysis of vehicle components.

The Air Transportation Systems track will take the view that the knowledge, understanding and skills necessary for the practice of aircraft design and evaluation are best acquired through interdisciplinary teaching (in the broader sense) and demanding application, rather than through a systematic series of individually assessed modules of analysis. The program will be designed to

stress pragmatic solutions to the technological problems our graduates are likely to face in the aviation / aerospace industry.

Description of Programs of Study, College of Social and Behavioral Sciences

College Course Framework.

The two Aviation Majors available within the College of Social and Behavioral Sciences include an educational foundation emphasizing communication, decision making, and analysis with a global perspective. The degree requirements are generally distributed as follows: about 90 credits in Writing, Quantitative skills, Natural Science, Social Science, Arts and Humanities and Foreign Language; about 45 credits of electives; about 26 credits in Aviation Core courses and about 30 credits in Aircraft Operations (Professional Pilot) or Management tracks.

Both Aviation programs of study build upon the base education with aviation industry core courses to prepare students for careers in the dynamic air transportation industry. Students choose to either participate in OSU's quality flight education program, which is the professional pilot track, or to focus on aviation management (airline / airport), depending on their career goals.

Aircraft Operations (Professional Pilot Track)

For those students planning on becoming professional pilots, the well-rounded, general education provided through the College of Social and Behavioral Sciences is a solid foundation to build upon with aviation industry knowledge and flight education. Graduates are FAA certificated commercial pilots with a multi-engine rating or a flight instructor certificate and the education needed to compete in this demanding and competitive industry. Graduates receive a B.S. or B.A. degree in Aircraft Operations from the College of Social and Behavioral Sciences.

Aviation Management:

The Aviation Management Program in the College of Social and Behavioral Sciences offers a Management perspective to how Aviation facilitates Economies and Societies. The analysis and communication skills of an Arts and Sciences education is an ongoing need for the global connecting nature of Aviation. For those students who desire to have a career in the business or operational side of the air transportation industry, this curriculum provides the aviation industry core education as well as air transportation-focused management courses as preparation. Graduates receive a B.S. or B.A. degree in Aviation Management from the College of Social and Behavioral Sciences.

Description of Programs of Study, Fisher College of Business

College Course Framework.

All Majors in the Fisher College of Business share a common foundation of approximately 160 foundation credits before specializing in a chosen Major. The foundation credits include First Year, Education, Science, and Humanities areas. The Business foundation credits include

- | | | |
|----|---|--------------------------------------|
| 3. | Aircraft Systems
ATSystems Anal & Synthesis | Existing Areas,
Replace Fac.(1.5) |
| 4. | Aviation Policy and Fed Regs.
FAA , NTSB, & Airport Policies
Aviation Regulatory Issues | New Areas,
New Fac. (1) |

Proposed assignment of the 2 New Faculty needed (for a separately proposed MS in Aviation and Proposed New Undergraduate Major in Air Transportation Systems). Also noted are the areas where replacements will be needed as current faculty retire.

All students in this engineering-oriented track must take either AVN 310 or AVN 310-M (not both); AVN 310 is an existing course and a required pre-requisite to AVN 341. AVN 310-M is a proposed new version of this course and will NOT satisfy the pre-requisite requirement for AVN 341 and the Aviation Flight Laboratory (AFL) sequence.

Also, all students in this track are required to take Civil Engineering 570, Transportation Systems Analysis, which provides the over-arching principles used in analyzing all of the varied multi-modal transportation systems. The rest of the curriculum then focuses specifically on air transportation systems analyses as a special case of the more general topic.

AVN 310.01 (5) Aircraft Operations and Performance

Flight fundamentals, aircraft operation and performance, aviation weather, and Federal Aviation Regulations are studied in this intensive, FAA approved, Private Pilot Ground School course to provide the foundation required to begin the Academic Flight Laboratory (AFL) sequence, starting with AVN 341. AVN 310 is a comprehensive class that also prepares the student for the FAA Private Pilot written exam, and is the first step towards becoming a pilot (for which oral and practical exams are also required).

AVN 310.02 (5) Aircraft Operations and Performance

This course provides fundamental knowledge on aircraft components, operation, navigation and regulations oriented for future air transportation industry professionals who do not plan to become pilots. Knowledge of the National Airspace System, airplane operations, Federal Aviation Regulations, and safety of flight considerations are included to establish a foundation for students principally interested in studying aviation management.

AVN 520 (3 cr.) Introduction to Avionics (ATC, Comm., Navig.)

Fundamentals and applications of avionics (aviation electronics). This topic provides the technology essential for aircraft communication, aircraft navigation and communication throughout the air transportation airway system (e.g. ATC and Dispatch). This course provides basic analysis and applications including the engineering and design process.

Outline:

- Avionics fundamentals,

- System design concepts,
- Electrical systems, including engine driven power generation,
- Sensors, communication & navigational aids,
- Principles of navigation, flight control, and systems integration.

Text: “Civil Avionics Systems”, I. Moir, A Seabridge, AIAA Inc., Reston, VA, 2003

AVN 570 (3 cr.) Influences on Aircraft Production

Introduction to the principles and practices of modern aerospace manufacturing, specifically focused on the idiosyncrasies of aircraft production. This course provides an introduction to manufacturing processes, materials and systems that are unique to aircraft and those that are common in vehicle manufacturing. One goal of this course is to promote a positive information base for compatibility within the air transportation industry.

Outline:

- Overview of aircraft systems analysis and design
- Overview of airplane production processes and process planning
- Individual manufacturing processes and technologies used to manufacture various components and subsystems of modern aircraft.
 - Process limits
 - Economic implications
 - Operations requirements
 - Materials considerations
- Production costs concepts including basic cost estimating
 - Materials vs. Cost
 - Tolerances vs. Cost
 - Production Volume vs. Cost
- Production Systems Management and Control

Material Supporting Outlined Topics: Michael P. Deisenroth and William H. Mason, “Curriculum Development in Aerospace Manufacturing,” 1996 ASEE Annual Conference.

NOTE: Course Notes and reading assignments will be used in lieu of a textbook, since there is nothing currently available that adequately covers these topics in this context. Reading assignments in the syllabus are for illustration only, being based on the best currently available textbooks.

AVN 575 (5) Development and Design of Aircraft Systems

Introduction to how aircraft systems are designed and have evolved, encompassing the systems approach. There is an emphasis on how the complex aircraft systems’ technical requirements emerge from a primitive customer requirement or need statement. Individual systems are integrated for the purpose of developing a fit-for-purpose aircraft product

Outline:

- The design and development process
- Design drivers

- Systems architecture
- Systems integration
- Configuration control
- Aircraft systems examples and case studies

Text: “Design and Development of Aircraft Systems: An Introduction,” Moir and A Seabridge, AIAA, Inc, Reston, VA , 2004

AVN 590 (5) Airline Practices and Design

This course will address and analyze the principal issues in structuring the air transport markets, devising the cost and revenue equation of airline operations, determining aircraft and flight scheduling, optimizing crew and maintenance scheduling, and performing analyses for network and fleet planning processes. The course will also examine financial issues related to aircraft acquisition and sales as well as infrastructure financing (runways, terminals, hangars, air navigation control facilities) and pricing of the aviation services this infrastructure provides.

This course is designed to provide students with an opportunity to:

- Understand the importance and scope of airline operations in both the domestic and international arenas.
- Understand the economic forces that shape the airline industry and the measures that are taken in response to those forces.
- Comprehend the nature of the product airlines provide, their characteristics, forms, and methods of delivery.
- Understand the factors that affect the choice of airline business strategy.

Reference Texts:

- Butler, Gail and Martin Keller (Editors) *Handbook of Airline Operations* (First Ed) (New York: McGraw-Hill, 2000)
- Butler, Gail and Martin Keller (Editors) *Handbook of Airline Finance* (First Ed) (New York: McGraw-Hill, 1999)
- De Neufville, Richard and Amedeo Odoni *Airport Systems: Planning, Design, and Management* (New York: McGraw-Hill, 2003)
- Holloway Stephen *Straight and Level: Practical Airline Economics* (Aldershot, UK: Ashgate, 2003)

AVN 591 (3) Flight Network Analysis and Optimization

This course provides a comprehensive introduction to the functional activities involved in planning and operating an airline and their integration with corporate strategies and policies. The complete airline planning process is explored, beginning with longer-term strategic decisions about fleet planning and route development, followed by medium-term schedule planning, fleet assignment, maintenance and operational considerations. The course will also examine a variety of network optimization models adopted by air transportation entities around the world.

Reference Texts:

- Massoud Bazargan *Airline Operations and Scheduling* (UK: Ashgate, 2004.)

- Butler, Gail and Martin Keller (Editors) *Handbook of Airline Operations* (First Ed) (New York: McGraw-Hill, 2000)
- Butler, Gail and Martin Keller (Editors) *Handbook of Airline Finance* (First Ed) (New York: McGraw-Hill, 1999)
- Holloway Stephen *Straight and Level: Practical Airline Economics* (Aldershot, UK: Ashgate, 2003)

AVN 597 (5) ATS Design – Aircraft Design for Utilization in AT System

Development of basic system elements of aircraft vehicle design. Fundamental approach is defined by demands of airline/commercial user. Emphasis is on synthesis of the aircraft role in the whole AT System. In particular, the focus of this course will be on the analyzing design alternatives for the Next Generation Air Transportation System (NGATS). Inclusion of Very Lights Jets, Uninhabited Aerial Systems, and self-separation / self-sequencing of airplanes into airports will be considered.

Outline:

- Overview (and review) of the vehicle design process (AVN 570 & AVN 575)
- Aircraft performance fundamentals – component interactions
 - Sizing from conceptual demands
 - Configuration layout (emphasis on use and aircraft flexibility in operation)
 - Cost analysis

This course will involve completion and reporting of a design study, including issues relating to use of the aircraft in fleet ops., of a unique aircraft development/ modification initiated to meet demands of ATS commercial users.

Texts:

- “Aircraft Design, A Conceptual Approach”, 4th Ed (2006), D.P. Raymer, AIAA, Inc, Reston VA, 1992
- “Civil Jet Aircraft Design”, L.R. Jenkinson, P. Simpkins, D. Rhodes, AIAA, Inc, Reston VA, 1999

AVN 610 (3) Introduction to Computer Modeling and Simulation in Aviation

This course will introduce the process of developing, implementing, verifying, and validating models used for constructive modeling in NGATS design and evaluation. Attention will also be given to functional and physical audits of flight training devices and simulators as part of acceptance testing. The alternative methods for implementing simulations will be reviewed, using examples of commercial off the shelf tools. Kinds of types of simulation models will be introduced, distinguishing between discrete event, network, continuous times, and hybrid modeling methods.

Outline:

- Overview both constructive modeling for systems analysis and design evaluation as well as man-in-the-loop simulation for research, development, training applications.
- Understand the Federal Aviation Administration distinction between flight training devices and simulators, and the corresponding differences in certification of each

- Appreciate the steps that have to be taken in order to develop a model and implement a simulation to be sure the results correspond to the real system, appreciating the difference and need for both verification and validation.
- Learn the basic principles for designing device interfaces that affect both work station control / display dynamics and the design of an instructor / operator station.

Reference Books

- Phillips, Warren F. (2004), *Mechanics of Flight*, Wiley, New York, NY.
- Law, Averill M. and W. David Kelton, 3rd edition (1999), *Simulation Modeling & Analysis*, McGraw-Hill, New York, NY.
- Prtisker, A. Alan B., 4th edition (1995), *Introduction to Simulation and SLAM II*, Wiley, New York, NY.
- Hays, R. T. and M. J. Singer (1989), *Simulation Fidelity in Training System Design: Bridging the Gap Between Reality and Training*, Springer-Verlag, New York, NY.
- Rolfe, J. M. and K. J. Staples, editors (1986), *Flight Simulation*, Cambridge University Press, New York, NY.

AVN 674 (3) Airport Systems Planning & Operations

A comprehensive study of airport planning & operations, the role of the airport and its components as part of the overall Air Transportation System, and the issues related to the planning, design, and development of the airport and its systems.

Course Objectives:

- ➔ To provide an understanding of the process for planning the various airport systems, including site studies, master plans, and environmental studies;
- ➔ To provide an understanding of the criteria used in designing airport systems, and to introduce the airport design process;
- ➔ To provide an understanding of the managerial, operational, financial, technical, environmental, and political issues related to airport planning & development; and
- ➔ To provide the practical knowledge necessary to enter the airport planning & design field.

Outline:

- Master Planning
- Environmental Studies
- Airfield Systems (Runways, Taxiways, Safety Areas)
- Electrical Systems (Lighting, Communications, NAVAIDS)
- Airport Services Support Systems (Terminals, Ramps, Hangars, Tie-downs, Fuel Facilities)
- Air Navigation System (ATC, Uncontrolled Airports); Weather Reporting Systems
- Airport Security Systems; Airport Access/Ground Vehicle Support Systems
- Airport Area Development (Airport Zoning, Federal Aviation Regulation, Part 77)
- Airport Layout Plan
- Airport Capital Improvement Program

Course Material: *Airport Planning and Management*, A.T. Wells, McGraw-Hill

(Tab Books, Blue Ridge Summit, PA), 1992 (2nd Ed.)
AC 150-5300 series, FAR Pt. 77, etc.
FAA Airport Design computer program

Project Notes:

1. Description: The planning and design of an airport
2. Location: Bellefontaine Quad
3. Information Provided: Local weather data, pre-determined forecast of based aircraft and operations levels, critical aircraft.
4. Resources: NWS, FAA Advisory Circular 150-5300 series, FAA Airport Design computer program.

Attachment 2: DRAFT Bingo Sheet for ATS Option

(see following page)

Note: ISE curriculum is similar in all but technical major courses. 71 total ISE; 68 total AVN
AVN/aero

Proposed Revisions for BS in Air Transportation Systems 2005-2006

(Bold font indicates changes from BS in Aviation)

Name: _____ SSN: _____ Phone: _____

New to OSU: _____ email: _____@osu.edu

YEAR	AUTUMN	WINTER	SPRING
1	Math 1515__ Engineering 100.02 (Engr Survey .. 1__ Engineering 1813__ Chem 1215__	Math 152 5__ Physics 131..... 5__ Engineering 183..... 3__ AVN 310. Fund AC Sys5__	Math 153..... 5__ Physics 132..... 5__ AVN 300 Nat Avn Sys..... 3__ Engl 110.....5__
2	Math 2545__ Physics 133.....5__ AAE 200 Aerodyn & Flt Perf5__ Gen Ed 3__	Math(366), 571 3__ Mech Eng 410..... 4__ AAE 201 AC Stab,Cont, Astro 5__ MS&E 205 3__	Math 255 5__ Mech Eng 430 4__ CSE 202 4__ CE 570 Trans. Sys Eng Anal. 4__
3	ISE 504 Eng Econ Anal..... 3__ AVN 530* Avn Reg or Elect.....3__ Stat (245), 427..... 3__ 2nd Engl 5__	CSE 230 4__ Stat 428 3__ Gen Ed 6__ AVN 591 Flt Netw Anal & Opt 3__	AVN 550* Avn Proj. Mangmt 3__ AVN 540* Avn Hum Factors... 3__ Econ 200 5__ Avn 520 ATC, Nav, Avionics 3__
4	AVN 560 Avn Safety 3__ AVN 570 Infl. Acft. Prdctn 3__ AVN 590 Airline Practce& Des 5__ Gen Ed 5__	AVN 674 Airport Sys & Ops. 3__ AVN 610 Simulat of ATSys. 3__ AVN575 Dev&Dsgn of Acft. Sys 5__ Gen Ed 5__	Free Elective 3__ AVN 597 AT System Design 5__ Gen Ed 8__

GENERAL EDUCATION (38 hrs)

English & Communication Skills (10)

English 110.xx (5) _____
 2nd English (5) _____

Social Sciences (9)

Econ 200 (5) _____
 _____ () _____
 _____ () _____

Historical Survey (10)

_____ () _____
 _____ () _____

Arts & Humanities (9)

a. Literature (1 course)
 _____ () _____

b. Visual/Performing Arts or

Other Humanities (1 course)
 _____ () _____

TECHNICAL COURSE TRACKS

Choose ARS (45), MGT(45 hrs), or ATS(47)

	ARS	MGT	ATS
	Stat 245(5) _____	Stat 245(5) _____	Stat 427 (3) _____
	Avn 341(2) _____	Avn 552(3) _____	Stat 428 (3) _____
	Avn 342(2) _____	Avn 650(3) _____	CE 570(4)
	Avn 410(3) _____	Avn 652(3) _____	MSE 205(3)
	Avn 413(3) _____	Avn 654(3) _____	CSE 202(4)
	Avn 415(3) _____	B-Mgt 330(5) _____	Avn 520(4)
	Avn 441(3) _____	B-Mgt 331(4) _____	Avn 570(3)
	Avn 442(3) _____	Econ 201(5) _____	Avn 575(5)
	Avn 443(3) _____	Geog 645(5) _____	Avn 674(3)
	Avn 444(3) _____		Avn 590(5)
	Avn 445(3) _____		Avn 591(4)
	Avn 446(3) _____		Avn 597(5)
			Avn 610(3)

	AVN ARS	AVN MGT	AVN ATS
	Elect (9hrs)	Elect. (9hrs)	Free Elect. (3hrs)
	_____ () _____	_____ () _____	_____ () _____
	_____ () _____	_____ () _____	_____ () _____
	_____ () _____	_____ () _____	_____ () _____

ADMISSION CONDITION

_____ () _____

SOCIAL DIVERSITY

(May overlap with another GEC Category)

_____ () _____

Free Elective _____ (3) _____

CORE AVIATION COURSES

(Taken by ALL Aviation Majors)

_____ Avn 300 (3)
 _____ Avn 310 or Avn 310M (5)
 _____ Avn 530* (3)
 _____ Avn 540* (3)
 _____ Avn 550* (3)
 _____ Avn 560* (3)

* Writing assignments in these courses satisfies the need for a 3rd writing course

Attachment 3: New Course Proposal Forms (catalog information)
(see following pages)

OHIO STATE NEW COURSE REQUEST

College: Engineering
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
 (e.g., Portuguese)
 Proposed Course No: 310M Full Title of Course: Private Pilot Fundamentals for Management Majors
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: 07 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: PRIV FUND-MGMT Level U G P Credit Hours: 5

Description (not to exceed 25 words): Study of flight fundamentals, aircraft operation, weather, and regulations for future air transportation professionals.

Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours:
M-T-W: 1hr & F(only) 2hr.

Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)

Prerequisite (s): Math 104 or equivalent

Exclusion or limiting clause:

Repeatable to a maximum of ___ credit hours. N/A

Cross-listed with: N/A

Grade Option (Please check): Letter S/U Progress

If this course is Progress graded, what course is the last one in the series?

Honors Statement: Yes No GEC: Yes No Admission Condition Course: Yes No
 Off-Campus: Yes No EM: Yes No

Other General Course Information: Not acceptable as prerequisite for AVN 341
 (e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
 (If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)

Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Management majors will not take AVN 341 and AVN 342 as follow on courses. Content and emphasis here is mgmt vs ops.

2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.

This course is (check one) Required Elective Other (Explain)

All majors MUST take either AVN 310 or AVN 310M

* If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course.

ALL AVN majors now take AVN 310, whether they go on to AVN 341/342 or not. This provides non-pilots an option

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List:

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 300, 530, 540, 550, 560

6. Expected section size: 25 Proposed number of sections per year: 2

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed

Gerald P. Chubb Gerald P. Chubb 10/6/2006
 Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School/College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School/College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

Nancy L. Tanager NANCY L. TANGERA 10/6/06
 ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

OHIO STATE NEW COURSE REQUEST

College: Engineering
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
(e.g., Portuguese)
 Proposed Course No.: 526 Full Title of Course: Introduction to Avionics
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: 07 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: INTR TO AVIONICS Level: U G P Credit Hours: 4

Description (not to exceed 25 words): Fundamentals and applications of aviation electronics (avionics), including aircraft communication and navigation systems.

Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours:
2 hrs, twice per wk: T-R

Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)

Prerequisite (s): Phys. 132, CSE 202, & AAE 201

Exclusion or limiting clause: N/A

Repeatable to a maximum of 0 credit hours. N/A

Cross-listed with: N/A

Grade Option (Please check): Letter S/U Progress

If this course is Progress graded, what course is the last one in the series?

Honors Statement: Yes No GEC: Yes No Admission Condition Course: Yes No
 Off-Campus: Yes No EM: Yes No

Other General Course Information: None
(e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
(If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)

Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Air Transportation System engineers need to know what kinds of types of systems are used & their principles of operation/limitations

2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
 This course is (check one) Required Elective Other (Explain)
Air Transportation Systems (ATS) Engineering Track/Concentration
If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course.

Existing faculty (Dr. York) to teach this in lieu of other courses (e.g. AVN 593)

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List:

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 570, 575, 590, 591, 597, 610 & 674

6. Expected section size: 20 Proposed number of sections per year: 1

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed

Gerald P. Chubb Gerald P. Chubb 10/6/2006
 Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School /College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School /College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

Nawal Tamejja NAWAL TAMEJJA 10/6/06
 ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

OHIO STATE NEW COURSE REQUEST

College: Engineering
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
(e.g., Portuguese)
 Proposed Course No: 570 Full Title of Course: Influences on Aircraft Production
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: 08 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: Infl Acft Prdctn level U G P Credit Hours: 3

Description (not to exceed 25 words): Analyzes key economic, military, technical, and international influences affecting airplane design specifications.

Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours: T-R 1 1/2 hrs.

Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)

Prerequisite (s): Phy. 132, CSE 202, & AAE 201

Exclusion or limiting clause: None

Repeatable to a maximum of 1 credit hours.

Cross-listed with: N/A

Grade Option (Please check): Letter S/U Progress

If this course is Progress graded, what course is the last one in the series?

Honors Statement: Yes No GEC: Yes No Admission Condition Course: Yes No
 Off-Campus: Yes No EM: Yes No

Other General Course Information:
(e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
(If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)

Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Air Transportation Systems (ATS) specialists need to understand what shapes the translation of primitive customer needs into design requirements.

2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
 This course is (check one) Required Elective Other (Explain)
New Track in Air Transportation Systems (ATS)

* If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course.

Dr. York prepared the syllabus & is prepared to teach this in lieu of other assignments - currently AVN493.

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List: ISE Consurred, based on change of title (as shown)

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 520, 575, 590, 591, 597, 610, & 674

6. Expected section size: 12 Proposed number of sections per year: 1

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable

Syllabus shared with ISE and title was changed from Post-Manufacturing to Influences on Aircraft Production per their recommendation

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed

Gerald P. Chubb Gerald P. Chubb 8 Feb. 2007
Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School /College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School /College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

Nawal K. Taneja Nawal K. Taneja 2/8/2007
ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

OHIO STATE NEW COURSE REQUEST

College: Engineering Aviation
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
 (e.g., Portuguese)
 Proposed Course No: 575 Full Title of Course: Development and Design of Aircraft Systems
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: 07 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: DEV & DSGN ACFT SY Level: U G P Credit Hours: 5
 Description (not to exceed 25 words): Intro to operations based system design process and aircraft systems development evolution
 Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours: I-R 2 1/2 hrs.
 Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)
 Prerequisite (s): AVN 520 & AVN 570

Exclusion or limiting clause:
 Repeatable to a maximum of ___ credit hours.
 Cross-listed with: N/A
 Grade Option (Please check): Letter S/U Progress

If this course is Progress graded, what course is the last one in the series?
 Honors Statement: Yes No GEC: Yes No Admission Condition Course: Yes No
 Off-Campus: Yes No EM: Yes No
 Other General Course Information: (e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
 (If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)
 Will course be taught in distance learning format: Yes No

B. General Information:

- Provide the rationale for proposing this course:
Introduces Air transportation Systems (ATS) Engineers to air-plane component design requirements & technology driven changes for improved operations.
- List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
 This course is (check one) Required Elective Other (Explain)
Air transportation Systems (ATS) Engineering track/renovation.
 * If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this ^{new course}
Dr. York will be assigned this class in lieu of
others he's been teaching (e.g. AVN 593)
4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?
 Yes No List: _____
5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 530, 570, 590, 591, 597,
610 & 674
6. Expected section size: 20 Proposed number of sections per year: 1
7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes
8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable
9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed)

<u>Gerald P. Chubb</u>	Gerald P. Chubb	10/6/2006
Academic Unit Undergraduate Studies Committee Chair (Undergraduate course)	Printed Name	Date
Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course)	Printed Name	Date
School/College Undergrad Curriculum Committee (Undergraduate/Graduate course)	Printed Name	Date
School/College Graduate Curriculum Committee (Undergraduate/Graduate course)	Printed Name	Date
<u>Nancy Tanager</u>	NANCY TANETA	10/6/06
ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR	Printed Name	Date
COLLEGE DEAN	Printed Name	Date
Graduate School (If Appropriate)	Printed Name	Date
ASC Curriculum Committee Chair (If Appropriate))	Printed Name	Date
University Honors Center (If Appropriate)	Printed Name	Date
Office of International Education (study tour only)	Printed Name	Date
ACADEMIC AFFAIRS	Printed Name	Date

OHIO STATE NEW COURSE REQUEST

College: Engineering
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
(e.g., Portuguese)
 Proposed Course No: 590 Full Title of Course: Air Transport Practices and Design
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: C7 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: AT PRAC & DSGN Level U G P Credit Hours: 5
 Description (not to exceed 25 words): Analysis of principle issues in structuring air transportation markets, including financial impact of traffic mgmt.
 Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours:
 Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)
 Prerequisite (s): AVN 300 & AVN 550

Exclusion or limiting clause:
 Repeatable to a maximum of ___ credit hours.
 Cross-listed with:
 Grade Option (Please check): Letter S/U Progress
 If this course is Progress graded, what course is the last one in the series?
 Honors Statement: Yes No GEC: Yes No Admission Condition Course: Yes No
 Off-Campus: Yes No EM: Yes No
 Other General Course Information:
(e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
(If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)
 Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Examines the issues driving profitability in a globalized service market and the impact technology has on revenue & cost
 2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
 This course is (check one) Required Elective Other (Explain)
Air Transportation Systems (ATS) Engineering track/concentration
If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this ^{new course.}

Dr. Tanaja proposes teaching this as an extra course to his present load.

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List:

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 520, 570, 591, 575, 597,

6. Expected section size: 20 Proposed number of sections per year: 1 6/04/07

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the *OAA Curriculum Handbook*.

APPROVAL SIGNATURES (As needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed

Gerald P. Chubb Gerald P. Chubb 10/6/2006
 Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School /College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School /College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

Nawal Tanaja NAWAL TANAJA 10/6/06
 ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

OHIO STATE NEW COURSE REQUEST

College: Engineering
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
 (e.g., Portuguese)
 Proposed Course No: 591 Full Title of Course: Flight Network Analysis and Optimization
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: 07 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: FLT NETANAL ^{OPT} Level U G P Credit Hours: 3

Description (not to exceed 25 words): Intro to planning and operating an air line, including route analysis, scheduling, fleet planning, and maintenance.

Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours: M-W 1 1/2 hr.

Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)

Prerequisite (s): AVN 300 & AVN 550

Exclusion or limiting clause: _____

Repeatable to a maximum of _____ credit hours.

Cross-listed with: _____

Grade Option (Please check): Letter S/U Progress

If this course is Progress graded, what course is the last one in the series? _____

Honors Statement: Yes No GEC: Yes No Admission Condition Course: Yes No
 Off-Campus: Yes No EM: Yes No

Other General Course Information: _____
 (e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
 (If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)

Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Introduces Air Transportation Systems (ATS) engineers to the types of analysis required to optimize air line operations

2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
 This course is (check one) Required Elective Other (Explain)
Air Transportation Systems (ATS) Engineering track/concentration
 * If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this ^{new course}

Dr. Chul Lee will teach this as our newest faculty member as part of his normal load

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List:

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 320, 570, 575, 590, 597,

6. Expected section size: 20 Proposed number of sections per year: 1 610 & 674

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As Needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed)

Gerald P. Chubb Gerald P. Chubb 10/6/2006
 Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School/College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School/College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

Nirvan Kungl NANAL JANESA 10/6/06
 ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

OHIO STATE NEW COURSE REQUEST

College: Engineering
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
(e.g., Portuguese)
 Proposed Course No: 597 Full Title of Course: Air Transportation System Design
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: 07 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: ATS DSGN Level U G P Credit Hours: 5
 Description (not to exceed 25 words): Analysis of commercial operations and its affect on both initial design & modification of aircraft.
 Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours:
T-R 2 1/2 hrs.
 Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)
 Prerequisite (s): AVN 575

Exclusion or limiting clause:
 Repeatable to a maximum of ___ credit hours.
 Cross-listed with:

Grade Option (Please check): Letter S/U Progress
 If this course is Progress graded, what course is the last one in the series?

Honors Statement: Yes No GEC: Yes No Admission Condition
 Off-Campus: Yes No EM: Yes No Course: Yes No

Other General Course Information:
(e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
(If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)

Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Examines life-cycle design issues and focuses on aircraft utilization in commercial aviation (versus initial design)

2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
 This course is (check one) Required Elective Other (Explain)
Air Transportation Systems (ATS) Engineering track/concentration
If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course.

Part of Dr. York's new teaching load.

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List:

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: *526, 570, 575, 582, 591,*

6. Expected section size: *30* Proposed number of sections per year: *1* *616 & 674*

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As needed, All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed

Gerald P. Chubb *Gerald P. Chubb* *10/6/2006*
 Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School/College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School/College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

Nawal Tami *NAWAL TAMER* *10/6/06*
 ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

OHIO STATE NEW COURSE REQUEST

College: Engineering

Academic unit: Aviation Book 3 Listing: Aviation (AVN)
(e.g., Portuguese)

Proposed Course No: 610 Full Title of Course: Intro to Computer Modeling & Simulation in Aviation

Proposed Effective Qtr/Yr: SU AU WI SP YEAR: 07 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: (MPTR MODLG & SIM) Level U G P Credit Hours: 3

Description (not to exceed 25 words): Development of hybrid models of aviation activities to describe and predict performance.

Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours: M-W 1 1/2 hr.

Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)

Prerequisite(s): AVN 510 & ENG 183

Exclusion or limiting clause:

Repeatable to a maximum of ___ credit hours.

Cross-listed with:

Grade Option (Please check): Letter S/U Progress

If this course is Progress graded, what course is the last one in the series?

Honors Statement: Yes No GEC: Yes No Admission Condition: Yes No
Off-Campus: Yes No EM: Yes No Course: Yes No

Other General Course Information: Requires familiarity with MATLAB
(e.g. "Taught in English" "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
(If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)

Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Introduces Simulink & State Flow modeling for descriptive & predictive analysis of simplified operations and maintenance activities

2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
This course is (check one) Required Elective Other (Explain)
Air Transportation Systems (ATS) Engineering track/concentration
If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course.

Dr. Chubb will teach this as a second course that quarter, in addition to AV560: Aviation Safety.

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List:

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: *520, 570, 575, 590, 591, 597 & 674*

6. Expected section size: *20* Proposed number of sections per year: *1*

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed)

Gerald P. Chubb *Gerald P. Chubb* *10/6/2006*
 Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School /College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School /College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

Nancy T. Campbell *NANCY CAMPBELL* *10/6/06*
 ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

OHIO STATE NEW COURSE REQUEST

College: Engineering
 Academic unit: Aviation Book 3 Listing: Aviation (AVN)
 (e.g., Portuguese)
 Proposed Course No: 674 Full Title of Course: Airport Systems Planning, Design, and Development
 Proposed Effective Qtr/Yr: SU AU WI SP YEAR: C7 (See OAA Academic Organization and Curriculum Handbook for Deadlines)

A. Course Offerings Bulletin Information. Follow instructions in the OAA Academic Organization and Curriculum Handbook.

Is this a course with decimal subdivisions? If so, use one New Course Request form for the generic information that will apply to all subdivisions. Use separate forms for each new decimal subdivision, including on each form only the information that is unique to that subdivision.

18-Character Transcript Abbreviation: ARPT PLNG & DSGM Level U G P Credit Hours: 3

Description (not to exceed 25 words): Comprehensive study of airport planning, design, and development to support commercial and general aviation.

Quarter offered (check): SU AU WI SP *Distribution of class time/contact hours:

Quarter and contact/class time hours information should be omitted from Book 3 publication: (check here)

Prerequisite(s): AVN 552 (recommended)

Exclusion or limiting clause:

Repeatable to a maximum of ___ credit hours.

Cross-listed with: CE 674

Grade Option (Please check): Letter S/U Progress

If this course is Progress graded, what course is the last one in the series?

Honors Statement: Yes No GEC: Yes No Admission Condition
 Off-Campus: Yes No EM: Yes No Course: Yes No

Other General Course Information:
 (e.g. "Taught in English." "Credit does not count toward BSBA degree.")

Subject Code _____ Subsidy Level (V, G, T, B, M, D, or P) _____
 (If you have questions please email Jed Dickhaut @ dickhaut.1@osu.edu)

Will course be taught in distance learning format: Yes No

B. General Information:

1. Provide the rationale for proposing this course:
Airport design can be a limiting or enabling factor in air transportation systems, influencing airline & private flight ops & maintenance.

2. List Major/Minor affected by the creation of this new course. Attach revisions of all affected programs.
 This course is (check one) Required Elective Other (Explain)
Air Transportation Systems (ATS) Engineering track / concentration
 If the course offered is less than quarter, term, or semester, please also complete the Flexibly Scheduled/Off Campus/Workshop Request form.

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course. This course is 'planned' to be AVN 694 in lieu of CE 674 during ~~Winter 2007~~, taught by CSU's Dir. of Airport

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes No List: _____

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: 526, 576, 575, 596, 591, 597, 9610

6. Expected section size: 20 Proposed number of sections per year: 1

7. Do you want prerequisites enforced electronically? (See OAA Curriculum Manual for what can be enforced.) Yes

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (List units and attach letters and/or forms): Not Applicable
e-mail indicating Civil Engineering's support is attached

9. Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA Curriculum Handbook.

APPROVAL SIGNATURES (As needed. All signatures on lines in ALL CAPS (e.g. ACADEMIC UNIT) must be completed

Gerald P. Chubb Gerald P. Chubb 10/6/2006
 Academic Unit Undergraduate Studies Committee Chair (Undergraduate course) Printed Name Date

Academic Unit Graduate Studies Committee Chair (Undergraduate/Graduate course) Printed Name Date

School /College Undergrad Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

School /College Graduate Curriculum Committee (Undergraduate/Graduate course) Printed Name Date

N. Annis Tamm NANNI TANNI 10/6/06
 ACADEMIC UNIT CHAIR /SCHOOL DIRECTOR Printed Name Date

COLLEGE DEAN Printed Name Date

Graduate School (If Appropriate) Printed Name Date

ASC Curriculum Committee Chair (If Appropriate) Printed Name Date

University Honors Center (If Appropriate) Printed Name Date

Office of International Education (study tour only) Printed Name Date

ACADEMIC AFFAIRS Printed Name Date

Attachment 4: Syllabi for New Courses

(see following pages)

COURSE SYLLABUS

- Course No. and Title:** Private Pilot Fundamentals for Management Majors
- Instructor:** Robyn O. Litvay, Lecturer, Airline Transport Pilot (ATP),
Certificated Flight Instructor (CFII, MEI)
- Office:** 412 Aviation Building
(614) 688-4177, litvay.1@osu.edu
Office hours are by appointment only.
- Aviation Website:** <http://www.aviation.ohio-state.edu>,
Course Description: Study of flight fundamentals, aircraft operation, weather, and regulations essential for future air transportation professionals.
- Credit Hours:** U5 **Class Meetings:** Tues. and Thurs., 8:30 to 9:48 AM, and
Fri., 8:30 to 10:18 AM.
- Prerequisites:** Math 104 or equivalent **Quarters Offered:** AU, WI, and SP
- Texts/Supplies:** *ASA The Pilot's Manual: Ground School, third edition,
*2006 ASA Private Pilot Test Prep
*FAR/AIM 2006 *Plotter * E6-B Flight Computer
+ Cincinnati Sectional Chart
+ Airport/ Facility Directory, East Central U.S. (EC)
+ C-152 Pilot Operating Handbook and a Calculator (any)
- *Included in Private Pilot Kit available at the OSU Airport Terminal
+ Available from Customer Service at the OSU Airport Terminal
- Evaluation Criteria:** Exam I (10%), Exam II (10%), Exam III (10%), Quizzes
(4 x 5% = 20%), Homework (20%), Final Exam (30%)
- Course Letter Grade Minima:**
- | | | | |
|----------|----------|--------------------------|----------|
| A (93%) | A- (90%) | B+ (88%) | B (83%) |
| B- (80%) | C+ (78%) | C (73%) | C- (70%) |
| D+ (68%) | D (60%) | Failing Grade: below 60% | |

Notes:

This course is conducted under the guidelines specified in Phase 1 of the Training Course Outline for the Ohio State University's Commercial Pilot Certification Course, approved by the FAA under FAR Part 141.

Private Pilot Fundamentals for Management Majors

NOTE:

1. Attendance will be taken daily; riving more than 15 min. late is considered a missed class.
2. A student absent from an exam is responsible for arranging a makeup BEFORE the exam is returned. **No makeups are permitted after the return of an exam.** A valid and acceptable written excuse explaining the student's absence from an exam is required.
3. There will be four, take-home quizzes given. **There will be no late quizzes accepted without a valid, written excuse.**
4. Late homework accepted for only one week after due date (& with 50% grade deduction).
5. Students are expected to be familiar with the Code of Student Conduct, which covers such issues as plagiarism and academic misconduct.
6. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.
7. Students are expected to be aware of important dates published in the Master Schedule (like Final Exam date and time).This is a fast-paced class requiring daily study and preparation.

<u>Week</u>	<u>Subject</u>
<u>Week 1</u>	[Daily schedule of topics and assignments are subject to rearrangement] Introduction, overview, course objectives. Basic Aerodynamics
<u>Week 2</u>	Fundamentals of Flight, Stability, Flight Maneuvers Quiz 1 (Take-home).
<u>Week 3</u>	Airplane Systems and Powerplants. Quiz 2 (Take-home), Weight & Balance, Performance.
<u>Week 4</u>	EXAM 1 , Performance . Flight Instruments.
<u>Week 5</u>	Flight Instruments Quiz 3 (Take-home), FARs, AIM, ACs
<u>Week 6</u>	Basic Weather Theory, Aviation Weather Services, and Airports.
<u>Week 7</u>	EXAM 2 , Aviation Weather Services, continued Airports, Airspace, Flight Environment.
<u>Week 8</u>	Airspace, Radio Procedures, Radar Services, Quiz 4 (Take-home), Basic Navigation.
<u>Week 9</u>	Radio Navigation , Aerospace Physiology, and Safety of Flight.
<u>Week 10</u>	Decision Making and Collision Avoidance.

COURSE SYLLABUS

Course No. and Title: AVN 520, Introduction to Avionics

Responsible Faculty: Thomas M. York, Prof., Aviation Bldg. Rm 405; 292-3839

Office Hours: By Appointment

Course Description: Fundamentals and applications of avionics (aviation electronics) incl. aircraft communications and navigation systems

Course Objectives: Description, function and analysis of aircraft electronics systems, including the design and engineering processes.

Credit Hours: UG 3 **Class Meetings:** T, R 9:30-11:18, Rm. 201 Aviation Bldg

Prerequisites: Phys 132, CSE 202, AAE 201

Quarters Offered: SP (only)

Text(s): (Primary) --- Moss, I., and Selfridge, A., "Civil Avionics Systems," Am. Institute of Aeronautics and Astronautics, Reston, VA (2003) and Collinson, R.P.G., "Introduction to Avionics," Chapman Hall, New York (1996)

Elements of Course Grade: 15% Homework; 35% Midterm Exam; 50 % Final Exam (comprehensive).

Course Letter Grade Minima: A (94%), A-(91%), B+(88%), B (84%), B-(81%), C+(78%), C (74%), C-(71%), D+(68%), D (61%)

Notes:

1. A student absent from an exam is responsible for arranging a makeup before the exam is returned. No makeups are permitted after the return of an exam. A valid and acceptable written excuse explaining the absence from an exam is required.
2. Attendance in lecture will be helpful in acquiring the knowledge required for successful course completion.
3. Students are expected to be familiar with the Student Handbook provisions, including plagiarism and academic misconduct.
4. Students are expected to be aware of important dates published in the Master Schedule of Classes.
5. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.

COURSE SYLLABUS
Course Title: Introduction to Avionics

Course No.: AVN 520
Quarter: SP

<u>WK</u>	<u>DATE</u>	<u>Topics/Assignments</u>
01	3/29/07 3/31/07	Chapters 1 & 2 (pp. 1-32) Introduction and Overview of Avionics Technology.
02	4/5/07 4/7/07	Chapters 3 & Intro to 4 (pp. 33-80) System Development and Primary Power Generation & Distribution
03	4/12/07 4/14/07	Chapter 4 (cont.) and Chapter 5 (pp. 81-121) Secondary Power Generation & Distribution; and non-Radar Sensors
04	4/19/07 4/21/07	Chapters 5 & 6 (pp. 122-159) Radar Sensors, Communication, and Navigation Aids
05	4/26/07 4/28/07	Chapters 7 (pp. 161-212) Displays
06	5/3/07 5/5/07	MIDTERM (Tues.) covering lecture topics for weeks 1-7 Chapter 8 (pp. 215-249) Navigation
07	5/10/07 5/12/07	Chapter 9 (pp. 251-287) Flight Control Systems
08	5/17/07 5/19/07	Chapter 10 (pp. 289-328) Engine and Utility Systems
09	5/24/07 5/26/07	Chapter 11 (pp. 329-347) Systems Integration
10	6/02/07	Chapter 12 (pp. 349-373) Future Air Navigation Systems

Depending on student interest and Air Force scheduling constraints, a trip to the Avionics, Flight Dynamics, and Human Effectiveness Laboratories at Wright-Patterson Air Force Base may also be arranged (outside of normal class time); US citizens will be required to provide their social security number; and foreign nationals will have to provide appropriate credentials (Air Force documentation requirements will be discussed early in the quarter).

COURSE SYLLABUS

Course No. and Title: AVN 570, Influences on Aircraft Production

Responsible Faculty: Thomas M. York, Prof., Aviation Bldg. Rm 405; 292-3839

Office Hours: By Appointment

Course Description: Analyzes key economic, military, technical, and international influences that have affected airplane design and economic operation as well as describing how airplanes get built.

Course Objectives: Describe the process of deciding what kind of airplane should be manufactured and then managing the production and assembly process to deliver and support that product in airline operations.

Credit Hours: UG3 **Class Meetings:** T, R 9:30-10:48, Rm. 201 Aviation Bldg

Prerequisites Phys 132, CSE 202, AAE 201 **Quarters Offered:** AU (only)

Text(s): (Primary) --- Geng, Hywaiyu (2004), *Manufacturing Engineering Handbook*, McGraw-Hill, NY, Paul Clark (2001), *Buying the Big Jets: Fleet Planning for Airlines*, Ashgate, Burlington, VT. **Reference:** Donald M. Pattillo (1998), *Pushing The Envelope: The American Aircraft Industry*, University of Michigan Press, Ann Arbor.

Elements of Course Grade: 15% Homework; 35% Midterm Exam; 50 % Final Exam

Course Letter Grade Minima: A (94%), A-(91%), B+(88%), B (84%), B-(81%), C+(78%), C (74%), C-(71%), D+(68%), D (61%)

Notes:

1. A student absent from an exam is responsible for arranging a makeup before the exam is returned. No makeups are permitted after the return of an exam. A valid and acceptable written excuse explaining the absence from an exam is required.
2. Attendance in lecture will be helpful in acquiring the knowledge required for successful course completion.
3. Students are expected to be familiar with the Student Handbook provisions, including plagiarism and academic misconduct.
4. Students are expected to be aware of important dates published in the Master Schedule of Classes.
5. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.

COURSE SYLLABUS**Course Title:** Influences on Aircraft Production**Course No.:** AVN 570**Quarter:** AU 2007

<u>WK</u>	<u>DATE</u>	<u>Topics/Assignments</u>
01	9/22	GH: Chapters 1.1 & 1.2 Intro: What IS Manufacturing? Overview of Aircraft Assembly (Floor Layout, Fixtures, and Work Flow) DM: Pioneers & WW I Industry (pp. 5-38) Assignment: PC: Chapters 1&2: What Is Fleet Planning & Its Attributes (p. 1-42)
02	9/27/07 9/29/07	GH: Chapters 1.3 & 1.4 E-Manufacturing and Its Future PC: Market Evaluation (pp. 45 – 104) – Getting Requirements Right Assignment: DM: Building the Industry – Golden Era (pp. 39-86)
03	10/04/07 10/06/07	DM: '30s Struggle, '35-'40 Survey, & WW II Buildup (pp. 87-126) PC: The Airline & the Airplane Product (pp. 105-132) –the Cabin Assignment: GH: Chapters 2.1-2.3 Intro to Mfg. & Assy; Design for Assy; & QC
04	10/11/07 10/13/07	GH: Chapter 2.4 Choice of Materials and Processes DM: Industry in Wartime & Postwar Adjustment(s); '45-'54 Survey Assignment: PC: Aircraft Performance (pp. 135-193) – Design vs. Operation
05	10/18/07 10/20/07	DM: Cold War Industry & Transition & Aerospace Convergence PC: Airplane Economics: Cost Components (pp. 195-219) Assignment: GH: Chapter 2.5 Detailed Design for Manufacture
06	10/25/07 10/27/07	MIDTERM (Tues.) covering lecture topics for weeks 1-5 Guest Lecturer: Non-Technical Considerations – the Geo-political Implications of Make vs. Buy Decisions in Selecting Suppliers
07	11/01/07 11/03/07	GH: Chapters 3.1 & 3.2 Value Engineering and Its Management DM: Advncd., Technology Era (p. 261-284) Assignment: PC: Airplane Economics: Revenue Components & Measurement(s) (pp. 220-244) – fleet planning dynamics / drivers of operating costs
08	11/08/07 11/10/07	DM: An Industry Under Stress (pp. 285-316) PC: Investment Appraisal (pp. 245 – 257) Impact & Residual Value Assignment: GH: Chapters 3.3&3.4 Value Engrg. Methods & Org. of Mgmt.
09	11/15/07 11/17/07	GH: Chapter 4.1& 4.2 Intro to QFD Methods and Its Management PC: Investment Decision Making (pp. 256-266) Making Rt. Choices Assignment: The 80s and Beyond (pp. 317-343)
10	11/22/07	GH: Chapter 4.4 and 4.5 Design of Experiments and Analysis Issues Assignment: DM: Uncertainty After the Cold War (pp. 344-366) and PC: Fleet Planning – Art or Science? (pp. 267-269) Class discussion.

COURSE SYLLABUS

Course No. and Title: AVN 575, Development and Design of Aircraft Systems

Responsible Faculty: Thomas M. York, Prof.
Aviation Bldg. Rm 405; 292-3839

Office Hours: By Appointment

Course Description: Introduction to operations-based system design process and aircraft systems development evolution.

Course Objectives: Understanding and practice of aircraft development for the air transportation system including introduction of new technology, aircraft utilization, maintenance and lifetime issues, and integration of complex subsystems. The student will understand the integration of various demands to produce a fit-for purpose aircraft product.

Credit Hours: UG5 **Class Meetings:** T-R 2:30-5:20, Rm. 201 Aviation Bldg

Prerequisites: AVN 520, 570 **Quarters Offered:** WI (only)

Text(s): (Primary) --- Moir, I., and Seabridge, A., "Design and Development of Aircraft Systems: An Introduction," Am. Institute of Aeronautics and Astronautics, Reston, VA (2004) and Jenkinson, L.R., Simpkin, P., Rhodes, D., "Civil Jet Aircraft Design," Am. Institute of Aeronautics and Astronautics, Reston, VA (1999)

Elements of Course Grade: 30% Midterm Report of Design Drivers; 20% Oral Presentation of Final Report; 50 % Final Report of Group Project.

Course Letter Grade Minima: A (94%), A-(91%), B+(88%), B (84%), B-(81%), C+(78%), C (74%), C-(71%), D+(68%), D (61%)

Notes:

1. Students are expected to be familiar with the Student Handbook provisions, including plagiarism and academic misconduct.
2. Students are expected to be aware of important dates published in the Master Schedule.
3. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.

COURSE SYLLABUS**Course Title: Development and Design of Aircraft Systems****Course No.: AVN 575****Quarter: WI 2007**

<u>WK</u>	<u>DATE</u>	<u>Lecture</u>	<u>Project Activity</u>
01	1/4/07	Systems concepts & AC systems definition Moir & Seabridge (M&S) Ch.2	Project definition & group org.
02	1/9/07	Phases of concept, Development & design (M&S), Ch.3	Individual project assign. In group
03	1/16/07	Design drivers (M&S), Ch. 4; Jenkinson, L.R., Simpkin, P., Rhodes, D. (JS&R) Ch. 3	Overall config. & systems
04	1/23/07	System architecture (M&S), Ch. 5	Midterm Rept. Goals & format
05	1/30/07	System integration (JS&A), Ch. 5; (M&S) Ch. 6 MID-TERM REPORT DUE	Cabin layout
06	2/6/07	Organization structure, communications, project rev. (M&S), Ch. 8, (JS&A) Ch. 15	Intro to spread- sheets
07	2/13/07	Project system integration (M&S), Ch.6	Cost estimates
08	2/20/07	Marketing & airline product forces	Define overall project impact
09	2/27/07	Project report requirements (no reading assignment)	Prelim. review & revisions
10	3/6/07	Final Project Reports	Oral presentations

COURSE SYLLABUS

Course No. and Title: AVN 590, Air Transport Practices and Design

Responsible Faculty: Prof. Nawal K. Taneja, Room 401, Aviation Building

Office Hours: By Appointment (292-2405 or 292-8980)

Course Description: This course will address and analyze the principal issues in structuring the air transport markets, devising the cost and revenue equation of air transport operations and performing analyses for network and fleet planning processes. The course will also examine financial issues related to the aviation infrastructure—airports and Air Traffic Management (ATM) systems.

Course Objectives: The course is designed to provide students with an opportunity to understand the: (a) importance and scope of the air transportation industry; (b) economic forces shaping the air transport industry and measures that can be taken in response to those forces; (c) the nature of products air transport companies provide, their characteristics, forms, and methods of delivery.

Credit Hours: U 5 **Class Meeting:** M-W, Aviation Building Room 201

Prereq: AVN 300, 550 **Quarters Offered:** WI

Texts: McGraw-Hill Series Handbooks of Airline Finance (1999), Operations (2000), and Economics (2002).

Evaluation Criteria: Two In-Class Exams and a Final (25%, 25%, 50%)

Course Letter Grade Minima: A (94%), A-(91%), B+(88%), B (84%),
B-(81%), C+(78%), C (74%), C-(71%),

Notes: D+(68%), D (61%)

1. A student absent from an exam is responsible for arranging a makeup before the exam is returned. No makeups are permitted after the return of an exam. A valid and acceptable written excuse explaining the student's absence from an exam is required.
2. Attendance in lecture will be helpful in acquiring the knowledge required for successful course completion.
3. Students are expected to be familiar with the Student Handbook provisions, including plagiarism and academic misconduct.
4. Students are expected to be aware of important dates published in the Master Schedule.
5. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.

COURSE SYLLABUS
Course Title: Air Transport Practices and Design

Course No.: AVN 590
Quarter: WI 2007

<u>WK</u>	<u>DATE</u>	<u>Topics/Reading Assignments)</u>
01	1/3/07	1. Economic Impact of Civil Aviation on the US Economy 2. Managing Growth and Profitability Across Business Cycles
02	1/8 & 10	1. Understanding the Impact of the ATM system on Airline Economics 2. Airport Organizational Structures, Funding, and Economics 3. Airports and Airlines: Analysis of a Symbiotic, Love-Hate Relationship
03	1/15 & 17	1. Metrics for Measuring Network Economics and Profitability 2. Outsourcing in the Airline Industry: economic and Financial Fundamentals
04	1/22 & 24	1. Dynamic Fleet Management 2. Developing Effective Route Networks
05	1/29 & 31	1. Regional jets and Turboprops: The Next generation 2. Economics of Alliances and Feeder Services First In-Class Exam
06	2/6 & 8	1. The Development of the Airline Operations Control Center 2. The Airline Operations Center Dilemma: Solving “Day-of-Operation” Disruptions with Greater Economic Efficiency
07	2/13 & 15	1. Flight Crew Scheduling 2. Fundamentals of Airport Operations Staffing and Quality Assurance Measurement
08	2/20 & 22	1. Aircraft Maintenance and Engineering Operations 2. Streamlining Aviation Maintenance Practices
09	2/27 & 3/1	1. Airline safety: The Effective Management of Risk 2. Economics of Aviation Security
10	3/6 & 8	Course Summary Second In-Class Exam

Department of Aviation
The Ohio State University

Course No.: AVN 591
Quarter: WI 2007

COURSE SYLLABUS

Course No. and Title: AVN 591, Flight Network Analysis and Optimization

Responsible Faculty: Chul Lee, Asst. Prof. , Room 401, Aviation Building
E-mail: lee.955@osu.edu

Office Hours: By Appointment (292-2405 or 292-4556)

Course Description: This course provides a comprehensive introduction to the functional activities involved in planning and operating an airline and their integration with corporate strategies and policies. The complete airline planning process is explored, beginning with longer-term strategic decisions about fleet planning and route development, followed by medium-term schedule planning, fleet assignment, maintenance and operational considerations. The course will also examine a variety of network optimization models adopted by air transportation entities around the world

Course Objectives: The course is designed to provide students with an opportunity to:

- Develop comprehension of the scientific method, including research methods, sources of information, the processes of collecting and analyzing data, techniques used for preparing and presenting reports
- Acquire problem exploration and research skills and knowledge applied to identifying and solving problems, drawing conclusions, and making recommendations

Credit Hours: 3 **Class Meeting:** M-W, Aviation Building Room 201

Prereq: AVN 300, 550 **Quarters Offered:** WI

Texts: McGraw-Hill Series Handbooks of Airline Finance (1999), Operations (2000), and Economics (2002).

Evaluation Criteria: Midterm Examination	35%
Final Examination	35%
Analytical Case Study & Presentation	27%
Unannounced quizzes	3%

Course Letter Grade Minima: A (94%), A-(91%), B+(88%), B (84%),
B-(81%), C+(78%), C (74%), C-(71%),
D+(68%), D (61%)

An Analytical Case Study of no more than 10 pages must be submitted during the last week of the quarter. See separate instructions on format and content. PowerPoint presentation is also expected.

COURSE SYLLABUS
Course Title: Flight Network Analysis and Optimization

Course No.: AVN 590
Quarter: WI 2007

Notes:

1. A student absent from an exam is responsible for arranging a makeup before the exam is returned. No makeups are permitted after the return of an exam. A valid and acceptable written excuse explaining the student's absence from an exam is required.
2. Attendance in lecture will be helpful in acquiring the knowledge required for successful course completion.
3. Students are expected to be familiar with the Student Handbook provisions, including plagiarism and academic misconduct.
4. Students are expected to be aware of important dates published in the Master Schedule of Classes.
5. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.

<u>WK</u>	<u>DATE</u>	<u>Topics/Reading Assignments)</u>
01	1/3/07	Class introduction & Course organization Review of Air Transportation Analysis – Demand vs. Supply & Revenue vs. Costs
02	1/8 & 10	Introduction to Data Sources in Air Transportation
03	1/15 & 17	Introduction to Methods and Procedures for the Research Project in Air Transportation
04	1/22 & 24	Introduction to Data Analysis using Microsoft Office Applications
05	1/29 & 31	Midterm Examination and Review of Analytical Case Study
06	2/6 & 8	Introduction to Data Analysis Application in Air Transportation
07	2/13 & 15	Demand Forecasting Techniques in Air Transportation Systems
08	2/20 & 22	Modeling and Analysis of Air Transportation Network and Fleet Planning
09	2/27 & 3/1	Advanced Research Methods in Air Transportation
10	3/6 & 8	Review of Class Materials and Analytical Case Study Presentation

Study should use one of the data sources (discussed in the class) to analyze the historical trend, forecast or examine current conditions. Use Excel or db software, such as Access.

COURSE SYLLABUS

Course No. and Title: AVN 597, Air Transportation Systems Design

Responsible Faculty: Thomas M. York, Prof.
Aviation Bldg. Rm 405; 292-3839

Office Hours: By Appointment

Course Description: Design focused on aircraft utilization in the civil aviation system

Course Objectives: Development of understanding of the various system elements of commercial aircraft vehicles and their integration. The design approach is to meet the demands of the commercial user. Emphasis is on the aircraft utility in the whole air transportation system

Credit Hours: UG5 **Class Meetings:** T, R 2:30-5:20, Rm. 201 Aviation Bldg

Prerequisites: AVN 575 **Quarters Offered:** SP (only)

Text(s): (Primary) --- Jenkinson, L.R., Simpkin, P., Rhodes, D., "Civil Jet Aircraft Design," American Institute of Aeronautics and Astronautics (AIAA), Reston, VA (1999) and Raymer, D. P., "Aircraft Design: A Conceptual Approach," 2nd Ed., AIAA, Reston, VA (1992)

Elements of Course Grade: 30% Midterm Report of Design Drivers; 20% Oral Presentation of Final Report 50 % Final Report of Group Project.

Course Letter Grade Minima: A (94%), A-(91%), B+(88%), B (84%), B-(81%),
C+(78%), C (74%), C-(71%), D+(68%), D (61%)

Notes:

1. Students are expected to be familiar with the Student Handbook provisions, including plagiarism and academic misconduct.
2. Students are expected to be aware of important dates published in the Master Schedule.
3. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.

COURSE SYLLABUS
Course Title: Air Transportation Systems Design

Course No.: AVN 597
Quarter: SP 2007

<u>WK</u>	<u>DATE</u>	<u>Lecture</u>	<u>Project Activity</u>
01	3/29/07	Aircraft systems design example Moir & Seabridge (M&S) Ch.10	Project definition & group org.
02	4/5/07	Market considerations; aircraft cost estimations (JS&R), Ch. 12	Individual project assign. In group
03	4/12/07	Aircraft performance calculations (JS&R) Ch. 10	Overall config. & system design
04	4/19/07	Aircraft powerplants (M&S), Ch. 9	Midterm Rept. Goals & format
05	4/26/07	Overall system configuration (JS&R) Ch. 3	MID-TERM REPORT DUE
06	5/3/07	Advanced Regional Jet Example (JS&R) Ch. 16	
07	5/10/07	Economic analysis (M&S), Ch.10	Cost estimates
08	5/17/07	Aircraft utilization in air transport system Maintenance and lifetime considerations	Operations issues
09	5/24/07	Aircraft configuration modification issues	
10	5/31/07	Project oral presentations	

COURSE SYLLABUS
Course Title: Modeling and Simulation

Course No.: AVN 610
Winter Quarter 2007

<u>WK</u>	<u>DATE</u>	<u>Topics/Assignments</u>
01	1/6&1/8	L&K Chapter 1: 1.1-1.4 (pp. 1-74) Basic Discrete Simulation of Single Server Queue and Colgren pp (TBD)*
02	1/13&15	L&K Chapters 1: 1.5-1.9 and 2.1-2.2 (pp. 75-140) Other Forms of Simulation and an Intro to Complex System Modeling and Colgren
03	1/20&22	L&K Chapter 2: 2.3-2.8 (pp. 141-233) Modeling Complex Systems and Colgren pp. (TBD)
04	1/27&29	NOTE: Monday is a Holiday – Martin Luther King L&K Chapters 3 & 4 (pp. 234-297) Simulation Software and Review of Basic Probability and Statistics and Colgren pp (TBD)
05	2/3&5	L&K Chapter 5 and 6: 6.1-6.5 (pp. 298-371) Building Valid and Credible Simulation Models and Estimating Input Probability Distributions and Colgren pp (TBD)
06	2/10 2/12	MIDTERM (Wed.) covering lecture topics for weeks 1-5 L&K Chapter 6: 6.5-6.11 and Chapter 7 (pp. 372-448) Input Parameter Estimation and Random Number Generation and Colgren pp (TBD)
07	2/17&19	L&K Chapter 8 (pp. 462-581) Generating Random Variates and Colgren pp (TBD)
08	2/24&26	L&K Chapter 9&10 (pp. 522-611) Output Data Analysis and Comparison of Alternate System Designs / Configurations and Colgren pp (TBD)
09	3/3&5	L&K Chapters 11 & 12 (pp. 612-696) Variance-Reduction Techniques and Experimental Design for Optimization and Colgren pp (TBD)
10	3/10 &12	L&K Chapter 13 (pp. 696-736) Aviation System Simulation Examples and Colgren pp (TBD)

*** Colgren's textbook was due out Aug '06 and is now scheduled for Jan '07; therefore the reading assignments from L&K are what is specified for now.**

WRITTEN PROJECT PAPERS DUE WEDNESDAY 3/12

The requirements for the Project Paper you are to write are described in the handout you will receive on the first day of class. If there are any questions about the assignment, be sure to ask them early. The homework assignments are designed to lead you toward your goal. Be sure that you define a topic of interest early so the homework will indeed not be wasted effort. The proposed title and a brief description of your project paper needs to be turned in not later than the second week of class. Recommendations will be made when this material is returned to you. Be specific in your focus.

COURSE SYLLABUS

Course No. & Title: Aviation 674, Airport Systems Planning, Design & Development

Responsible Faculty: Lecturer Doug Hammon, Airport Director
OSU Airport Administration Building, 292-5460, dhammon@osuairport.org

Office Hours: By appointment

Course Description: A comprehensive study of airport planning, design & development, the role of the airport and its components as part of the overall Air Transportation System, and the issues related to the planning, design, and development of the airport and its systems.

Course Objectives:

- To provide an understanding of the process for planning the various airport systems, including site studies, master plans, and environmental studies;
- To provide an understanding of the criteria used in designing airport systems, and to introduce the airport design process;
- To provide an understanding of the managerial, operational, financial, technical, environmental, and political issues related to airport planning & development; and
- To provide the practical knowledge necessary to enter the airport planning & design field.

Credit Hours: UG3

Class Meeting: Friday, 9:00 – 12:00

Prereqs: AVN 552 (recommended) **Quarter(s) Offered:** AU

Course Material: Book: Horonjeff, Robert & Francis X. McKelvey, Planning & Design of Airports, 4th edition, McGraw-Hill Professional, 1993.

Other references: AC 150/5300-13, FAR Pt. 77, FAA Airport Design computer program, etc
Outline available at www.aviation.ohio-state.edu/courses/online/av580

Elements of Course Grade: Final Exam (40%), Project (50%), Assignments (10%)

Notes:

1. A student absent from an exam is responsible for arranging a makeup. A valid and acceptable written excuse explaining absence from an exam is required.
2. Attendance in lecture will be helpful in acquiring the knowledge required for successful course completion.
3. Students are expected to be familiar with Student Handbook provisions, including plagiarism and academic misconduct: <http://oaa.ohio-state.edu/coam/code.html>
4. Students with physical or learning disabilities requiring alternative accommodations for completing course requirements (e.g. tests) should make appropriate arrangements by contacting Disability Services (150 Pomerene Hall, 2-3307) AND THE INSTRUCTOR at the BEGINNING of the Quarter.
5. Students are expected to be aware of important dates published in the Master Schedule of Classes and in the Course Handout: read it carefully!

Course Syllabus
Course Name: Airport Planning, Design & Development

Course No.: Aviation 674
Quarter: AU07

<u>Week</u>	<u>Date</u>	<u>Subject</u>
1	9/23	Course Introduction; Introduction to Airports
2	9/30/07	Airport Plans & Studies Class visitor – Airport Planner
3	10/07/07	Airfield Systems (Runways, Taxiways, Safety Areas) Site Visit – OSU Airport Airfield; Class visitor – Airport Engineer
4	10/14/07	Mechanical Systems (Lighting, Signage, Communications, NAVAIDS) Site Visit – OSU Airport Airfield; Class visitor – Electrical Contractor
5	10/21/07	Airport Services Support Systems (Terminals, Ramps, Hangars, Tie-downs, Fuel Facilities) Site Visit – OSU Airport Terminal Area; Class visitor – Airport Architect
6	10/28/08	Air Navigation System (ATC, Uncontrolled Airports); Weather Reporting Systems Site Visit – OSU Airport ATCT
7	11/04/07	Airport Access/Ground Vehicle Support Systems; Airport Security Systems Class visitor – Transportation Security Administration
8	11/08/07	Airport Area Development (Airport Zoning, FAR Pt. 77) Class visitor – Planner, City of Columbus/Mid-Ohio Region Planning Commission
9	11/18/07	Airport Layout Plan; Airport Capital Funding; Construction
10	11/23/07	Final exam, Projects Due

NOTE: Friday 11/11/07 is a National Holiday and Friday 11/25/07 is the day after Thanksgiving. So, for this academic year, these two Friday classes will have to be held on the preceding Wednesday, on the dates shown.

Attachment 5: Air Transportation Systems Innovation Concept Paper

(see following page)

Air Transportation Systems Innovation Concept Paper

Submitted by Bruce J. Holmes
NASA Langley

(Editor's Note: This Concept Paper was offered in response to UAA member requests to the submitter for a definition of "air transportation systems.")

Definition: For purposes of this concept paper, Air Transportation Systems include the vehicles, airspace architectures and procedures, landing facilities, communication-navigation-surveillance systems, operations, pilots, training, and all related components that enable air mobility for people, goods, and services. Air transportation system innovation includes and accounts for both innovations within air transportation and between the air transportation and other systems with which air transportation must interface. These other systems include landside transportation systems, environmental systems, energy (fuel) systems, and supply chain systems (research, design, regulation, manufacturing, maintenance, and others).

Innovation in Air Transportation Systems requires a new network of collaborators in several aviation disciplines and at the system-of-systems level. The endeavor includes innovating in vehicle concepts, airspace architectures, and enabling technologies for safe, secure, and environmentally compliant operational capabilities for 21st century mobility. A fundamental tenant of innovation in air transportation is to produce scalability in air mobility. That is, as more mobility is enabled, the system performance expands to accept the growth, without slowing down. The air transportation system that would be capable of such scalable growth would require a common mental model, or topology, that linked together the layers in the system in ways that promote the least friction and waste between the elements of the topology.

Air transportation system innovation requires organizational capabilities to incubate the relationships, traditional and non-traditional, formal and informal, between the public and private sector organizations to develop and implement "system of systems" approaches to innovation in air transportation. An air transportation system innovation organization would link strategically with national interests in air transportation system innovation in NASA, the FAA, the Next Generation Air Transportation System (NGATS) Joint Planning and Development Office (JPDO), as well as with academe and DOD.

The synergies between advancements in vehicles, airspace, and aviation safety frame a notional future state that could serve as context for system innovation. The synergies are based on the new abilities of aircraft concepts to sense, control, communicate, and navigate with increasing levels of vehicle autonomy. These new vehicle capabilities, in turn, allow for new concepts in airspace architectures and procedures that become possible based on the new aircraft capabilities. The new airspace capabilities, in turn, allow for new concepts in air vehicles and their operational capabilities. A Future State can be envisioned as an architecture of vehicles, airspace, and safety and security capabilities capable

of demand on adaptive behavior in response to future requirements. The architecture is envisioned to encompass on-demand as well as scheduled, distributed as well as centralized, and point-to-point as well as hub-and-spoke transportation service operations in all classes of vehicles: Subsonic, Supersonic, Personal, Runway independent, and Un-crewed.

While many of the tools, methods and concepts for transportation system innovation will find application in the current air transportation system infrastructure, the innovation focus is on alternative markets and system concepts. Such innovations would serve the markets that would be diverted from traditional transportation systems, as well as markets that would be induced through transport capabilities not present in current systems on the ground or in the air.

The principle design requirements for this program include the following:

- Pursuing breakthrough concepts in air transportation system innovation for public mobility, cargo, package, and aviation public service functions, based on the synergies between advancements in vehicles, airspace and safety
- Addressing all sectors of air vehicles: Subsonic, Supersonic, Personal, Runway independent, and Un-crewed
- Development of methods and tools for research in scalable architectures for air transportation system network topologies, at all layers of the topologies (Mobility layer; NAS layer; Transport (vehicle) layer; Operations layer; and Capacity layer)
- Translation and applications of modern network theory (scale-free topologies) for design of distributed as well as centralized systems
- Development of network-based approaches to the understanding of air transportation system robustness, vulnerabilities, and healing in response to disruptions
- Airspace, vehicle, airport infrastructure and architecture technologies, including autonomy technologies for demand-adaptive (scalable) airspace systems and automation technologies for vehicles and vehicle systems
- Transportation system engineering, including economics, safety, environment, and system performance
- Large scale simulation and modeling of infrastructure topologies and airspace architectures
- Multi-modal concepts for vehicles and system architectures
- Transportation public policies, public administration, and legal issues affecting technology uptake in the market, through networked value webs
- Partnership/collaboration with Federal, state, NGO, and industry organizations.

Attachment 6
Abbreviated Faculty Curricula Vita

Aviation Department Faculty

Nawal Taneja, Professor
PhD Aeronautical Engineering, 1971, London University (England)
MBA, 1969, Massachusetts Institute of Technology
MS Aeronautical & Astronautical Engineering, 1967, MIT
BS Aeronautical Engineering, 1966, London University (England)
Graduate Faculty status: P

Stacy Weislogel, Professor
J.D. 1978, Capital University
MS Industrial Administration, 1963, Purdue University
BS Aeronautical & Astronautical Engineering, 1962, Ohio State University

Thomas M. York, Professor
PhD Aerospace Sciences, 1969, Princeton University
MS Aerospace Sciences, 1967, Princeton University
MS Aerospace Engineering, 1961, Pennsylvania State University
BS Aerospace Engineering, 1960, Pennsylvania State University
Graduate Faculty status: P

Gerald Gregorek, Professor (Aeronautical and Astronautical Engineering)
PhD Aeronautical & Astronautical Engineering, 1967, Ohio State University
MS Aeronautical & Astronautical Engineering, 1959, Ohio State University
BS Aeronautical & Astronautical Engineering, 1958, Ohio State University
Graduate Faculty status: P

Gerald P. Chubb, Associate Professor
PhD Industrial & Systems Engineering, 1981, Ohio State University
MA Experimental Psychology, 1963, Ohio State University
BS Experimental Psychology, 1962, Ohio State University
Graduate Faculty Status : M

Chul Lee, Assistant Professor
PhD Air Transportation Systems (One-of-a-Kind Program), 1999, Ohio State Univ.
MBA Aviation, 1995, Embry-Riddle Aeronautical University
BS Aerospace Engineering, 1992, Iowa State Univ.
Graduate Faculty Status: M

Robyn Litvay, Lecturer
MS Materials Science and Engineering, 1998, Oregon State University
BS Aeronautical Technology, 1987, Arizona State University

James Oppermann, Lecturer
MS Human Resources Org. Development, 1990, University of San Francisco
BA, 1971, St. Mary's College of California

Doug Hammon, Clinical Faculty
MS Civil Engineering, 1992, Ohio State University
MCRP (City & Regional Planning), 1992, Ohio State University
BS Aviation, 1989, Ohio State University

Charles Patterson, Academic Advisor
EdD, Higher & Adult Education, 1988, University of Missouri-Columbia
MEd Guidance & Counseling, 1978, Bowling Green State University
BS Special Education, 1975, Bowling Green State University

Attachment 7

Complete Faculty Curricula Vitae

CURRICULUM VITAE

Gerald P. Chubb

EDUCATION

Academic

- 1964-1981 PhD, Industrial and Systems Engineering, The Ohio State University, Columbus, OH. Dissertation Title: A Comparison of Anxiety and Frustration Impacts on Performance in Manned Systems.
- 1962-1963 Master of Arts, Experimental Psychology, The Ohio State University, Columbus, OH. Thesis Title: Driver's Ability to Control the Velocity of an Automobile as a Function of Initial Velocity and Extent of Change.
- 1959-1962 Bachelors of Science, Experimental Psychology, The Ohio State University, Columbus, OH.

Professional

- 1980 Executive Development Program, Office of Personnel Management, Kings Point, Long Island
- 1974 Medical Physiology Short Course, University of Michigan, Ann Arbor, MI.

TEACHING APPOINTMENTS

Academic

- 1996-Present Associate Professor, Department of Aerospace Engineering and Aviation / Dept. of Aviation, The Ohio State University, Columbus, OH.
- 1999-2000 Interim Director of Flight Education
- 1997-1998 Business Manager, FAA's Airworthiness Assurance Center of Excellence
- 1990-1996 Assistant Professor, The Ohio State University, Department of Aviation / Department of Aviation and Aerospace Engineering, Columbus, OH.
- 1986-1989 Lecturer, Department of Bioengineering and Human Factors, College of Engineering, Wright State University, Fairborn, OH.
- 1981-1986 Lecturer, Department of Psychology, Wright State University, Fairborn, OH.
- 1978-1981 Lecturer, Department of Psychology, Wittenburg University, Springfield, OH.
- 1974-1978 Lecturer, Department of Business Management, University of Dayton, Dayton, OH.
- 1970-1974 Lecturer, Department of Psychology, University of Dayton, Dayton, OH.
- 1968-1970 Lecturer, Department of Information Science, University of Dayton, Dayton, OH.

Professional

1984 Coogan, Charles O., and Gerald P. Chubb. "Logistics/Human Factors Front-End Analysis Workshop." Systems Explorations, Inc. (San Diego, CA) and ALPHATECH, Inc. (Burlington, MA). 14-15 May 1984.

RESEARCH ACTIVITY

Ohio State University

2005-2008 IMPRINT Enhancements to Model the Impact of Training, Intergovernmental Personnel Agreement, Warfighter Readiness Research and Development Division, Human Effectiveness Directorate, Air Force Research Laboratory, US Air Force (AFRL/HEAT, Mesa Research Site, AZ).

2002-2004 Information Requirements Study of the Decision Making / Problem Solving Processes in Support of Safety Oversight of FAR Part 121 Carriers, Federal Aviation Administration (FAA), William J. Hughes Technical Center, Atlantic City, NJ.

2001-2002 Comparison of GPS Approach and landing with Bendix-King 89B versus SmartDeck Avionics Display

2000-2001 Economic Impact of Small Aviation Transportation System (SATS) in Ohio, NASA Glenn Research Center, OH. (in conjunction with faculty in the Dept. of Agricultural, Developmental, and Environmental Economics)

1999-2000 Scoring Pilot Performance, AFRL/HEAT, MRS, AZ.

1997-1998 Business Manager, Airworthiness Assurance Center of Excellence, FAA, William J. Hughes Technical Center, Atlantic City, NJ.

1995-1996 Systems Engineer, Flight Training Curriculum Work Package, Advanced General Aviation Transportation Experiments, NASA Langley research Center, Hampton, VA.

1994-1995 User-Centered, Object-Oriented Expertise Approach to Advanced Air Combat Display Design, AFRL/HEC, Wright-Patterson AFB, OH.

1993-1994 Intelligent Tutoring Systems for Flight Education, NASA Langley Research Center, Hampton, VA.

1992-1993 Human Factors Research Support, HQ-FAA, Aeromedical Division, Washington, DC.

1991-1992 Sequential Network Modeling, Office of Military Performance Assessment, Walter Reed Medical Center, US Army.

1990-1991 Synthetic Task Development, Sustained Performance Branch, Human Effectiveness Directorate, Brooks AFB, TX.

Research in Industry

1989-1990 Design Specification of a Jury Selection System Using Voter Registration Records, Triad Systems, Xenia, OH.

1986-1989 Workload Assessment, McDonnell-Douglas

1983-1986 Development of C-SAINT for Boeing under the Cockpit Automation Technology Program (CAT)

- 1984-1986 Development of Queuing Models for Workload Assessment under contract to Northrop
- 1982-1984 Modeling of Soviet Command and Control System for the National Aviation Intelligence Center (NAIC) and Human Factors Research Support to the Human Engineering Division, WPAFB.
- 1967-1967 C-141 Field Test of Presentation of Information for Maintenance and Operation

Government Research

- 1961-1963 Highway Research and Empirical Studies of Driving Behavior
- 1963-1965 Maintenance Maintainability Research on Troubleshooting Decision Trees
- 1965-1966 2D vs. 3D Displays for Remote Manipulation Tasks for Repair of Nuclear Powered Aircraft
- 1968-1969 Development of Human Engineering Systems Simulation Lab
- 1970-1971 Vulnerability / Survivability: Human Performance Modeling of F-106 & B-52 in Nuclear Attack Environments
- 1972-1975 Development of Systems Analysis of Integrated Networks of Tasks (SAINT), for Monte Carlo simulations of crew activities
- 1975-1980 Strategic Avionics Crewstation Design Evaluation Facility, studies of Emergency War Order Missions using Electronic Warfare Officers and Navigators / Radar Navigators (supporting Project Rivet Ace and the Offensive Avionics System (OAS) updates to the B-52 G/H)
- 1981-1982 Staff Analyst for Toxic Hazards and Biodynamics Divisions, and Biotechnology Representative to the F-22 Raptor System Program Office

Papers / Research Presentations

Chubb, Gerald P. (2005), “A Comparison of SAINT with IMPRINT and Micro Saint Sharp” 13th Biennial International Aviation Psychology Symposium, FAA CAMI, Oklahoma City, 18-21 April, pp. 98-102.

Chubb, Gerald P. (2005) “Predator Simulations: A Review,” Documentation of IPA Summer Activities for AFRL/HEA, Sept. 15, 2005.

Chubb, Gerald P. and Chang Liu (2003), “Comparisons Among Three PFD Display Formats with Synthetic Terrain, Background,” in Proceedings of the 12th Biennial International Symposium on Aviation Psychology, Dayton, OH, 14-17 April 2003.

Chubb, Gerald P., Robert J. B. Hutton, David A. Malek, and Erica L. Rall (2003), Information Requirements Study of the Decision Making / Problem Solving Processes in Support of Safety Oversight of FAR Part 121 Carriers, Interim Report, FAA William J. Hughes Technical Center (WJHTC), Risk Analysis Section, 31 March.

Chubb, Gerald P. and Chang Liu (2002), General Aviation Training: Integration of Advanced Cockpit Displays, Final Report, Embry Riddle Aeronautical University, (FAA CAMI Contract DTFA 02-01-C-09254), 7 June 2002

Chubb, Gerald P. (2002), "Errors Associated with an Unusual Clearance", in Mary Ann Turney (editor) Proceedings of the Aviation Communication Conference, ASU and ERAU/Prescott, Mesa AZ, March, pp. 34-44.

Chubb, Gerald P., Vogel, Joseph L., and Harding, Alan (1999), Scoring Pilot Performance in Basic Flight Maneuvers, AFRL Technical Report, Warfighter Training Division, Human Effectiveness Directorate, Air Force Research Laboratory, March.

Shurtleff, William W. and Chubb, Gerald P. (1998), Airworthiness Assurance Center of Excellence, Volume 2. Technical Report, FAA William J. Hughes Technical Center, Atlantic City International Airport, NJ, 12 September.

Chubb, Gerald P. and Philip M. Macy (1997), "Microsoft Flight Simulator Suitability for Cross Country Exercises for Private Pilot Training," AIAA Conference on Modeling and Simulation Technologies, New Orleans, LA, 11-13 August.

Hunter, Ross M. and Gerald P. Chubb (1997), "Microsoft Flight Simulator as a Data Capture Tool for an Intelligent Tutoring System in Private Pilot Training," AIAA Conference on Modeling and Simulation Technologies, New Orleans, LA, 11-13 August.

Chubb, Gerald P. (1996), "Cockpit Layout and Display Design," invited presentation at Experimental Aviation Association, Oshkosh, WI, August 6.

Chubb, Gerald, Ross M. Hunter, and Michael G. Motsis, Intelligent Tutoring Systems for AGATE Training, Final Report, Contract NAS1-20517, SYSTRAN Corp., Dayton, OH, 21 June.

Chubb, Gerald P. Chubb (1994), Airway Science Simulation Laboratory, Final Report, FAOS 91-16, Federal Aviation Administration, Washington, DC.

Chubb, Gerald P., "Integrated Combat Training," Final Report, Section 27, Summer Faculty Research Program, Air Force Office of Scientific Research, Bolling Air Force Base, MD.

Chubb, Gerald P., "Reliability and Validity of Task Analysis Using Miller's Terminology," in R. S. Jensen (editor), Proceedings of the Seventh International Symposium on Aviation Psychology, OSU Department of Aviation, Columbus, OH, 1993.

Brown, Tammy R. and Chubb, Gerald P., "PATHFINDER Analysis of Miller's Task Terminology," in R. S. Jensen (editor), Proceedings of the Seventh International Symposium on Aviation Psychology, OSU Department of Aviation, Columbus, OH, 1993.

Chubb, Gerald P., Sequential Network Modeling (SNM) for Performance Risk Assessment (PRA), Technical Report, Battelle Memorial Institute, Research Triangle Park, NC, September, 1992.

Chubb, Gerald P., "Proposed Methodology for Synthetic Task Construction," Final Report, Summer Faculty Research Program, Air Force Office of Scientific Research, Bolling AFB, MD, 31 August, 1991.

Chubb, Gerald P., "Some Systems Analysis Techniques," System Development Technical Group Newsletter, Human Factors Society, Santa Monica, CA., May, 1991, 1-9.

Chubb, Gerald P., "ADAM: A General Approach for Progressive and Evolutionary Implementation of Human Operator and System Models," Proceedings of the American Nuclear Society Topical Meeting on Advances in Human Factors Research on Man-Computer Interactions: Nuclear and Beyond, Nashville, TN, 10-14 June, 1990, pp. 83-89.

Chubb, Gerald P., "SAINT Performance Assessment Model of a SAM System," in Stephen A. Murtaugh and Sally VanNostrand, editors, Proceedings of MORIMOC II: MORS Symposium on Human Behavior and Performance as Essential Ingredients in Realistic Combat Modeling, Center for Naval Analyses, Alexandria, VA. 22-24 February 1989, Volume I, pp. 199-219.

Chubb, Gerald P. and Walter D. Seward. "Systems Engineering Support for AI or Humane Intelligence Applications." Proceedings of the NATO Workshop on the Electronic Crewmember." Ingolstadt, FRG. 19-22 September 1988.

Seward, Walter D. and Gerald P. Chubb. "Validating On-Line Models of Activity Patterns: Getting Machines to Meet Operator Needs for Support." Proceedings of the NATO Workshop on the Electronic Crewmember. Ingolstadt, FRG. 19-22 September 1988.

Hoyland, Constance M., Debbie Ganote, and Gerald P. Chubb. "C-SAINT: A Simulation Tool Customized for Workload and Information Flow Analysis." Proceedings of the IEEE National Aerospace and Electronics Conference (NAECON). Dayton, OH. 21-25 May 1988. pp. 823-830.

Chubb, Gerald P., Noreen Stodolski, Warren D. Fleming, and John A. Hassoun. "STALL: A Simple Model for Workload Analysis in Early System Development." Proceedings, 31st Annual Human Factors Society Meeting. Vol. I. New York. October 1987. pp. 363-367.

Chubb, Gerald P. "Tutorial on Analytic Man-Machine System Models." Proceedings, Fourth Mid-Central Ergonomics, Human Factors Conference. Aviation Research Laboratory, University of Illinois. July 1987. pp. 53-58.

Chubb, Gerald P., William M. Cooper, Glenn M. Kersnick, Raymond J. Rubey. "Human Cognitive Modeling Using an MTOS Analog." Proceedings of the Fourth International Symposium on Aviation Psychology. The Ohio State University, Columbus, Ohio. April 1987. pp. 121-127.

Chubb, Gerald P., Noreen S. Wilcox, Richard A. Miller, and Jin W. Park. "STALL: Defining a Load Saturation Point for Supervisory Control." Proceedings, 22nd Annual Conference on Manual Control. Wright-Patterson Air Force Base, Ohio. 1987. pp. 107-114.

Christensen, Julien M. and Gerald P. Chubb. "Human Factors Improvement for Product Safety." Proceedings of the National Aerospace and Electronics Conference (NAECON). Dayton, OH. May. 1986, pp. 869-876.

Chubb, Gerald P. "Human Factors in Systems Engineering: New Analysis Requirements." International Topical Meeting on Advances in Human Factors in Nuclear Power Systems. Knoxville, TN. 20-23 April 1986.

Chubb, Gerald P., and Richard A. Miller. "Identifying Factors to Include in Modeling Human Behavior." Proceedings of the 1985 IEEE International Conference on Systems, Man, and Cybernetics. Tuscon, AZ. TP-207. SofTech, Inc., Fairborn, OH. 13-15 November 1985.

Chubb, Gerald P., and Richard A. Miller. "Queuing Network Theory Applied to Manned System Performance Prediction." Proceedings of the 1985 Annual Human Factors Society Meeting. Baltimore, MD. 29 September - 3 October 1985. pp. 566-570.

Chubb, Gerald P. "Soviet Air Defense Modeling Using TADZ." SP-370. ALPHATECH Inc. Vol. I: 2 April 1984; Vol. II: 4 April 1984; and Vol. III: 6 April 1984.

Chubb, Gerald P. "Soviet Air Defense Modeling Using QUEB." SP-354. ALPHATECH, Inc. Burlington, MA. 21 February 1984.

Chubb, Gerald P. "Emotive Disruptions: Performance Implications." In Proceedings of the Second Symposium on Aviation Psychology. R. S. Jensen (ed.). OSU Aviation Psychology Laboratory. Columbus, OH. 25-28 April 1983, pp. 413-420.

Chubb, Gerald P. "Model Validation via Real-Time Mission Simulation." Proceedings, IEEE Conference on Systems, Man, and Cybernetics. Seattle, WA. 28-30 October 1982 (also identified as AFAMRL-TR-82-69).

Chubb, Gerald P., Bradley D. Purvis, and Earl D. Sharp. "Validating Manned System Design and Engineering Change Proposals." National Aerospace and Electronics Conference (NAECON) Proceedings. Dayton, OH. 19-21 May 1981

Chubb, Gerald P. "Real Time Mission Simulation for Crew Station Design." NATO Conference on Manned System Design. Freiburg, W. Germany. 22-25 September 1980.

Chubb, Gerald P., and Steven Beecroft. "Real Time Simulation of OAS Phase I Controls and Displays." Presented at the Summer Computer Simulation Conference. Seattle, WA. 25-27 August 1980.

Seifert, D. J., and Gerald P. Chubb. "SAINT: A Combined Simulation Language for Modeling Large, Complex Systems." Proceedings of the SIGSIM 78 Conference. Canberra, Australia. 4-8 September 1978.

Chubb, Gerald P. "Human Engineering Problems in the B-52 Offensive Avionics Crewstation." Presented at and published in Proceedings: The Sixth Psychology in the DoD Symposium. USAF Academy. 20-22 April 1978.

Sharp, Earl D., and Gerald P. Chubb. "The Nature of Navigator Crew Duties on a B-52 Mission." Presented at and published in Proceedings: The Sixth Psychology in the DoD Symposium. USAF Academy. 20-22 April 1978.

Chubb, Gerald P., and Kathleen Berisford. "Manned System Modeling: SAINT Applied to Strategic Navigation." Presented at and published in the Proceedings of the Tenth Annual Simulation Symposium. Tampa, FL. 16-18 March 1977.

Chubb, Gerald P. "Application of SAINT to Operations Evaluation in Manned Systems." Presented at the Aerospace Medical Association Meeting. Bal Harbour, FL. 10-13 May 1976.

Chubb, Gerald P. "Tornado Survival and Recovery--A Personal Report." Published in the Human Factors Bulletin, Vol. 17, No. 5 (May 1974)

Pritsker, A. Alan B., David B. Wortman, Gerald P. Chubb, and Deborah J. Seifert. "SAINT: Systems Analysis of Integrated Networks of Tasks." Proceedings of the Fifth Annual Pittsburgh Conference on Modeling and Simulation. 24-26 April 1974.

Chubb, Gerald P. "Monte Carlo Simulation of Degraded Man-Machine Performance." Proceedings of the AGARD Avionics Panel XXIV Meeting. Dayton, OH. 16-20 October 1972.

Chubb, Gerald P. "A Psychologist's Input to Operation Research." Proceedings of the Third Psychology in the Air Force Symposium. Air Force Academy. Colorado Springs, CO. 18-20 April 1972.

Chubb, Gerald P. "The Use of Monte Carlo Simulation to Reflect the Impact Human Factors Can Have On Mission Success." Presented at the 1971 Winter Simulation Conference: Fifth Conference on Applications of Simulation. New York, NY. 8-10 December 1971.

Chubb, Gerald P. "The Law and Human Factors." Human Factors Society Bulletin, XIV (2 February 1971), pp. 7-8.

Chubb, Gerald P. F-106A Nuclear Vulnerability Analysis, Vol. VIII: Crew Effectiveness. AFSWC-TR-70-7. Air Force Weapons Laboratory. Kirtland AFB, NM. 6 January 1971.

Chubb, Gerald P. "Supporting the Support Personnel Who Support the Automatic Support System: Advanced Development of Job-Oriented Performance Aids." Presented at and published in the Proceedings of the 5th Annual IEEE Symposium on Automated Support Systems for Advanced Maintainability. St. Louis, MO. 3-5 November 1969.

Chubb, Gerald P., and Robert G. Mills. "Development and Preparation of Cost-Optimized Troubleshooting Decision Trees." Presented at and published in the Proceedings of the 5th Annual IEEE Symposium on Automatic Support Systems for Advanced Maintainability. St. Louis, MO. 3-5 November 1969.

Wilmot, H. Leslie, Gerald P. Chubb, and B. Tabachnick. Project PIMO Final Report. Vol. VI: Technical Data Preparation Guidelines. AFHRL-TR-69-155. Air Force Human Resources Laboratory. Wright-Patterson AFB, OH. May 1969.

Grieme, R., David Cleveland, and Gerald P. Chubb. Project PIMO Final Report. Vol. IV: PIMO Technical Data Format Specification. AFHRL-TR-69-155. Air Force Human Resources Laboratory. Wright-Patterson AFB, OH. May 1969.

Chubb, Gerald P. "An Evaluation of Proposed Application of Remote Handling in Space." Proceedings of the Project ROSE (Remotely Operated Special Equipment) Seminar. Vol. II. 26-27 May 1964.

Book Chapters

Chubb, Gerald P. (1995), "Displays to Enhance Air Combat Situational Awareness" in D. J. Garland and M. R. Endsley, Experimental Analysis and Measurement of Situation Awareness, Embry Riddle Press, Daytona Beach, FL, 345-349.

Jensen, Richard S., G. P. Chubb, J. Adrion-Kochan, L. A. Kirkbride, and J. Fisher (1993), "Aeronautical Decision Making in General Aviation: New Intervention Strategies," in Ray Fuller, Neil Johnson, and Nick McDonald (editors), Human Factors in Aviation Operations: Proceedings Western European Association of Aviation Psychologists, Volume 3, Ashgate Publishing, Brookfield, VT, pp.5 - 10.

Chubb, Gerald P. and Constance M. Hoyland (1989). "Systematic Behavioral Modeling of Multioperator Systems to Evaluate Design Concepts." in Grant R. McMillan, David Beevis, Eduardo Salias, Michael H Strub, Robert Sutton, and Leo Van Breda, editors, Applications of Human Performance Models to System Design, Plenum Press: New York, NY. pp. 295-311. (I: 40%; T: 90%)

Chubb, Gerald P., K. Ronald Laughery, and A. A. B. Pritsker (1987). "Simulating Manned Systems." In Handbook of Human Factors. G. Salvendi (ed.). John Wiley and Sons: NY. pp. 1298-1327. (I: 20%; T: 80%)

Chubb, Gerald P. (1981). "SAINT, A Digital Simulation Language for the Study of Manned Systems." in Moraal, J. and Kraiss, (eds.). Manned System Design: Methods, Equipment, and Applications. Plenum Press: New York, NY. pp. 153-179.

HONORS, GRANTS, SPECIAL RECOGNITION

Grants

Airway Science Grant for an Aviation Simulation Laboratory, FAA
Airworthiness Assurance Center of Excellence, FAA

Honors

Psy Chi, Psychology Honorary
Alpha Pi Mu, Industrial Engineering Honorary

Awards

Air Force Systems Command, Scientific and Technical Achievement Award, 1972.
Armstrong Laboratory Full-Time, Long-Term Training Selectee (OSU PhD Residency, 1973-1974)
Aerospace Medical Research Laboratory, Human Engineer of the Year, 1975.
Federal Civil Service Outstanding Performance Award, 1970 and 1981.
Federal Civil Service Sustained Superior Performance Award, 1965 and 1982.

SERVICE

University Committees / Activities

Faculty Career Enhancement Committee
Council on Academic Affairs (1999-2002)
Presidential Medalists Evaluator
OSU Senator & Senate Alternate
 Legislative Affairs Committee
 Committee on Academic Freedom & Responsibility
Faculty Council
Honors and Scholars Program
Glenn Institute

College Committees / Activities

College Committee on Academic Affairs (C2A2)
Chair, C2A2 Subcommittee A (2005-2006)
Engineering Core Curriculum Committee
Honors Committee (both for Engineering & for Arts & Sciences)

Curriculum Committee of the Colleges of the Arts and Sciences
GEC Subcommittee B, Colleges of the Arts & Sciences
Aviation Task Force
Summer Orientation (2002-2003)
Lecturer & Lab Instructor for ENG 181 - 183 (2000-2002)

Departmental Service

Aviation Section Planning Committee
OSU Airport Master Plan Technical Advisory Committee
Strategic Planning Committee
Promotion and Tenure Committee
Chair Search Committee
Recruitment Committee
Advisory Council Committee
Graduate Studies Committee
Aviation Undergraduate Studies Committee, Chair
NetJets, Inc. Scholarship Committee
Aviatrix Scholarship Committee
Alpha Eta Rho, Faculty Advisor (1991-2005)

Professional Affiliations

Senior Member, American Institute of Aeronautics and Astronautics
Governor, East Central Region, Alpha Eta Rho (AHP)
Member, University Aviation Association (UAA)
Member, Council on Aviation Accreditation (CAA)
Member, Association of Aviation Psychologist
Member, Central Ohio Psychological Association (COPA)
Member, Southern Ohio Chapter, HF&ES

Service in the Professions

Human Factors and Ergonomics Society

President, Central Ohio Chapter, 1995-1996.
Program Chair, Systems Development Technical Group, 1988 and 1990.
Technical Session Organizer, 12th-15th and 17th-21st annual meetings
Chairman, Professional Qualifications Committee, 1972-1977
Human Factors Editorial Review Board, 1969-1973 and 1992-Present
Southern Ohio Chapter: President --- 1976 and Secretary --- 1972

Ohio Society of Professional Engineers, Greene County Chapter (1974-1982)

Vice President, Region 7 --- 1980 and 1981
State Representative --- 1981

President Greene County Chapter --- 1980
1st VP, Greene County Chapter --- 1979
Secretary, Greene County Chapter --- 1977 and 1978
Engineer for a Day Program Coordinator --- 1975 and 1976

University Aviation Association

President-Elect (2002-2003), President (2003-2004), and Past-President (2004-2005)
OSU Institutional Representative (1993-2005)

Chair, Simulation Committee (2000-2003),

Member, Education and Publications Committees

Scholarship Committee: Evaluator – National Business Aviation Assoc. (NBAA)

Scholarship, Airport Councils International – North America (ACI-NA)

Scholarship, & SimuFlite Scholarship

Member, Board of Trustees (1998-2002)

Technical Organizer and Chair: “Symposium on Security in General and Collegiate Aviation”, Bloomington, MN 16 April 2004.

Requested External Evaluations:

Purdue University: J. Lampe, from Asst. to Assoc. Prof.

Southern Illinois University at Carbondale (SIUC): aviation departmental strategic plan review and on-site visit (with Larry Gross, Purdue Univ.)

Arizona State University: R. Karp, from Assoc. to full Prof.

Purdue University: J. Thom, from Asst. to Assoc. Prof.

Invited Speaker, University Aviation Association, 11-14 September 2002, “International Students and Their Problems Getting Started”

American Institute of Aeronautics and Astronautics

Aviation Operations Technical Committee

AIAA SPEAS Award Evaluator

AOTC representative to the *Journal of Aircraft*, 2004-2005 (reviewer)

Organizer and Chair, “Human Factors in Aviation Session”, AIAA ATIO Conference, Chicago, 20 Sep. 2004

Product Support Technical Committee

Other / Community Service

Board Member, Professional Aviator Board of Certification (PABC), advising on collegiate aviation’s interests

Associate Board Member, Church Mobilization Representative, and Recruit Counselor for: Pioneer Bible Translators, Dallas, TX

Board Member, Tree of Life Christian Schools (1998-2003)

Chairman of the Board, Bible Institute for Christian Missions (1986-2001)

Recent Invited Presentations

Boy Scout Troop 102, London OH, 27 Mar. 2006, "Careers in Engineering"

Crosswalk, 13 Nov. 2003, "Running in the Dark: Journeys of Faith in the Real World"

Pioneer Bible Translators (PBT), 8 July, Phoenix, AZ, "PMI: People Are PBT's Most Important Element", invited breakfast testimonial, in conjunction the North American Christian Convention (NACC).

Congress on Aviation and Space Education, Panel on Collegiate Aviation, "Aviation Career Opportunities for Graduates of Research Universities" Cincinnati Hilton, Salon M, 5 April 2003.

Hilliard Church of Christ, Senior Saints, 23 July 2002, Aerospace Engineering and Aviation at The Ohio State University.

Hilliard City Schools (2002), Aerospace Engineering (how an airplane flies) and aviation (what pilots do) to First Grade students, Hilliard Horizon.

Ohio Council on Aviation Education, Panel Discussion on Careers in Aviation, Career Day, 19 November 2001.

PROFESSIONAL DEVELOPMENT

Pioneer Mission Institute (PMI) in Dallas, TX - June 2004, 2005, & 2006
Continuing Education Unit (CEU) Short Courses for Psychologist License Renewal: 23 hours each biennium (variety of topics, to include 3 hrs. on professional ethics)
Private Pilots' Certificate and Advanced Ground Instructor's Certificate
American Management Courses while General Manager of ALPHSCIENCE
Numerous technical short courses while a Civil Servant at WPAFB.

Revised: 11/2006

CURRICULUM VITAE

Gerald Michael Gregorek

EDUCATION

Academic

1967 Ph.D., Ohio State University, Columbus, Ohio
Fluid Mechanics

Ph.D. Dissertation: *Hypersonic, Low Reynolds Numbers Pressure and Heat Transfer Over Blunt Cones*

1959 Master of Science, Ohio State University, Columbus, Ohio
Aerodynamics

1958 Bachelor of Aeronautical Engineering (5-year degree *Cum Laude*) Ohio State University, Columbus, Ohio.

TEACHING APPOINTMENTS

Numerous courses taught in applied aerodynamics; incompressible, supersonic and hypersonic flows; aircraft design, performance, stability and control experimental methods

Academic

2005 – Present Professor, Department of Aerospace Engineering, Ohio State University,
Regular appointment, 2/3 time

2005 – Present Professor, Department of Aviation, Ohio State University,
Regular appointment, 1/3 time

1994 – Present Director, Aeronautical and Astronautical Research
Laboratory, Ohio State University

1976 – 2005 Professor of Aeronautical and Astronautical Engineering, Ohio State
University, Regular appointment, full time

1994 – 2001 Chairman and Professor, Aerospace Engineering,
Applied Mechanics, and Aviation, Ohio State University,
Regular appointment, full time

1993 – 1991 Chairman and Professor, Aeronautical and Astronautical
Engineering Department, Ohio State University,
Regular appointment, full time

1979 – 1993 Associate Director, Aeronautical and Astronautical Research Laboratory, Ohio State University

1976 – 1981 Director, NASA General Aviation Airfoil Design and Analysis Center, Ohio State University

1969 – 1975 Associate Professor, Aeronautical and Astronautical Engineering

Ohio State University, Regular appointment, full time

1967
full time Research Supervisor, Aeronautical and Astronautical Research Laboratory, Ohio State University, Regular appointment,

1967 – 1969 Assistant Professor, Aeronautical and Astronautical Engineering, Ohio State University, Regular appointment, full time

1960 – 1967 Instructor, Aeronautical Engineering, Ohio State University,
Regular appointment, full time

1958 - 1960 Research Associate, Aerodynamics Laboratory, Ohio State University

Teaching Innovations

2002 Developed, with N. Taneja, new course for aviation and aerospace engineering seniors, AVN694 – Economics of Jet Transport Design

1999 Developed junior “Integrated Design” course AAE 512 to provide early design experience related to classroom work

1992 Developed advance design course for AAE graduate students (AAE 616)

1986 Expanded senior design course to three course sequence (AAE 694, AAE 510, AAE 416): OSU Page 2 November 29, 1999 Fall Qtr aircraft design seminars, Winter Qtr aircraft design, and Spring Qtr advanced design; again replicating industry preliminary design teams

1980 Introduced small design projects into sophomore AAE 200 sequence, model rocket, model glider projects which take students from paper studies to rocket or glider flight

1975 Senior capstone design course (AAE 515) configured as preliminary design teams replicated as in industry

1974 Three course (AAE 200) series integrating a two-hour laboratory with three lecture periods to bring students close to theory at early stage

1969 First flight research course developed at OSU using training aircraft from Department of Aviation

GRADUATE ADVISING

80+ Masters of Science degrees graduated

10 Ph.D. degrees graduated

Currently advising 1 Masters and 1 Ph.D. candidates

RESEARCH EXPERIENCE

Facility Development

- 1993 Contributed to development of wind tunnel to study high altitude transonic airfoils
- 1974 Assisted in the development of two transonic wind tunnels. A low turbulence airfoil test facility for study of transonic laminar flow airfoils and a high Reynolds transonic facility to test airfoil flap and control systems
- 1970 Designed and operated a pilot Ludwig tube for high Reynolds number operations (2nd facility in US)
- 1965 Modified OSU hypersonic facility for low-density operation and for operation with different gases to simulate foreign atmospheres
- 1962 Assisted OSU and USAF staff in the design and operational use of Mach 20 hypersonic wind tunnel
- 1960 Brought 20-inch diameter Mach 14 hypersonic wind tunnel of USAF at Wright-Patterson AFB to operational status
- 1958 Designed components for air-heated continuous flow hypersonic wind tunnel (research associate)

Instrumentation

- 1958 Present, Designed assorted pressure heat transfer and force measuring instrumentation for wind tunnels and flight systems
- 1968 Developed a heat transfer measuring technique using phase-change paints. Used by investigators to obtain quantitative three- dimensional heat transfer data
- 1961 Developed a novel miniature total temperature profiles in hypersonic boundary layers

Flight Test Programs

- 1982 Designed two, three and four blade propellers for use on General Aviation aircraft with the objective of noise reduction at no cost in performance – conducted flight test with three propellers mounted on the Beech Sundowner
- 1981 Managed the NASA sponsored flight evaluation of the laminar flow characteristics of the Bellanca Skyrocket airfoil – determined the laminar flow exceeded theory and established foundation for subsequent laminar flow airfoil design.
- 1978 Managed a NASA study using the Beech Sundowner with a modified leading edge that enabled a 7 knot decrease in stall speed
- 1976 Managed the NASA sponsored flight evaluation of the Bellanca Skyrocket II to determine its basic drag characteristics – the lowest drag of any comparable propeller driven aircraft
- 1975 Conceived and managed NASA sponsored program the “gloved” airfoil approach for flight testing a new airfoil on an existing general aviation aircraft. Beech Sundowner had a 13% GA-W2 airfoil built over the existing NACA 63415 airfoil and the aircraft flown to get actual overall flight performance and detailed measurements

Analysis And Design

- 1981 Designed the first transonic natural laminar flow airfoil for use on the Italian Avanti, an advanced twin turbo prop business class aircraft
- 1980 Designed the first airfoil tailored for use on wind energy machines for Sandia National Laboratories
- 1978 Initiated the first numerical re-examination of the icing process on aircraft airfoils for NASA
- 1976 - 1981 Designed airfoils for USAF and aerospace commercial firms such as Bell Helicopter Textron, Gulfstream American, and Rockwell International

RESEARCH PUBLICATIONS AND PRESENTATIONS (list not inclusive, but representative)

Gregorek, G. M. and Hall C. E, Lee J. D., Whitfield C. A., Stevens, K., “STOL Herk Program” Technical Report – U. S. Pentagon and Snow Aviation International; March 20, 2006.

Gregorek, G. M. and Hall C. E, Whitfield C. A., Stevens, K., “Experimental Development and Investigation of Propeller/Jet Engine Interactions and Computational Development and Analysis of Pratt and Whitney 306B Flight Nacelle” Final Report – U. S. Pentagon and Snow Aviation International; March 30, 2006.

Gregorek, G. M. and Hall C. E, Whitfield C. A., Stevens, K., “Wind Tunnel Test Program” Final Report – U. S. Pentagon and Snow Aviation International; March 30, 2006.

Gregorek, G. M., Janiszewska, J. M., Lee, J. D., “The LS(1)-0417 MOD Airfoil Aerodynamic Flow Characteristics with the Application of Vortex Generators” AIAA January 2004, presented at the 2004 ASME Wind Energy Symposium.

Gregorek, G.M., Mallett, F., Chapter 36, Department of Aeronautical and Astronautical Engineering at the Ohio State University “Aerospace Engineering Education During the First Century of Flight”, published by AIAA July 2004.

Gregorek, G. M., Pearson, J., Smith, M. J., Komerath N. M., Prasad, J.V.R., “Multi-Winglets for Improved Aircraft Performance” Final Report – STAR Technology and Research, Inc. and Air Force Research Laboratory, January 2004.

Gregorek, G. M., Dreese, J., Lee, J. D., Whitfield, C. A., Janiszewska, J., “C-130 Tip Tank Modification Program” Final Report – Snow Aviation International, July 31, 2003.

Gregorek, G. M., Janiszewska, J. M. “Two Dimensional and Three Dimensional Flow Characteristics of a LS(1)-0417 MOD Airfoil Model with Applied Grit Roughness and Pitch Oscillations” submitted to National Renewable Energy Laboratory, Golden Co. 2002

Gregorek, G.M. and Reuss, R., “Design Considerations for Hypersonic Waveriders.” Proceedings of the First International Hypersonic Waverider Symposium, October 17-19, 1990, published in 1991.

Gregorek, G.M. and Ramsay, T.N., “The Design of Two Stage to Orbit Vehicles.” AIAA Paper No. 91-3128, Presented at the AIAA Aircraft Design Systems and Operations Meeting, Baltimore, Maryland, September 23-25, 1991.

Gregorek, G.M., “Stability and Control of Sport Aircraft.” Presentation at the Experimental Aircraft Association Annual Meeting, Oshkosh, Wisconsin, July 1991.

Gregorek, G.M. and Hopf, C.P., “An International Student Education Program for Progress in Space.” 41st Congress of the International Astronautical Federation, Dresden, Germany, October 6-12, 1990.

Gregorek, G.M. and Reuss, R., “A Hypersonic Research Vehicle to Develop Scramjet Engines.” AIAA Paper No. 90-3232, Presented at the AIAA Aircraft Design and Operations Meeting, Dayton, Ohio, September 17-19, 1990.

Gregorek, G.M., Mulh, K.E. and Schofield, R.B., "Effects of Leading Edge Roughness on Unsteady Airfoil Performance," Presented at the Solar Energy Research Institute Contractor Review, Golden, Colorado, July 25-26, 1990.

Gregorek, G.M., "High Lift Systems for Sport Airplanes" and "Stability and Control Sport Airplanes," Presented at the Experimental Aircraft Association Annual Meeting in Oshkosh, Wisconsin, July 1990.

Gregorek, G.M., Mulh, K.E. and Schofield, R.B., "A Study of Roughness Effects on the NACA 0021." Tenth Annual Vertical Axis Wind Turbine Research Seminar, Sandia National Laboratories Albuquerque, New Mexico, June 19-20, 1990.

Gregorek, G.M. "A Hypersonic Research Aircraft for Scramjet Engine Development." Presented at the AIAA Aerospace Engineering Conference and Show, Los Angeles, California, February 1990.

Gregorek, G.M., Berchak, M.J. and Hoffmann, M.J., "Aerodynamic Characteristics of Four Vertical Axis Wind Turbine Airfoils." Ninth Wind Energy Symposium, ASME Energy Sources Technology Conference, New Orleans, January 14-17, 1990.

Gregorek, G.M. and Hoffmann, M.J., "The Aerodynamic Characteristics of Four VAWT Airfoils." Presented at the Ninth ASME Wind Energy Symposium, New Orleans, Louisiana, January 1990.

Gregorek, G.M. and Hopf, C., "NASA/USRA Advanced Engineering Education: The Advanced Design Program." IAF Paper No. 89-550, Presented at the 40th Congress of the International Astronautical Federation, Malaga Spain, October 1989.

Gregorek, G.M., "International Aerospace Engineering Experiences of the Ohio State University." Presented at the Meeting on US-European Co-operation and Exchange in Science and Engineering, National Research Council, Washington DC, October 27, 1989.

Gregorek, G.M., Hoffmann, M.J. and Berchak, M.J., "Steady State and Oscillatory Aerodynamic Characteristics of a NACA 0021 Airfoil," Report to Sandia National Laboratories Albuquerque, New Mexico on RF Project 721818, August 1989.

Gregorek, G.M., Hoffmann, M.J., and Berchak, M.J., "Steady State and Oscillatory Aerodynamic Characteristics of a NACA 0021 Airfoil," Report to Sandia National Laboratories, Albuquerque, New Mexico, on RF Project 721818, August 1989.

Gregorek, G.M., Hoffmann, M.J. and Berchak, M.J., "Steady State and Oscillatory Aerodynamic Characteristics of the Sandia 0018/50 Airfoil," Report to Sandia National Laboratories, Albuquerque, New Mexico, on RF Project 721818, August 1989.

Gregorek, G.M., "Engineering and Science of the Future," Invited Lecturer at the Martin W. Essex School for the Gifted, Columbus, Ohio, August 1989.

Gregorek, G.M., "High Speed Sport Planes and the Sound Barrier – Part II," Presented at the EAA Design College Annual Meeting of the Experimental Aircraft Association, August 1989.

Gregorek, G.M. and Weissman, P., "A Hypersonic Executive Transport," AIAA 89-2108, Presented at the Aircraft Design and Operations Technical Meeting of the American Institute of Aeronautics and Astronautics, Seattle, Washington, July 1989.

Gregorek, G.M. and Bragg, M.B., "Environmentally Induced Surface Roughness Effects on Laminar Flow Airfoils: Implications for Flight Safety." Presented at the Aircraft Design and Operations Technical Meeting of the American Institute of Aeronautics And Astronautics, Seattle, Washington, July 1989.

Gregorek, G.M., "Space Science and Engineering in the Twenty-First Century," Invited Lecturer at the Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, April 1989.

Gregorek, G.M., "Hypersonic Transport Design," Invited Lecturer at the Universities Space Research Association Twentieth Anniversary Science and Engineering Symposium, Washington, DC, March 1989.

Gregorek, G.M. and Hoffmann, M.J., "Steady and Unsteady Wind Tunnel Tests of HAWT and VAWT Airfoils." Presented at the Eighth ASME Wind Energy Symposium, Houston, Texas, January 1989.

Gregorek, G.M., "Applications of Vortex Generators to Wind Turbine Airfoils." Presented at the Eighth ASME Wind Energy Symposium, Houston, Texas, January 1989.

Gregorek, G.M. and Lee, J.D., "The Development of the Ohio State University Three-Inch Hypersonic Wind Tunnel from Pilot Tunnel to Low Cost Student Research Facility." Presented at the 70th Meeting of the Supersonic Tunnel Association, Wharton, Aerodrome, Lancashire, England, October 11-12, 1988.

Gregorek, G.M., Boyd, R.R., and Weissman, P.S., "High Speed Transpacific Passenger Flight." AIAA Paper No. 88-4484, Presented at the AIAA/AHS/ASEE Aircraft Design, Systems and Operations Meeting, Atlanta, Georgia, September 7-9, 1988.

Tai, T.C., Huson, G.G., Hicks, R.M and Gregorek, G.M., "Transonic Characteristics of a Humped Airfoil." AIAA Journal of Aircraft, Vol. 25, No. 8, pp. 673-674, August 1988.

Gregorek, G.M., "Sport Aircraft and the Sound Barrier." And "Propeller Concepts for Sport Aircraft." Presentations at the National Meeting of the Experimental Aircraft Association, Oshkosh, Wisconsin, July 31-August 6, 1988.

Gregorek, G.M. and Hoffmann, M.J., "Steady and Unsteady Wind Tunnel Test of Two HAWT Airfoils-The S809 and the NACA 23015." Presented at the Solar Energy Wind Research Program Review, Golden, Colorado, July 19-20, 1988.

Gregorek, G.M., Hoffmann, M.J. and Newman, R.L., "The Evolution of a Flight Test Program at the Ohio State University." AIAA Paper No. 88-2203, Presented at the AIAA Flight Testing Conference, San Diego, California, May 18-20, 1988.

Gregorek, G.M. and Rugger, M.L., "Applications of Vortex Generators to Vertical Axis Wind Turbines." Eighth Annual Vertical Axis Wind Turbine Aerodynamics Seminar, Bushland, Texas, April 1988.

Gregorek, G.M., Kuneiga, R.J. and Nyland, T.W., "Comparison of Pressure Distributions on Model and Full-Scale NACA 64-621 Airfoils with Ailerons for Wind Turbine Application." Prepared for US Department of Energy, DOE/NASA/20320-75, NASA TM-100802, April 1988.

Gregorek, G.M. and Rueger, M.L., "An Experimental Investigation of the Effect of Vortex Generators on the Aerodynamic Characteristics of a NACA 0021 Airfoil Undergoing Large Amplitude Pitch Oscillations," Report to Sandia National Laboratories, Albuquerque, New Mexico, March 1988.

Gregorek, G.M. and Law, S.R., "Truncated Airfoil Performance Characteristics" Published as a NASA Contractors Report on Wind Energy Propulsion, 1987.

Gregorek, G.M., "Low Drag Airfoil Developments." AIAA General Aviation Conference, Anaheim, California, September 1986.

Gregorek, G.M. and Bragg, M.B., "General Aviation Highlights, 1986," AIAA Aerospace America, December 1986.

Gregorek, G.M., "International Model Rocketry," AIAA Student Journal, Spring 1986.

Bragg, M.B. and Gregorek, G.M. "An Experimental Study of a High Performance Canard Airfoil With Boundary Layer Trip and Vortex Generators," AIAA Paper No. 86, 0781-CP, AIAA 14th Aerodynamic Testing Conference, West Palm Beach, Florida, March 1986.

Gregorek, G.M. and Hoffmann, M.J., "Dynamic Stall of Wind Turbine Airfoils." Fifth ASME Wind Energy Symposium, New Orleans, Louisiana, February 1986.

Bragg, M.B., Gregorek, G.M. and Lee, J.D., "Airfoil Aerodynamics in Icing Conditions." Journal of Aircraft, Vol. 23, No. 1, pp. 76-81, January 1986.

Gregorek, G.M. and Bragg, M.B., "Aircraft Performance Penalties Due to Ice Accretion." SAE Business Aircraft Meeting and Exposition, Wichita, Kansas, April 1985.

Hoffmann, M.J. and Gregorek, G.M., "Wind Tunnel Testing of Oscillating HAWT and VAWT Blade Element Airfoil Sections." Proceedings of the US Department of Energy Wind Turbine Aerodynamics Seminar, Albuquerque, New Mexico, March 26-28, 1985.

Bragg, M.B., Gregorek, G.M. and Lee, J.D., "Experimental and Analytical Investigations Into Airfoil Icing." Paper No. ICAS-84-I.10.4, The International Council of the Aeronautical Sciences Meeting, Toulouse, France, September 1984.

Petrie, S.L., Freuler, R.J., Gregorek, G.M. and Bragg, M.B., "Modeling Techniques for Transonic Airfoils." Society of Computer Simulation Multi-Conference, San Diego, California, February 1984.

Gregorek, G.M. and Bragg, M.B., "Performance Analyses for Aircraft in Icing Conditions." Paper No. AIAA-84-0180, AIAA 22nd Aerospace Sciences Meeting, Reno, Nevada, January 1984.

Bragg, M.B. and Gregorek, G.M., "Predicting Aircraft Performance Degradation Due to Ice Accretion." Paper No. SAE-83-9742, SAE Business Aircraft Meeting and Exposition, Wichita, Kansas, April 1983.

Gregorek, G.M., Woan, C.J. and Korkan, K.D., "Acoustic Evaluation of Three Turbo Propellers." Paper No. 830733, Society of Automotive Engineers Business Aircraft Meeting, Wichita, Kansas, April 1983.

Gregorek, G.M., Newman, R.L. and Black, G.T., "Aeroacoustic Flight Test of Four Single Engine Propellers." Paper No. 830731, Presented at the Society of Automotive Engineers Business Aircraft Meeting, Wichita, Kansas, April 1983.

Holmes, B.J., Obara, C.J., Gregorek, G.M., Hoffmann, M.J., and Freuler, R.J., "A Flight Investigation of Natural Laminar Flow on the Bellanca Skyrocket II." Paper No. 830717, Presented at the Society of Automotive Engineers Business Aircraft Meeting, Wichita, Kansas, April 1983.

Bragg, M.B. and Gregorek, G.M., "Predicting Aircraft Performance Degradation Due to Ice Accretion." Paper No. 830742, Presented at the SAE Business Aircraft Meeting, Wichita, Kansas, April 1983.

Bragg, M.B. and Gregorek, G.M. "An Analytical Investigation of the Icing Properties for Several Low and Medium Speed Airfoils," Paper No. AIAA-83-0109, AIAA 21st Aerospace Sciences Meeting, Reno, Nevada, January 1983.

Gregorek, G.M., "engineering Students, Ping Pong Balls and Model Rockets – A Unique Aerospace Education Experience." Paper AIF-82-415, Presented at the XXXIII Congress of the International Astronautical Federation, Paris, France, October 1982.

Bragg, M.B., Gregorek, G.M. and Shaw, R.J., "Wind Tunnel Investigation of Airfoil Performance Degradation Due to Icing." AIAA Paper No. 82-0582, Presented at AIAA 12th Aerodynamic Testing Conference, Williamsburg, Virginia, March 1982.

Bragg, M.B. and Gregorek, G.M., "Aerodynamic Characteristics of Airfoils with Ice Accretions." AIAA Paper No. 82-0282, Presented at the AIAA 20th Aerospace Sciences Meeting, Orlando, Florida, January 1982.

Korkan, K.D. and Gregorek, G.M., "An Analytical Acoustic Evaluation of Three Turbopropellers." Paper No. 810587, SAE Business Aircraft Meeting, April 1981.

Gregorek, G.M., Naik, S.J., Ross, J.C. and Corsigli, V.R., "An Interference Study of a Low Wing General Aviation Airplane." Paper No. 810574, Society of Automotive Engineers Business Aircraft Meeting, Wichita, Kansas, April 1981.

Bragg, M.B. and Gregorek, G.M., "An Analytic Approach to Airfoil Icing." AIAA Paper No. 81-0403, AIAA 19th Aerospace Sciences Meeting, St. Louis, Missouri, January 1981.

Korkan, K.D., Gregorek, G.M. and Keiter, I., "An Acoustic Sensitivity Study of General Aviation Propeller." AIAA Paper No. 80-1871, AIAA Aircraft Systems Meeting, Anaheim, California, August 1980.

Korkan, K.D., Gregorek, G.M. and Mikkleson, D.C., "A Theoretical and Experimental Investigation of Propeller Performance Methodologies." AIAA Paper No. 80-1240, AIAA/SAE/ASME 16th Joint Propulsion Conference, Hartford, Connecticut, June 1980.

Korkan, K.D. and Gregorek, G.M., "Propeller Aeroacoustic Methodologies." NASA Lewis Research Center Conference Proceedings on Propulsion Technology, Publication 2126, November 1979.

Gregorek, G.M., Korkan, K.D. and Freuler, R.J., "A NASA Initiative for General Aviation – The General Aviation Airfoil Design and Analysis Service." Canadian Aeronautics and Space Journal, 25, 34-42, 1979.

Woan, C.J. and Gregorek, G.M., "The Exact Numerical Calculation of Propeller Noise," AIAA Paper No. 78-1122, AIAA 11th Fluid and Plasma Dynamics Conference, July 1978.

Lee, J. D., Gregorek, G.M. and Korkan, K.D., "Testing Techniques and Interference Evaluation of the OSU Transonic Airfoil Facility." AIAA Paper No. 78-1118, AIAA 10th Aerodynamic Testing Conference, San Diego, California, April 1978.

Korkan, K.D., Woan, C.J. and Gregorek, G.M., "Effect of Airfoil Sections on Acoustic Performance of Propellers," Proceedings of the Advanced Technology Airfoil Conference, NASA Langley Research Center, March 1978.

Freuler, R.J., and Gregorek, G.M., "An Evaluation of Four Single Element Airfoil Analytic Methods." Proceedings of the Advanced Technology Airfoil Conference, NASA Langley Research Center, March 1978.

Gregorek, G.M., Hoffmann, M.J., Payne, H. and Harris, J.P., "Drag Evaluation of the Bellanca Skyrocket II," Paper No. 770472 SAE Business Aircraft Meeting, Wichita, Kansas, March 1977.

Gregorek, G.M., Weislogel, G.S., Hoffmann, M.J. and Vogle, G.M., "In-Flight Measurements of the GA(W)2 Aerodynamics Characteristics." Paper No. 770461 SAE Business Aircraft Meeting, Wichita, Kansas, March 29, 1977.

Korkan, K.D. and Gregorek, G.M., "Bow Shock Wave Profiles and Detachment Distances About Hemispherical Noises at Low Supersonic Mach Numbers." AIAA Journal, 15, 739-740, 1977.

Gregorek, G.M. and Weislogel, G.S., "The Airplane as an Aerospace Engineering Laboratory." American Society for Engineering Education Annual Conference, No. 1203, University of Tennessee, June 1976.

Weislogel, G.S., Gregorek, G.M., and Hoffmann, M.J., "GA(W)-2 Airfoil Flight Test Evaluation," Society of Automotive Engineer Business Aircraft Meeting, Paper No. 760492, Wichita, Kansas, April 6-9, 1976.

Gregorek, G.M., Hoffman, M.J., and Weislogel, G.S., "Data Acquisition System for In-Flight Airfoil Evaluation." Society of Automotive Engineers Business Aircraft Meeting, Paper No. 760462, Wichita, Kansas, April 6-9, 1976.

Gregorek, G.M., "International Model Rocket engine Static Tests." Paper No. 75-088 Presented at the XXVIth Congress of the International Astronautical Federation, Lisbon, Portugal, 1975.

Gregorek, G.M., "Proposed International Standards for Model Rocket Engines," XXIVth Congress of International Astronautical Federation, Baku, Russia, October 1973.

Slotkin, A.L. and Gregorek, G.M., "Aerospace Activities in the United States of America." Proceedings of the First Conference of "Youth and Space," Paris, France, February 1972.

Olson, L.E., Gregorek, G.M. and Lee, J.D., "The Influence of Artificially Induced Turbulence Upon Boundary Layer Transition in Supersonic Flows", USAF Aerospace Research Laboratories Report ARL 71-0022, January 1971.

Gregorek, G.M., "Model Rocketry. A New Tool for Advanced Aerospace Education and Its Influence on Youth Rocketry Safety." Presented at the XXIst Congress of the International Astronautical Federation, Constance, Germany, 1970.

Bittner, J.W. and Gregorek, G.M., "An Investigation of Planar Free Jets." ARL 69-018s, November 1969.

Gregorek, G.M., Belcher, R.J., and Kamm, J.L., "An Aerodynamic Study of Vehicles Moving at High Subsonic Speeds Through Tubes." Presented at CASI/AIAA Subsonic Aero-Hydrodynamics Meeting, Ottawa, Canada, July 1969.

Thomas, K.M., Martellucci, A., Gregorek, G.M., and Muntz, E.P., "Some Shock/Wind Tunnel Observations of Interference Effects in Hypersonic Wakes." AIAA Pre-Print No. 69-349, AIAA 4th Aerodynamic Testing Conference, Cincinnati, Ohio June 1969.

Gregorek, G.M. and Engle, J.H., "An Experimental Study of the Aerodynamics of Vehicles Traveling at High Speeds Through Long Tubes." High Ground Transportation Journal, Vol. III, May 1969.

Gregorek, G.M., "Aerodynamic Simulation for Vehicles Moving Through Long Tubes." AIAA Pre-Print No. 69-313, Presented at AIAA 3rd Flight Test, Simulation and Support Conference, Houston, Texas, March 1969.

Gregorek, G.M., "Viscous Effects on Blunt Cones at Low Reynolds Number and Hypersonic Speeds." US Air Force Aerospace Research Laboratories Technical Documentary Report, ARL 69-006, January 1969.

Gregorek, G.M. and Lee, J.D., "Heat Transfer Measurements in Hypersonic Low Density Flows by Thin Skin Techniques and Phase-Changing Coatings." AIAA Pre-Print No. 68-373, Presented at AIAA 3rd Aerodynamic Testing Conference, San Francisco, California, April 1968.

Gregorek, G.M. and Luce, R.G., "Axisymmetric and Planar Freejets for Hypersonic Low Density Test Facilities Aerospace Research Laboratories, USAF, ARL Report 66-0068, April 1966.

Petrie, S.L. and Gregorek, G.M., "Non-Equilibrium Effects in Leading Edge Simulation." Proceedings of the Fourth Hypervelocity Techniques Symposium, November 1965.

Petrie, S.L. and Gregorek, G.M., "Pressures on Circular Cylinders in Equilibrium and Nonequilibrium Hypersonic Airfoils." Flight Dynamics Laboratory, Research and Technology Division, A.F. Systems Command, AFFDL TR-65-99, August 1965.

Luce, R.G., Gregorek, G.M. and Lee, J.D., "The Laminar Boundary Layer in Axisymmetric Nozzles with Wall Cooling." Aerospace Research Laboratories, USAF ARL 65-112, June 1965.

Gregorek, G.M. and Korcan, K.D., "Hypersonic Blunt Body Similitude in a Perfect Gas." Flight Dynamics Laboratory of Aeronautical Systems Division, USAF, FDL-TDR-64-92, June 1964.

Gregorek, G.M., Kroeger, F.B. and Kendall, T.H., "Performance Evaluation of the ARL Four-Inch Vertical Hypersonic Wind Tunnels." Report to Aerospace Research Laboratories, O.A.R. USAF Research Project No. 1617, April 1964.

Scaggs, N.E., Burggraf, W. and Gregorek, G.M., "The ARL Thirty-Inch Hypersonic Wind Tunnel Initial Calibration and Performance." Technical Documentary Report of the Aerospace Research Laboratories, Office of Aerospace Research, USAF, ARL 63-223, December 1963.

Gregorek, G.M., Nark, T.C. and Lee, J.D., "An Experimental Investigation of the Surface Pressure and the Laminar Boundary Layer on a Blunt Flat Plate in Hyper-sonic Flow." Flight Dynamics Lab of the Aeronautical Systems Division, USAF, ARL 63-223, December 1963.

Gregorek, G.M., "The Mach Number Independence Principle in Hypersonic Flows." News in Engineering, The Ohio State University Press, February 1963.

Gregorek, G.M. and Korkan, K.D., "An Experimental Observation of the Mach and Reynolds Number Independence of Cylinders in Hypersonic Flow." Technical Note in the AIAA Journal, January 1963.

Gregorek, G.M., "Initial Calibrations and Performance of the ARL Twenty-Inch Hypersonic Wind Tunnel." Technical Documentary Report of the Aerospace Research Laboratories, O.A.R. USAF ARL 62-393, August 1962.

Gregorek, G.M. and Lee, J.D., "Design Performance and Operational Characteristics of the ARL Twenty-Inch Hypersonic Wind Tunnel." Technical Documentary Report of the Aerospace Research Laboratories, USAF, ARL 62-392, August 1962.

Chu, S.T. and Gregorek, G.M., "A Study of Ablation in the Stagnation Region." Report to Dept. of Army Ordinance Corps. on Contract DA 33-019-ORD 2317, (TRALOSU) 560-5, May 1960.

Gregorek, G.M., Kellam, J.M., and Lee, J.D., "An Experimental Study of Model Ablation at a Mach Number of 5.6" Report to Dept. of Army Ordinance Corps on Contract No. DA33-019-ORD 2314 with OSU Research Foundation, 1959 (TRALOSU-I59-I)

Gregorek, G.M., and Lee, J.D., "Pressure Distributions on a 90 Cone-Cylinder at a Nominal Mach Number of 8.15." Report to General Electric Company on The Ohio State University Research Foundation Project 839, June 1959.

HONORS AND AWARDS

- | | |
|------|---|
| 1999 | Fellow, American Institute of Aeronautics and Astronautics |
| 1997 | TopCAT Executive of the Year Award by the Columbus Industry and Technology Council |
| 1993 | Experimental Aircraft Association Meritorious Service Award |
| 1991 | International Astronautical Federation (IAF) Frank J. Malina Medal (US recipient – 5 medals awarded over life of award) |
| 1989 | USRA Distinguished Service Award (3 awards presented in 26 years) |
| 1988 | American Institute of Aeronautics and Astronautics National Faculty Advisor Award |
| 1983 | American Institute of Aeronautics and Astronautics National General Aviation Award |

1982	American Institute of Aeronautics and Astronautics Section Activities Award
1980	Ohio State University Boyer Award for Meritorious Service
1974	Ohio State University Boyer Award for Meritorious Service
1973	Charles MacQuigg Award for Teaching Excellence
1972	American Institute of Aeronautics and Astronautics Technical Man of the Year, Columbus Section
1958	Convair Award for Graduate Study

RESEARCH AWARDS AND GRANTS (1983 – 2006)

Research award participation from 1959 – 1982 in excess of \$15,000,000.00. Following is representative, but not all-inclusive.

Title	PI & Team	Report Date	Total Award
Analysis Of A High-Lift Transonic Airfoil	Gregorek, Gerald M	25-Jun-85	\$14,999
Analysis Of Two Advanced Transonic Airfoils	Gregorek, Gerald M	5-Nov-86	\$13,501
US Army Heavy Lift Helicopter Airfoil Test	Gregorek, Gerald M; Freuler, Richard J; Lee, John D	27-Jul-05	\$46,000
Analysis Of Helicopter Rotor Airfoils	Gregorek, Gerald M., Lee, John D.	5-Mar-84	\$35,000
Development Of Aeronautical Data For A Single Engine Business Jet Aircraft.	Gregorek, Gerald M., Lee, John D.	10-Sep-95	\$144,000
Development Of Aeronautical Data For A Single Engine Business Jet Aircraft.	Gregorek, Gerald M., Lee, John D.	10-Jan-96	\$15,000
Development Of Aeronautical Data For A Single Engine Business Jet Aircraft.	Gregorek, Gerald M., Lee, John D.	10-Sep-96	\$14,700
Wright Patterson Wind Tunnel Consortium (CRADA).	Gregorek, Gerald M., Lee, John D.	11-Oct-00	\$0

Wright Patterson Wind Tunnel Consortium (CRADA).	Gregorek, Gerald M., Lee, John D.	22-Mar-01	\$16,500
Wright Patterson Wind Tunnel Consortium (CRADA).	Gregorek, Gerald M., Lee, John D.	1-May-01	\$6,600
Wright Patterson Wind Tunnel Consortium (CRADA).	Gregorek, Gerald M., Lee, John D.	18-Jun-01	\$24,750
Wright Patterson Wind Tunnel Consortium (CRADA).	Gregorek, Gerald M., Lee, John D.	7-Sep-01	\$52,525
Wright Patterson Wind Tunnel Consortium (CRADA).	Gregorek, Gerald M., Lee, John D.	23-Dec-02	\$18,425
Wright Patterson Wind Tunnel Consortium (CRADA).	Gregorek, Gerald M., Lee, John D.	19-Feb-03	\$100,425
Construct And Test A Basic Designed Airfoil Model	Gregorek, Gerald M	14-Mar-88	\$20,000
Construction Of Three Bas Designed Airfoil Models And Services For Tunnel Test Of These Airfoil Models	Gregorek, Gerald M	4-Aug-88	\$51,000
AARP Rotor Blade Airfoils Wind Tunnel Test.	Gregorek, Gerald M., Lee, John D.	22-Jan-02	\$132,000
Innovative Ventricular Assist System (IVAS).	Gregorek, Gerald M; Cornhill, John F; Nakamura, Shoichiro; Xu, Longya	13-Feb-96	\$251,561
Innovative Ventricular Assist System (IVAS).	Gregorek, Gerald M; Nakamura, Shoichiro; Xu, Longya	18-Nov-96	\$280,048
Innovative Ventricular Assist System (IVAS).	Gregorek, Gerald M; Nakamura, Shoichiro; Xu, Longya	4-Dec-97	\$266,508
RCOPT Airfoil Data	Gregorek, Gerald M	29-Mar-88	\$8,260

Plasma Arc Tunnel Test Program	Gregorek, Gerald M., Lee, John D.	14-Nov-88	\$62,650
Plasma Arc Tunnel Test Program	Gregorek, Gerald M., Lee, John D.	25-Jul-90	\$35,823
Models Fabrication And Wind Tunnel Tests At OSU	Gregorek, Gerald M	30-Jun-94	\$20,000
Models Fabrication And Wind Tunnel Tests At OSU	Gregorek, Gerald M	7-Jul-94	\$14,000
Wind Tunnel Test Of Two Transonic Airfoils.	Gregorek, Gerald M; Lee, John D	17-Apr-03	\$55,000
Intelligent Propulsion System Foundation Technology.	Benzakein, Meyer J; Adamovich, Igor V; Buchheit, Rudolph G; Dunn, Michael G; Flores, Katharine M; Gregorek, Gerald M; Mills, Michael J; Samimy, Mohammad; Williams, James C; Yedavalli, Rama K	6-Jun-05	\$401,850
Intelligent Propulsion System Foundation Technology.	Benzakein, Meyer J; Adamovich, Igor V; Buchheit, Rudolph G; Dunn, Michael G; Flores, Katharine M; Gregorek, Gerald M; Mills, Michael J; Samimy, Mohammad; Williams, James C; Yedavalli, Rama K	6-Jun-05	\$1,026,950
Intelligent Propulsion System Foundation Technology.	Benzakein, Meyer J; Adamovich, Igor V; Buchheit, Rudolph G; Dunn, Michael G; Flores, Katharine M; Gregorek, Gerald M; Mills, Michael J; Samimy, Mohammad; Williams, James C;	6-Jun-05	\$3,036,200

Yedavalli, Rama K

Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	12-Apr-85	\$25,000
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	11-Dec-84	\$52,719
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	12-Apr-84	\$70,000
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	8-Nov-85	\$20,000
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	22-Jan-86	\$20,000
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	26-Mar-86	\$40,000
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	12-Dec-86	\$80,024
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	24-Jun-87	\$11,903
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	29-Sep-87	\$79,884
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	23-Nov-88	\$100,000
Effects Of Ice Formation On 2-D Aerodynamic Shapes	Gregorek, Gerald M., Bragg, Michael B.	11-May-90	\$4,350
Tailored Airfoils For Wind Turbine Applications	Gregorek, Gerald M; Lee, John D	31-Jan-85	\$100,118
Tailored Airfoils For Wind Turbine Applications	Gregorek, Gerald M; Lee, John D	16-Nov-83	\$64,991
Tailored Airfoils For Wind Turbine Applications	Gregorek, Gerald M; Lee, John D	9-Dec-83	\$100,000

A Study Of Tailplane Icing	Gregorek, Gerald M	19-Apr-94	\$60,000
A Study Of Tailplane Icing	Gregorek, Gerald M	11-Apr-95	\$23,621
A Study Of Tailplane Icing	Gregorek, Gerald M	22-May-95	\$60,000
A Study Of Tailplane Icing.	Gregorek, Gerald M	1-May-96	\$30,000
A Study Of Tailplane Icing.	Gregorek, Gerald M	3-Feb-97	\$70,030
A Study Of Tailplane Icing.	Gregorek, Gerald M	19-Jul-96	\$89,605
Magnetic Nozzle Studies For Advanced Rocket Propulsion.	Gregorek, Gerald M; Lee, John D	27-Apr-00	\$80,000
A Study Of Unsteady Pressures On Oscillating Airfoil In Cascade	Gregorek, Gerald M., Lee, John D.	7-Mar-91	\$75,000
A Study Of Unsteady Pressures On Oscillating Airfoil In Cascade	Gregorek, Gerald M., Lee, John D.	29-Jan-92	\$70,000
Acoustic And Performance Evaluation Of General Aviation Propellers By Flight Research	Gregorek, Gerald M; Weislogel, Stacy	2-Aug-83	\$18,246
Wind Tunnel Tests Of Transonic Natural Laminar Flow Airfoils	Gregorek, Gerald M; Bragg, Michael B	18-Sep-87	\$20,000
Preliminary Design Of A Two-Seat, Special-Purpose, General-Aviation Aircraft.	Gregorek, Gerald M	19-Oct-95	\$27,594
Preliminary Design Of A Two-Seat Special Purpose General Aviation Aircraft.	Gregorek, Gerald M	8-Jan-96	\$14,108
Detailed Design And Wind Tunnel Testing Of An Experimental Special Purpose General Aviation Aircraft.	Gregorek, Gerald M	9-Jul-96	\$110,850
Analysis Of Two Advanced Transonic Airfoils	Gregorek, Gerald M	23-Jun-86	\$30,000

Advanced Aeronautics Design Program	Gregorek, Gerald M	23-Feb-95	\$17,350
An Experimental Investigation Of The Unsteady Aerodynamic Characteristics Of Wind Turbine Airfoils	Gregorek, Gerald M	29-Apr-86	\$99,840
An Experimental Investigation Of The Unsteady Aerodynamic Characteristics Of Wind Turbine Airfoils	Gregorek, Gerald M	26-Jun-87	\$75,700
Wind Tunnel Testing Of An S809 Airfoil Model	Gregorek, Gerald M	18-Nov-88	\$9,397
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines	Gregorek, Gerald M	1-Oct-91	\$48,057
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines	Gregorek, Gerald M	10-Jan-92	\$48,057
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines	Gregorek, Gerald M	18-Sep-92	\$96,610
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines	Gregorek, Gerald M	14-Jul-93	\$93,561
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines	Gregorek, Gerald M	24-Aug-93	\$140,000
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines	Gregorek, Gerald M	14-Apr-94	\$93,794

A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines	Gregorek, Gerald M	5-Oct-94	\$100,000
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines.	Gregorek, Gerald M	1-Dec-95	\$156,000
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines.	Gregorek, Gerald M	13-May-97	\$128,457
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines.	Gregorek, Gerald M	6-Jan-99	\$49,000
A Study Of Roughness On Wind Turbine Airfoils And Its Effect On The Performance Of Horizontal Axis Wind Turbines.	Gregorek, Gerald M	2-Dec-99	\$45,015
Steady And Unsteady Wind Tunnel Test And Analysis Of A Wind Turbine Rotor Tip.	Gregorek, Gerald M	5-Feb-02	\$51,411
Provide Wind Tunnel Testing, Data Acquisition And Data Processing For The Aaed Canard/Control System Flutter Test	Gregorek, Gerald M	6-Aug-86	\$17,958
Wind Tunnel Test Of Specialized Airfoils.	Gregorek, Gerald M; Lee, John D	1-Sep-01	\$60,000
Wind Tunnel Test Of Specialized Airfoils.	Gregorek, Gerald M; Lee, John D	17-Dec-01	\$45,000
Wind Tunnel Tests Of Specialized Airfoils.	Gregorek, Gerald M; Lee, John D	25-Apr-02	\$3,000
Experimental Evaluation Of Roughness On Two Laminar Airfoils.	Gregorek, Gerald M; Lee, John D	1-Nov-02	\$40,000
An Initiative To Establish The Ohio Wright Aeronautical Center Using Wright-Patterson Air Force Base Wind Tunnels.	Gregorek, Gerald M	27-Jun-00	\$100,000

Continued Development Of Plasmadynamic Thruster.	Gregorek, Gerald M; Lee, John D	13-Dec-02	\$36,944
Test Of An Rc05 Airfoil Model	Gregorek, Gerald M	26-Aug-87	\$8,750
Design And Fabricate A Remotely Piloted Miniature Aircraft For Instrumentation Evaluation In Flight	Gregorek, Gerald M	14-Feb-85	\$55,624
Design & Fabricate A Remotely Piloted Miniature Aircraft For Instrumentation Evaluation In Flight	Gregorek, Gerald M	30-May-84	\$24,200
Measure The Dynamic Force And Moment Characteristics For Airfoil Sections Intended For Use In Darrieus Vertical Axis Wind Turbine (Vawt) Blades	Gregorek, Gerald M; Lee, John D	12-Jan-84	\$99,988
Design And Fabricate A Remotely Piloted Miniature Aircraft For Instrumentation Evaluation In Flight	Gregorek, Gerald M	13-Jan-86	\$8,500
Unsteady Pressure Measurements On Wind Turbine Airfoils	Gregorek, Gerald M	27-Mar-86	\$89,901
Unsteady Pressure Measurements On Wind Turbine Models	Gregorek, Gerald M	14-Sep-87	\$99,583
Vertical-Axis Wind Blade Section Activities	Gregorek, Gerald M	1-Feb-89	\$60,000
Vertical-Axis Wind Blade Section Activities	Gregorek, Gerald M	25-Oct-90	\$34,100
Experimental Aero-Dynamic Characteristics Of Vertical Axis Wind Turbine Airfoils	Gregorek, Gerald M	30-Mar-93	\$99,999
Two Dimensional Airfoil Investigation	Gregorek, Gerald M	17-Mar-86	\$18,000

Two Dimensional Airfoil Investigation	Gregorek, Gerald M	25-Nov-86	\$5,000
Wind Tunnel Test And Analysis Of A Supercritical Airfoil	Lee, John D; Freuler, Richard J; Gregorek, Gerald M	24-Aug-94	\$35,000
Sikorsky Aircraft Award	Gregorek, Gerald M	13-Oct-93	\$47,300
Sikorsky Aircraft Award	Gregorek, Gerald M	14-Dec-93	\$39,000
USRA Aeronautics Pilot Program	Gregorek, Gerald M	13-May-87	\$21,956
USRA Aeronautics Pilot Program	Gregorek, Gerald M	6-Nov-87	\$22,484
USRA (United Space Research Association) Aeronautics Pilot Program	Gregorek, Gerald M	1-Nov-88	\$22,484
USRA Aeronautics Pilot Program	Gregorek, Gerald M	12-Oct-88	\$2,736
The Design Of A Hypersonic Research Vehicle Under The Universities Space Research Association	Gregorek, Gerald M	15-Feb-90	\$22,000
The Design Of A Hypersonic Research Vehicle Under The Universities Space Research Association	Gregorek, Gerald M	7-Dec-90	\$22,000
The Design Of A Hypersonic Research Vehicle Under The Universities Space Research Association	Gregorek, Gerald M	17-Sep-91	\$23,840
The Design Of A Hypersonic Research Vehicle Under The Universities Space Research Association	Gregorek, Gerald M	4-Sep-92	\$17,350

The Design Of A Hypersonic Research Vehicle Under The Universities Space Research Association	Gregorek, Gerald M	22-Sep-93	\$17,350
Wind Tunnel Test For Wing Development On An Unmanned Air Vehicle.	Gregorek, Gerald M	11-Dec-00	\$0
Wind Tunnel Test For Wing Development On An Unmanned Air Vehicle.	Gregorek, Gerald M	18-Apr-01	\$12,600

\$10,177,214

SERVICE

University, College, And Department

- 1958 – Present Served on Honors and Awards Committee, Graduate Committee, Undergraduate Committee, Promotion and Tenure Committee, et al
- 1958 - Present Speaker, Innumerable high schools and universities nationally and internationally
- 1993-1994 Faculty Advisor: Human powered vehicle project (3rd place in International Sprint)
- 1992-1994 Faculty Advisor: Society of Automotive Engineer Radio Controlled Cargo Aircraft Competition (3rd place 1993, 1st place 1994)
- 1988-1991 College Committee on Honors and Awards
- 1987-1990 Member, Ohio State University Senate
- 1983-1986 College Committee on Dismissals and Reinstatement
- 1961-1990 Faculty Advisor: Student Branch of American Institute of Aeronautics and Astronautics

International

- 1990-1994 Initiated joint aircraft design project with French students at Ecole Polytechnique Feminine. OSU students and French students communicate

electronically on a project involving aircraft design and present their combined efforts at an international meeting on design education.

1988 Organized first USSR/USA space modeling competition

1970 - Present Active in the International Astronautical Federation (IAF):
Organized first International Student Paper competition in 1974; member of
IAF Education Committee; Chairman of Student Youth Research Experiment
Committee for rocketry and astronautical experiments

1970- Present Federation Aeronautique Internationale (FAI): Space modeling
subcommittee. Participated in World Championships of Space Modeling as
competitor, team manager and official judge in Yugoslavia, Czechoslovakia,
Bulgaria, and Poland. Assisted in organization of 1992 world championships in the
USA.

Military Service

United States Air Force
February 1951- November 1954
US Air Force Airman
Aircraft and Engine Mechanic, B-29 Flight Engineer and Instructor B-29 Cruise Control

Profession

Interest in applied and experimental aerodynamics from subsonic to hypersonic flight regimes; wind tunnel design and instrumentation; flight vehicle performance stability, control, and flight test; airfoil and aircraft design; aircraft icing; aerodynamics of ground vehicles; and wind energy systems applied in professional societies.

American Institute of Aeronautics and Astronautics (AIAA)

2000 – Present Pre-College Guidance Committee

1996 - 1998 Aircraft Operations Technical Committee

1989 - 1992 Aircraft Design Technical Committee

1989 - Present Academic Affairs Committee

1986 – 1988 Ground Test Technical Committee

1978 - Present Student Activities Committee

- 1979 - 1981 Flight Test Technical Committee
- 1976 - 1978 General Aviation Technical Committee
- 1970 - 1974 Chairman, AIAA Student Activities Committee

Supersonic Wind Tunnel Association (SWTA)

1986 – 1992

American Society of Engineering Education (ASEE)

- 1971– 1975 Executive Committee of Aerospace Division
- 1972 - 1973 Chairman-Aerospace Division

International Astronautical Federation (IAF)

- 1982- 1992 Student Activities Committee
- 1970-1973 Supervised Youth Rocketry Committee

Industry

- 1975- Present Consultant to several firms including Battelle Memorial Institute, Sandia National Laboratories, Rockwell International, Snow Aviation International, Star Technology and Research, Orion America Technologies
- 1973 Member Technical Staff, Thrust Augmentation system for VF-12A
- 1972 Aviation Group, Rockwell North American
- 1957 Junior Engineer, North American Aviation, A3J Vigilante dynamics group
- 1956 Junior Engineer, Convair Ft. Worth, Texas, B-58 flutter and vibration
- 1967- Present Expert witness on various aircraft accident investigations, the Air Florida Boeing 737 accident at Washington National Airport e.g.,

CURRICULUM VITAE

Douglas E. Hammon

EDUCATION

Academic

- 1992 Master of Science: Civil Engineering, The Ohio State University
Specialization: Transportation Engineering
- 1992 Master of City and Regional Planning, The Ohio State University
Specialization: Transportation Planning
- 1989 Bachelor of Science: Aviation, The Ohio State University
Specialization: Aeronautical Sciences

Professional Development

- 2001 American Association of Airport Executives: Advanced "Airport Safety & Operations Specialist" training
- 1998 American Association of Airport Executives: Basic "Airport Safety & Operations Specialist" training
- 1996 U.S Department of Transportation, Federal Highway Administration: Statewide Travel Demand Modeling
- 1995 Northwestern University Traffic Institute: Highway Capacity
- 1994 & 1995 U.S Department of Transportation, Federal Highway Administration: Congestion Management System
- 1994 U.S. Department of Transportation, Federal Highway Administration: Travel Demand Management
- 1994 U.S. Department of Transportation, Federal Highway Administration: High Occupancy Vehicle (HOV) -- Planning, Design, and Operations
- 1991 Ohio Transportation Technology Transfer Center: Geographic Information Systems in Transportation Planning

TEACHING APPOINTMENTS

Academic

- 1999-present Lecturer, Department of Aviation, The Ohio State University
Courses: Airport Management; Airport Systems Planning, Design & Development

Professional

- 2006-present Lead workshops for members of the Ohio Aviation Association
Audience: Airport Sponsors, Airport Managers, FBO's, and Airport Consultants
Topics: Airport Administration, Finance, Operations, Services, Development, Outreach
- 2006 "Small Airport Security," The Center for Terrorism Preparedness, University of Findlay

PROFESSIONAL EXPERIENCE

Aviation

- 1999-present Airport Director, The Ohio State University Airport, Columbus, Ohio
- 1997-1999 Airport Director, Butler County Regional Airport, Hamilton, Ohio
- 1991-1993 Aviation Planner, Ohio DOT Division of Aviation, Columbus, Ohio

Transportation

- 1993-1997 Transportation Planner/Engineer, Ohio-Kentucky-Indiana Regional Council of Governments, Cincinnati, Ohio
- 1991 Transportation Analyst, Ohio DOT Division of Transportation Modes, Columbus, Ohio

DOCUMENTATION

- 1996 *OKI Regional Council Mobility Management Program Manual-of-Practice*
- 1992 *Good Neighbors by Design: A Guide to Land Use Planning around Ohio Airports*

PROFESSIONAL AFFILIATIONS & LICENSES

American Association of Airport Executives

Ohio Aviation Association

2007 1st Vice-President

2006 2nd Vice-President, Chair – Education Committee

Mid-Ohio Regional Planning Commission Technical Advisory Committee

Columbus Chamber Small Business Council

Northwest Civic Association

Private Pilot

CURRICULUM VITAE

Chul K. Lee

EDUCATION

- 1999 Ph.D. in One-of-a-Kind Program in Air Transportation Systems
The Ohio State University
- 1995 Master of Business Administration in Aviation
Embry-Riddle Aeronautical University
- 1992 Bachelor of Science in Aerospace Engineering
Iowa State University

TEACHING APPOINTMENTS

Academic

- 2005 – Present Assistant Professor, Department of Aviation
The Ohio State University
- 1999 – 1999 Research/Teaching Associate, Department of Aviation
The Ohio State University
- 1996 – 1999 Graduate Research Associate, Department of Aviation
The Ohio State University
- 1994 – 1995 Graduate Teaching Assistant, Department of Aviation Business
The Ohio State University

Professional

- 2005 Guest Speaker
Jeju Air, S. Korea
- 2004 Guest Lecturer, Department of Air Transportation
Hankuk Aviation University, S. Korea
- 2004 Guest Speaker, Corporate Strategy
Garuda Airlines, Indonesia
- 2003 Guest Lecturer, Department of Aerospace Engineering
Ryerson University, Canada
- 2002 Guest Speaker, Corporate Strategy
Korean Air, S. Korea

2002 Guest Speaker, Corporate Strategy
Asiana Airlines, S. Korea

PROFESSIONAL EXPERIENCE

2000 – 2005 Senior Engineering Analyst
Bombardier Aerospace, Canada

1999 – 2000 System Consultant
Bombardier Aerospace, Canada

1990 – 1991 Liaison Engineer/Interpreter
Republic of Korea Air Force, Seoul, Korea

1994 – 1995 Graduate Teaching Assistant, Department of Aviation Business
The Ohio State University

RESEARCH/CREATEIVE ACTIVITY

Sponsored Research

2006 Feasibility study of new regional international airline based in Incheon City, S.
Korea
Incheon City International Airport, S. Korea

2006 Analysis of the Role of 30-60 Seat Regional Jets and US Demand for 30-60
Seat Regional Jets
Embraer Aerospace & Rolls-Royce

2005 – 2006 Airline Length of Haul Trend Analysis - US Domestic, Europe & Asia
Bombardier Aerospace, Canada

1994 Awarded the Link Foundation Fellowship in developing a "Computerized
Airline Strategy Simulation" as a master's thesis

Papers/Presentations

2006 “Commercial Airliners’ Aircraft Deployment and Stage Length Trend
Analysis in the USA, Europe and Asia”, Presented at The 3rd Air Transport
Research Society Conference, Nagoya, Japan. The presentation has been
accepted for publication in a refereed journal

2001 "Can Domestic Operations Be a Potential Profit Source for an Airline in

South Korea If the Right Size Aircraft Were Deployed?", Presented at
The 3rd Air Transport Research Group Conference, Jeju Island, South
Korea

2005 Member of the Delta Mu Delta National Honor Society

PROFESSIONAL AFFILIATIONS

American Institute of Aeronautics and Astronautics

Air Transport Research Society

The Airline Group of the International Federation of Operational Research Societies

SERVICES

2005 Initiated and completed a cooperation agreement with Korean (Hankuk)
Aviation University (Seoul Korea) which has Engineering disciplines such as
Aerospace, Mechanical, Electrical and Computer along with other aviation-
related majors (about 4,000 undergraduate & graduate students)

Curriculum Vitae

Robyn Olson Litvay

EDUCATION:

Academic

- 2007-2009 Ph.D. candidate, The Ohio State University, Columbus, OH
Industrial and Systems Engineering, Operations Research.
- 1994-1998 Master of Science Degree , Oregon State University / University of Washington,
Corvallis, OR and Seattle, WA in **Materials Science and Engineering**, GPA 3.8/4.0.
Masters Thesis: *Dwell Time Low Cycle Fatigue in TI-6242SI.*
Recipient of the OSU Graf Fellowship, Fall 1996 and Winter 1997.
- 1983-1987 Bachelor of Science, Arizona State University, Tempe, AZ, **Aeronautical Technology**,
GPA 3.5/4.0.
Recipient of the Regents' Four-year Tuition Scholarship and the Phoenix 99's Flight
Scholarship.
- 1982-1983 Rotary Foreign Exchange Student to Cape Town, South Africa

Professional

- 1999 Boeing 737 New Generation Instructor Certification for simulator-based Transition and
Differences training courses, Seattle, WA.
- 1990 Beechcraft Bonanza and Baron Instructor Certification for Lufthansa Airlines airline
training program, Goodyear, AZ.
- 1990 FAA **Airline Transport Pilot** certification, Cockpit, Resource Management, Scottsdale, AZ
- 1989 FAA Multi-engine, Commercial, Instrument – Instructor Certification, Mesa, AZ.
- 1988 FAR 135 checked for air charter/taxi operations, Mesa, AZ.
- 1987 FAA Certificated Flight Instructor Certification, Mesa, AZ.
- 1986 FAA Commercial Pilot Certification, Mesa, AZ.
- 1985 FAA Instrument Pilot Certification, Phoenix, AZ.
- 1984 FAA Private Pilot Certification, Phoenix, AZ.

Robyn Olson Litvay

TEACHING APPOINTMENTS:

Academic

- 2004-present Lecturer, Department of Aviation, The Ohio State University, Columbus, OH, full time.
- 1994-1998 Teaching/Research Assistant, Department of Mechanical Engineering, Oregon State University, Corvallis, OR, full time. Department of Materials Science and Engineering, University of Washington, Seattle, WA, full time.

Professional

- 1999-2003 Boeing 737 New Generation Instructor for simulator-based Transition and Differences training courses, Seattle, WA.
- 1990-1992 Beechcraft Bonanza and Baron Instructor for Lufthansa Airlines airline training program, Goodyear, AZ.
- 1987-1990 Instructed students through Private, Commercial, Instrument, CFI, CFII, Multi-engine, and ATP training courses using FAR 61 and 141 syllabi, Mesa, AZ and Scottsdale, AZ.

WORK EXPERIENCE:

- 2004-present **Lecturer**, The Ohio State University, Department of Aviation, Columbus, OH
Developed three and am currently teaching two, undergraduate level, aviation courses within the College of Engineering.
Project Advisor for an Aviation Department sponsored, student, engineering project encompassing all disciplines of engineering.
- 2001 **Pilot, Horizon Air, Portland, OR**
First Officer on the Dash 8-Q400, 70 passenger aircraft for FAR 121 scheduled flights.
- 1999-2003 **Boeing 737 Flight Training Instructor**, FlightSafety Boeing Training International (now Alteon), Seattle, WA
Instructor for New Generation (models 600 through 900) 737s. Responsible for training pilots, including NetJets BBJ pilots, during Transition and Differences courses using fixed base and Level C simulators.
Responsible for creating and updating a 737 airplane performance workbook distributed worldwide, and used for all 737 NG training courses.
Responsible for developing computer based training software for transition training between the larger Boeing glass cockpit airplanes and the New Generation 737s.

Test instructor for web-based training software.

Robyn Olson Litvay

- 1994-1998 **Graduate Research Assistant/Graduate Teaching Assistant**, University of Washington, Seattle, WA, Oregon State University Materials Science Laboratory, Corvallis, OR
- Conducted dwell cycle and corrosion fatigue tests using the Instron 8521.
Performed various research associated tasks.
Performed teaching assistant duties for engineering undergraduate and graduate level courses including the teaching of laboratory sections and grading.
OSU College of Engineering TA of the Year for 1997.
- 1990-1992 **Flight Instructor**, Airline Training Center, Goodyear, AZ
- Ab initio program (through ATP standards) for Lufthansa, Air France, Iberia, and All Nippon Airlines with emphasis on line procedures and cockpit management.
- 1990 **Flight Instructor**, Cockpit Resource Management, Aero Mech, Scottsdale, AZ
- Instructed pilots preparing for ATP check rides including cockpit management procedures.
Instructed students enrolled in the Airline Preparation Program through Instrument, Commercial, CFI, CFII, and Multiengine FAR 61 and 141 syllabi.
- 1987-1990 **Charter Pilot/Flight Instructor**, SAS Executive Aviation, Mesa, AZ
- Piloted FAR 135 charter flights. Instructed students through Private, Commercial, Instrument, CFI, CFII, FAR 61 and 141 syllabi.
- 1986-1988 **Ground Operations Personnel**, America West Airlines, Phoenix, AZ
- Guided/pushed B-737s and B-757s in and out of the gate areas, loaded and unloaded the aircraft.
- 1984-1986 **Line Service Personnel**, Sawyer Aviation, Phoenix, AZ
- Serviced, positioned, and fueled general aviation aircraft used for charter and instructional flight.

Robyn Olson Litvay

HONORS, GRANTS, SPECIAL RECOGNITION:

- 1999 B-737NG Instructor Recognition and Award, FlightSafety Boeing, Seattle, WA
- 1997 Recipient of the OSU Graf Fellowship and Teaching Assistant of the Year Award, Oregon State University, Corvallis, OR.
- 1996 Recipient of the OSU Graf Fellowship, Oregon State University, Corvallis, OR.
- 1987 Scholastic All-American, Arizona State University, Tempe, AZ.
- 1987 Recipient Phoenix 99's Flight Scholarship, Arizona State University, Tempe, AZ.
- 1984-1987 Recipient of the Regents' Four-year Tuition Scholarship, Arizona State University, Tempe, AZ.

PUBLICATIONS: (former name Robyn Olson Faber)

M.E. Kassner, R. Faber, X. Li, Y.Ge, Y. Kosaka, J.A. Hall, "Low Cycle Dwell Time Fatigue in Ti-6242" *Metall. And Mater Trans.* 30A, pp.2383-2389, 1999.

M.E. Kassner, R. Faber, X. Li, Y.Ge, Y. Kosaka, J.A. Hall, "Low Cycle Dwell Time Fatigue in Ti-6242" *Fatigue Behavior of Titanium Alloys* (ISBN 0-87339-434-8), pp. 119-126. A collection of papers from the 1998 TMS Fall Symposium in Chicago, Illinois, October 11-15, 1998.

R. Faber, M.E. Kassner, "The Influence of the Microstructure on the Dwell-Time Fatigue Properties of Ti-6242" *Materials Week '97*, Indianapolis, Indiana, September 14-18, 1997.

COMMITTEES AND DEPARTMENTAL SERVICE:

- 2006 College of Engineering Diversity Committee
- 2005-2006 Project Advisor for a Department of Aviation sponsored, student, engineering project.
- 2005-2006 Women in Engineering, Women in Aviation
- 2004-2006 Department of Aviation Diversity Affairs
- 2005-2006 Department of Aviation Student Recruitment Committee

CURRICULUM VITAE

Jim Oppermann
7570 Deer Creek Drive
Worthington, Ohio 43085
H 614 841 9184 W 614 688 8746

EDUCATION

1987 to 1990 Master of Arts, Human Resources and Organization Development
University of San Francisco

1967 to 1971 Bachelor of Arts
Saint Mary's College of California

INDUSTRY EXPERIENCE:

2002 to Date THE OHIO STATE UNIVERSITY AVIATION DEPARTMENT

Lecturer in the Aviation Management Curriculum.

Administrator of NetJets Scholarships.

Coordinator of Internship and Employment opportunities across the Industry.

Assist Student Recruitment.

- Presentations to Interested Students and to Advisors of the Colleges we serve.
- Designed new Brochures and Pamphlet.
- Coordinated redesign of Department Website.

Faculty Advisor AHP. Coed Aviation Fraternity.

Assist AHP Spring Aviation Conference.

1991 to 2002 AMERICA WEST AIRLINES, Columbus Ohio

Supervision, Administration, and Development of a Hub Operation and its Customer Service Personnel. Directly Responsible for Passenger Services. Indirectly responsible to Operations and Support Departments. Liaison to Mesa Airlines at introduction of Regional Jet services. Advisory Supervision to new Cities and to Cities needing assistance.

1980 to 1990 Employment Manager and Executive Recruiting in Financial Services.

1974 to 1980 CHARTERED BANK OF LONDON, San Francisco, Operations Officer

1971 to 1974 ICYE, San Francisco, Administration of an International Youth Exchange.

SERVICE TO THE PROFESSION AND THE UNIVERSITY

- 2002 to Date Member, University Aviation Association
Aviation Management Committee Member.
Scholarship Committee Member
- 2002 to Date Program Staff International Airline Symposium
- 2003 to Date Member, Honors Committee
College of Engineering
- 2003 to Date Introduced and developed an Airline Online Simulation into the Aviation curriculum.

November 2006

CURRICULUM VITAE

Nawal K. Taneja

EDUCATION

1971	Ph.D. Air Transportation London University, England
1969	M.S. Management Science Massachusetts Institute of Technology
1967	M.S. Aeronautics and Astronautics Massachusetts Institute of Technology
1966	B.Sc. Aeronautical Engineering London University, England

TEACHING APPOINTMENTS

1985 - Present	Professor, Department of Aviation Ohio State University
1976 - 1979	Associate Professor, Aeronautical and Astronautical Engineering Massachusetts Institute of Technology
1973 - 1976	Assistant Professor, Aeronautical and Astronautical Engineering Massachusetts Institute of Technology
1970 - 1973	Lecturer, Aeronautical and Astronautical Engineering Massachusetts Institute of Technology

PROFESSIONAL

1984 - 1985	President and CEO All Star Airlines, Inc.
1980-1984	President Flight Transportation Associates, Inc.

1969-1970 Senior Economic Analyst
Trans World Airlines, Inc.

PUBLICATIONS

Books

- 2005 FASTEN YOURSEATBELT: The Passenger is Flying the Plane
Ashgate Publishing Limited, UK
- 2004 Simpli-Flying: Optimizing the Airline Business Model
Ashgate, Publishing Limited, UK
- 2003 AIRLINE SURVIVAL KIT: Breaking Out of the Zero Profit Game
Ashgate, Publishing Limited, UK
- 2002 Driving Airline Business Strategies through Emerging technology
Ashgate, Publishing Limited, UK
- 1989 Introduction to Civil Aviation - Second Edition
Lexington Books, DC Heath and Company, USA
- 1987 The International Airline Industry: Trends, Issues and Challenges
Lexington Books, DC Heath and Company, USA
(Also translated into Japanese)
- 1986 Introduction to U.S. Civil Aviation
Lexington Books, DC Heath and Company, USA
- 1982 Airline Planning: Corporate, Financial and Marketing
Lexington Books, DC Heath and Company, USA
- 1981 Airlines in Transition
Lexington Books, DC Heath and Company, USA
- 1980 U.S. International Aviation Policy
Lexington Books, DC Heath and Company, USA
- 1979 The U.S. Airfreight Industry
Lexington Books, DC Heath and Company, USA
- 1978 Airline Traffic Forecasting: A Regression Analysis Approach
Lexington Books, DC Heath and Company, USA
- 1967 The Commercial Airline Industry: Managerial Practices and
Regulatory Policies
Lexington Books, DC Heath and Company, USA

Journal Articles

- 1989 “Product Portfolio Planning for Airlines,” Transportation Journal, Vol. 28, No. 3, Spring-Summer 1989, pp. 50-55. (Co-author)
- 1989/90 “Infrastructure: its influence on the airline industry,” Airport Technology International, 1989/1990, pp. 18-20.
- 1985 “U.S. Deregulation: Review of American Experience,” Economic Regulation of Aviation in Australia, 1985, pp. 123-187.
- 1984 “World Civil Aviation in Chaos,” The Aeronautical Journal of The Royal Aeronautical Society, May 1984. (Special Edition)
- 1981 “Economics of Technological Change: A Joint Model for the Aircraft and Airline Industries,” Journal of Aircraft, Vol. 18, No. 1, January 1981, pp. 35-42. (Co-author)
- 1980 Evaluation of Scheduled Air Passenger Service in Domestic Markets,” Journal of Aircraft, Vol. 17, No. 1, January 1980, pp. 53-57. (Co-author)
- 1979 “Airline Productivity Redefined—Analysis of United States and European Carriers,” Transportation, Vol. 8, No. 1, August 1979, pp. 37-39. (Co-author)
- 1976 “Statistical Evaluation of Econometric Air Travel Demand Models,” Journal of Aircraft, Vol. 13, No. 9, September 1976, pp. 662-669.
- 1974 “Structured Flexibility in the Air Fare as a Means to More Prudent Regulation,” Transportation Research Forum, Vol. XV, No. 1 October 1974, pp. 7-13.
- 1973 “Financing of the Major U.S. Scheduled Airlines,” Transportation Research Forum, Vol. XIV, No. 1, October 1973, pp. 451-468.

Technical Reports

- 1989 “Discussions and Conclusions,” Aviation Forecasting Methodology: A Special Workshop Report. Transportation Research Circular No. 348,

August 1989. (Co-author)

- 1975 The state-of-the-art in Air Transportation Demand and Systems Analysis FTL Report R75-7 (Cambridge, MA: MIT, 1975). (Co-author)
- 1975 New Directions for Forecasting Air Travel Passenger Demand and Systems Analysis FTL Report R75-8 (Cambridge, MA: MIT, 1975).
- 1973 Aircraft Requirements for Low/Medium Density Markets FTL Report R73-4 (Cambridge, MA: MIT, 1973). (Joint Author)
- 1972 MIT/NASA Workshop: Airline Systems Analysis FTL Report R72-7, Vol. I and II (Cambridge, MA: MIT, 1972). (Joint Author)
- 1971 Air Travel Demand on the North Atlantic FTL Report R71 (Cambridge, MA: MIT, 1971).
- 1970 Concept Studies for Future Intercity Air Transportation Systems FTL Report R70 (Cambridge, MA: MIT, 1970). (Joint Author)
- 1968 A Multiple-Regression Analysis of Airline Indirect Operating Costs FTL Report R67 (Cambridge, MA: MIT 1968). (Co-Author)

Sponsored Research

1989-1990 Port Columbus International Airport Analysis of a broad spectrum of aviation data sources and the development of a statistical aviation data bank to be used by the airport administration in developing cost effective marketing strategies.

1980-1984 Flight Transportation Associates, Inc. (As the president of a multidisciplinary aviation consulting firm) Conducted numerous research studies dealing with the technical, operational, economic, management and regulatory problems of air transportation.) Following are just four examples of industry sponsored research.

The Chairman of the Board and the President of Republic Airlines sponsored a multi-year interdisciplinary research project to implement a comprehensive decision support system to identify and evaluate alternative airline marketing strategies in the deregulated environment.

The U.S. Department of State sponsored a research project to analyze the U.S. international airline industry profitability, obstacles to free competition, and the special requirements of operations to non-market economy nations.

The Massport Authority commissioned a research report on a forecast of passengers, cargo activity, and aircraft operations to determine the adequacy of existing and the need for additional airport facilities.

The U.S. Department of State commissioned a study of the identification and resolution of critical management issues vital to the success of its overseas minicomputer program.

1979-1980 Port Authority of New York and New Jersey Analysis of the effect of alternative night time noise restrictions or curfews on the flow of air freight out of the New York City region.

1975-1978 National Aeronautics and Space Administration Integrated models of the aircraft manufacturing and airline industries, incorporating new technologies and the relevant cash flows.

Organizer of 13 OSU International Airline Symposia—12 were financially supported by corporations in aviation related businesses

2006 Serving the Discerning Customer: The New Realty
Lisbon, Portugal—hosted by TAP Air Portugal

2005 An Evolving Business Model: The Pendulum Swings from
Product to Price and Settles on Value
Honolulu, Hawaii, USA—hosted by Continental Airlines

2004 New Business Realities for the 21st Century
Cochin, Kerala, India—hosted by Air India

2003 Changing Airlines in Pursuit of Value
Queenstown, New Zealand—hosted by Air New Zealand

2002 Controlling Change: A Multi-Industry Discussion
Lisbon, Portugal—hosted by TAP Air Portugal

2001 Managing for Value: A Multi-Industry Discussion
Lisbon, Portugal—hosted by TAP Air Portugal

2000 How Customers, Technologies and New Business Models
will Interact in the New Millennium
Amman, Jordan—hosted by Royal Jordanian Airlines

1999 Business Leadership in the Age of Convergence
Vienna, Austria—hosted by Austrian Airlines

- 1998 Airline Leadership Strategies beyond the Year 2000
Cape Town, Republic of South Africa—hosted by South African Airways
- 1996 Compelling Global Airline Strategies
Los Cabos, Mexico—hosted by Aeromexico
- 1995 Airline Reengineering
Columbus, Ohio, USA
- 1990 Marketing Perspectives for Airline of the Future
Columbus, Ohio, USA
- 1988 Airline Yield Management Symposium and Workshop
Columbus, Ohio, USA
- Service
- National and International
- 2006 Keynote address at the International Air Transport Association Conference on Loyalty Management, “Transformation of Airline Loyalty Programs.” Lisbon, Portugal
- 2004 Presentation before the Air Transportation of America on “Global Airline Industry: Transformational Forces and Potential Scenarios.” Washington, DC, USA
- 2004 Presentation before All Nippon Airways Management, “Vital Forces Necessitating Serious and Rigorous Changes in the Business Model of Traditional Airlines.” Tokyo, Japan
- 2003 Invited by the Secretary of Civil Aviation of India to make a presentation on challenges and opportunities facing the aviation industry in India
- 2002 Presentation before the STAR Alliance Sounding Board, “Managing Change in the Dysfunctional Airline industry.” Chicago, USA
- 2002-present Serve on the Board of Advisors of Teradata (a division of NCR)
- 2000 Keynote address at the International Air Transport Association Conference on Passenger services, “Concepts and Directions in Passenger Service.” Vancouver, Canada
- 1991 Invited by the Directorate of Civil Aviation to discuss Airline and Airports developments in China, Beijing, China

- 1989-1990 US National Research Council—served as an expert to provide advice on alternative strategies that might be adopted by the U.S. federal government to meet long-term airport capacity needs
- 1989 US U.S. Federal Aviation Administration (FAA) and Transportation Research Board (TRB)—participated in (and wrote the conclusions of) a two-day special workshop sponsored by the FAA and organized by the TRB to examine techniques and practices used by the FAA and other aviation forecasters and to explore other methodological approaches
- 1988-1990 International Aviation Management Training Institute (established by the Canadian Government)—elected as a member of the Senior Advisory Council to guide the Institute in its activities relating to the development of educational programs for senior management and government executives from the aviation industry worldwide
- 1989 International Air Transport Association (based in Geneva)-- participated (by invitation) in an IATA High Level Aviation Symposium held under the patronage of His Majesty King Hassan II of Morocco. The purpose of this symposium was to discuss the changing world air transport environment—searching for a proper balance. Marrakesh, Morocco
- 1987 International Air Transport Association (Geneva)— participated (by invitation) in a high level seminar organized by IATA and Royal Jordanian Airlines on the theme “Responding to the Market Needs in Different Parts of the World.” Aqaba, Jordan
- 1985 Invited by the Ministry of Civil Aviation, Australia to make a presentation on the U.S. airline deregulation experience and its relevance to the marketplace in Australia (August 1985)
- 1983 U.S. House and Senate—provided expert testimony during Hearings on the Impact of Deregulation on the Airline Industry
- 1983 International Air Transport Association (Geneva)— participated and delivered a research paper (by invitation) during a seminar organized by IATA and Lufthansa German Airlines. The purpose of this seminar was to determine if the U.S. domestic deregulation provides a suitable model for application abroad. Seeheim, Germany
- 1982 Invited by the Douglas Aircraft Company to present in Manila a seminar on the application of Microcomputers as decision-support systems in the airline industry

1979 U.S Congress, Office of Technology Assessment—served as a member of the Working Group on Advanced Air Cargo Airplanes

1978 U.S. Office of the Science Advisor—assisted with the development of U.S. Civil Aviation Policy

1975 Served as a member of the AIAA Working Group on the Impact of the Aviation Technology on U.S. Exports

1973 Served as the Chairman of the First Five-Day Workshop of the United Nations International Civil Aviation Organization on Air Traffic Forecasting Techniques. Montreal, Canada

State of Ohio

1986-87 Columbus Business Community—given the integral relationship between the growth in the local economy and the level of airline service available to and from the region, the Columbus business leaders requested a comprehensive analysis of commercial airline service at Port Columbus and the identification of service improvement strategies.

University

Served on

Department of Aviation Committees such as Faculty Search
College of Engineering Committees such as International Affairs
and Minority Affairs and University Mentoring Program
Graduate Faculty Representative on Candidacy and Final Oral
Examinations

CURRICULUM VITAE

Thomas M. York
Professor of Aviation

EDUCATION

Academic:

1965 – 1968	Princeton University Ph. D. Aerospace Sciences M.A. Aerospace Sciences	January 1969 June 1967
1964 – 1965	University of Maryland	
1960 -1961	The Pennsylvania State University M.S. Aerospace Engineering	August 1961
1956 – 1960	The Pennsylvania State University B.S. Aerospace Engineering	June 1960

TEACHING APPOINTMENTS

2005 – Present	Professor, Department of Aviation The Ohio State University	
1987 – 2005	Professor, Aeronautical and Astronautical Engineering The Ohio State University Chair, Dept of Aero. & Astro. , 1987 - 1991	
1979 – 1987	Professor, Department of Aerospace Engineering The Pennsylvania State Univ. Acting Head, Dept of Aerosp. Eng., 1985 – 1986	
1973 – 1979	Associate Prof., Dept of Aerospace Eng. The Pennsylvania State University	
1969 – 1973	Assistant Prof., Department of Aerospace Eng. The Pennsylvania State University	
1961 – 1965	Assistant Professor, Engineering Department United States Naval Academy	

PROFESSIONAL APPOINTMENTS

- 2001 – 2002 Visiting Research Professor
Applied Research Laboratory
The Pennsylvania State University
- 1994 – 1998 Ass't. to Director, Office of Policy and Planning
Ass't Sec'y. of Energy Research (Science)
U. S. Dept of Energy HQ, Wash., DC
- 1981 – 1982 Research Program Coordinator
Office of Fusion Energy Sciences
U. S. Dept of Energy HQ, Wash. DC
- 1978 Visiting Professor
Princeton University, Princeton, NJ
- 1977 Visiting Scientist
Los Alamos National Laboratory
Los Alamos NM
- 1970 – 2005 Consultant to:
Los Alamos National Laboratory
Livermore National Laboratory
NASA Glenn Research Center
Air Force Research Laboratory
White Sands Missile Range (Army)

RESEARCH/ACADEMIC ACTIVITY

Publications

1. "Pressure Distribution in the Structure of a Propagating Current Sheet," (with G. Jahn), Physics of Fluids, Vol. 13, No. 5, May 1970, pp. 1303-1309.
2. "Stress Dynamics in High Speed Piezoelectric Pressure Probes," The Review of Scientific Instruments, Vol. 41, No. 4, April 1970, pp. 519-521.
3. "Pressure Measurements in the Exhaust of a Pulsed Megawatt MPD Arc Thruster," NASA-TMX-52939, September 1970 (with C.J. Michels); Also AIAA Journal, Vol. 9, No. 12, December 1971.
4. "Flow Characteristics in the Exhaust of a Pulsed Megawatt Gas-Fed Arc," (with C.J. Michels), Proceedings Volume of 24th Gaseous Electronics Conference, October 1971; also, NASA TMX-67931; also IEEE Trans. on Plasma Science, Vol. PS-1, No. 4, December 1983.
5. "Transient Flow and Heating Characteristics in a Pinched Plasma Column," (with E.K. Stover), AIAA Paper 72-208, January 1972; Also Physics of Fluids, Vol. 17, No. 1, pp. 127-130, January 1974

Publications (continued)

6. "Dynamic Pressure Transducer System for Pulsed Flow Diagnosis," (with K.F. McKenna and C.J. Michels), Review of Scientific Instruments, Vol. 44, pp. 588, May 1973.
7. "Exhaust Flow and Propulsion Characteristics of a Pulsed MPD Arc Thruster," (with C.J. Michels), AIAA Journal, Vol. 11, No. 5 pp. 579-580, May 1973; Also NASA TMX-68026; Also AIAA Paper 72-500, April 1972.
8. "Transient Flow and Expansion of a Pinch Discharge Plasma in Self-Induced Magnetic Fields," (with K.F. McKenna), AIAA Paper No. 73-688, July 1973; Also Plasma Physics, Vol. 17, pp. 1-14, January 1975.
9. "End Loss from a Collision Dominated Theta Pinch Plasma," Physics of Fluids, Vol. 20, pp. 1556-1565, September 1977.
10. "Computer Modeling of Linear Theta Pinch Machines," (with E.K. Stover and E.H. Klevans), Physics of Fluids, 21(11), pp. 2090-2102. November 1973.
11. "Optimized Method of Measuring Directed Electron Velocities Using the Incoherent Regions of Laser Scattering," Applied Optics, Vol. 19, pp. 1582-1584, May 15, 1980.
12. "Evaluation of Nd-Glass Laser Systems for Incoherent Thomson Scattering Diagnostics of Low Density Plasmas," Applied Optics, Vol. 19, pp. 2118-2120, July 1, 1980.
13. "High Voltage SCR Trigger Circuit Utilizing Disc Capacitors in a Marx Array," Review of Scientific Instruments, Vol. 51, pp. 885-886, July 1980.
14. "Electron Collection by Blunt Probes in the Lower Ionosphere," (with C.I. Wu and T.W.K. Lai) AIAA Journal, Vol. 18, pp. 808-816, July 1980.
15. "Evaluation of Electron and Ion Densities in the Middle Atmosphere from Rocket-Borne Blunt Probes," Journal of Atmospheric and Terrestrial Physics, Vol. 44, No. 3, pp. 257-266, October 1981.
16. "Transient Loss From a Theta Pinch with an Initial Trapped Reverse Magnetic Field," (with J.E. Heidrich, J.W. Robinson, E.H. Klevans), Plasma Physics, Vol. 24, No. 10, pp. 1243-1260, February 1982.
17. "A Comparison of Spectroscopic and Thomson Scattering Measurements of Electron Densities and Temperatures in a Transient Expanding Plasma Flow," (with J.E. Heidrich, B.A. Jacoby, J.W. Robinson), J. Appl. Phys., Vol. 53, No. 6, pp. 4130-4135, June 1982.
18. "Computer Modeling of Theta Pinch Behavior with Plasma Column Rotation," (with J.R. McCowan, E.H. Klevans, J.E. Heidrich), Plasma Physics, Vol. 25, No. 1, pp. 25-31, April 1983.
19. "Compact Toroid Formations and Lifetime Studies in a Field Reversed Theta Pinch with High Fill Pressure," (with F.B. Mead), Proceeding of U.S.-Japan Symposium on Compact Toroid Research, Princeton University Princeton, New Jersey, February 1984.
20. "One-Dimensional Model of Compact Toroid Confinement and Translation in a Field Reversed Theta Pinch," (with D.R. Shieh), Proceedings of U.S.-Japan Symposium on Compact Toroid Research, Princeton University Princeton, New Jersey, February 1984.
21. "Roles for Magnetoplasma Thruster in Orbit Raising Missions" in Advanced Propulsion Concepts," (with G.R. Seikel, W.C. Condit), L. Caveny, Ed., Progress in Astronautics and Aeronautics, Vol 89, pp. 260-286, AIAA, New York, 1984.

Publications (continued)

22. "High Energy Nd-Glass Laser System for Thomson Scattering Diagnosis of High Temperature and Low-Density Plasmas" Rev. Sci. Instr., Vol. 56, No. 5, May 1985, pp. 1024-1026.
23. "FRC Plasma Transport Studies with 1-D Plus Modified Hills Vortex Radial Profiles" Proceedings of Fifth U.S. Compact Toroid Meeting, Los Alamos Scientific Laboratory, Santa Fe, New Mexico, May 1985.
24. "Large Aperture, High Speed Colorimeter for High-Energy Optical Pulses" (with M. Niimura) Reviews of Scientific Instruments, Vol. 56, (12), December 1985, (2253-2258).
25. "Fractional Fringe Fabry-Perot Interferometer Diagnostic for Low-Density Plasma Flow" (with J. Dooling) Reviews of Scientific Instruments, Vol. 57 (6), June 1986 (1090-1094).
26. "Studies of Plasma Transport in the CTTX Device Based on Local and Global Diagnostics- Transitional Plasma Behavior as a Function of Initial Static Fill Pressure," (with J.C. Dooling), Proceedings of Eighth U.S. Compact Toroid Symposium, University of Maryland, College Park, Maryland, June 1987.
27. "Double-pulse ND: Glass Laser System for Thomson Scattering Diagnosis of High-Temperature Plasmas," (with J.C. Dooling), Rev. Sci. Instr., Vol. 59, No. 8, pp. 1473-1475, August 1988.
28. "Second Harmonic Line Width Measurement of a Q-Switched Neodymium: Glass Laser Using Narrow-Band Interference Filters," Applied Optics, Vol. 27, No. 24, pp. 4999-5001, December 1988.
29. "Plasma Flow Processes within Magnetic Nozzle Configurations," AIAA-89-2711 (10 pp) Joint Propulsion Conference, July 1989; AIAA Journal of Propulsion and Power, Vol. 8, No. 5, Sept.-Oct. 1992, pp. 1023-1030.
30. "Compact Toroid Formation, Dynamics, and Lifetime in Collisional Plasma Generated at High Fill Pressure," (with J. Dooling, M. Niimura, F. Aghamir, F. Mead, D. Shieh), *J. Plasma Phys* (1990), pp. 419-449.
31. "Diagnostics and Performance of a 1/4-Scale MPD Thruster," AIAA-90-2665 International Electric Propulsion Conference, July 1990; Journal of Propulsion and Power, Vol. 9, No. 4, July-August 1993, pp. 553-560.
32. "Plasma Expansion in a Low-Power MPD Thruster with Variable Magnetic Nozzle" (with H. Kamhawi), AIAA 23rd International Electric Propulsion Conference; September 1993, Seattle, WA
33. "Theoretical Design of a Magnetic-Nozzle Acceleration System for Fusion Propulsion" (with I.G. Mikellides, P.G. Mikellides, P.J. Turchi), 36th AIAA/ASME/SAE/ASEE Joint Propulsion Conf, July 2000, Huntsville, AL.
34. "Numerical Simulation of Magnetically-Guided Plasma Flows for the Design of a Fusion Propulsion System" (with I.G. Mikellides, P.G. Mikellides, P.J. Turchi) AIAA STAIF Conference, January 2001, Albuquerque, New Mexico.
35. "Design of a Fusion Propulsion System-Part 2: Numerical Simulation of Magnetic-Nozzle Flows" (with I.G. Mikellides, P.G. Mikellides), AIAA J.of Prop. and Power. Vol. 18, No 1, 2002.

Publications (continued)

36. "Alternative Propellants for Pulsed Plasma Thruster" (with C.A. Scharlemann and P.J. Turchi), AIAA-2002-4270, 38th AIAA/ASME/SAE/ASEE Joint Propulsion Conf., July 2002, Indianapolis, IN.
37. "Investigation of a PPT Utilizing Water As Component Propellant" (with C.A. Scharlemann) IEPC, Int'l Elec Propulsion Conference, March 2003, Toulouse, France.
38. "Pulsed Plasma Thruster Using Water Propellant, Part I: Investigation of Thrust Behavior and Mechanism" (with C.A. Scharlemann), AIAA-2003-5022, 39th AIAA/ASME/SAE/ASEE Joint Prop. Conference, July 2003, Huntsville, AL.
39. "Pulsed Plasma Thruster Using Water Propellant, Part II: Thruster Operation and Performance Evaluation" (with C.A. Scharlemann), AIAA-2003-5023, 39th AIAA/ASME/SAE/ASEE Joint Prop. Conference, July 2003, Huntsville, AL.
40. "Mass Flux Measurements in the Plume of a Pulsed Plasma Thruster" (with C.A. Scharlemann), AIAA-2006-4856, 42nd AIAA/ASME/SAE/ASEE Joint Prop. Conference, July 2006, Sacramento, CA.

Graduate Theses Supervised

<u>Name</u>	<u>Title</u>	<u>Degree</u>	<u>Granted</u>
E.K. Stover	An Investigation of Transient Pressure and Plasma Properties in a Pinched Plasma Column	M.S. Aero.	1971
K.F. McKenna	An Investigation of the Transient Plasma Flow from a Self-Field Pinch Discharge	Ph.D. Aero.	1973
T.W-K. Lai	Electron Collection Theory for a D-Region Subsonic Blunt Electrostatic Probe	M.S. Aero.	1974
G.R. Allen	The Use of a Fresnel Zone Plate Imaging System as an X-ray Diagnostic for the Dense Plasma Focus Device	M.S. Nuc.	1975
L.B. Kaplan	Laboratory Simulation of Rocket-Borne D-Region Blunt Probe Flows	M.S. Aero	1977
R.S. Freeman	Studies of Eng Loss from a Theta Pinch Using a Twyman-Green Interferometer	M.S. Nuc.	1977
V.P. Veglia	The Design of Magnetic Mirrors for a Linear Theta Pinch	M.S. Nuc.	1979

Graduate Theses Supervised (continued)

<u>Name</u>	<u>Title</u>	<u>Degree</u>	<u>Granted</u>
R.G. Brasfield	Evaluation of the Performance of Blunt Electrostatic Ionosphere Probes in a Scaled Laboratory Experiment	M.S. Aero.	1979
J.E. Heidrich	An Experimental Study of the Transient Loss of Plasma from a Theta Pinch Having an Initially Reversed Magnetic Field	Ph.D. Physics	1980
B.A. Jacoby	Experimental Investigation of Energy Loss and End Loss Physics in a Lin. Theta Pinch	Ph.D. Nuc. Eng.	1980
A.J. Peterson, Jr.	The Design of a Frequency Doubled Nd-Glass Lazer Light Thomson Scattering Diagnostic Technique	M.S. Nuc. Eng.	1981
S.K. Chang	Numerical Analysis of Gerdian Probe Flows with Applications to Lower Ionosphere Data.	Ph.D. Nuc. Eng.	1981
K.L. Holsopple	Magnetic Guide Field Generation and Compact Toroid Scaling for a Field Reverse Theta Pinch	M.S. Nuc. Eng.	1981
D.R. Shieh	Numerical Analysis of Compression and Outgassing Effects on Electron Density Indications from Langmuir Tip Probes and Impedance Probes	M.S. Nuc. Eng.	1982
J.C. Dooling	The Evaluation of Electron Line Densities in an Arc Discharge Using a Fabry-Perot Interferometer	M.S. E.E.	1983
F. Aghamir	Plasma Heating, Compression and Lifetime Studies in a Field-Reversed Theta Pinch	M.S. E.E.	1983
C.Y. Gung	Comparison of Middle Atmosphere Electron and Ion Densities Developed from Probe Data and Predicted by Chemical Models	M.S. Nuc. Eng.	1983
D. Azevedo	Measurements of Plasma Properties with Electrotation Probes in Flowing Plasmas	M.S. Aero.	1985

Graduate Theses Supervised (continued)

<u>Name</u>	<u>Title</u>	<u>Degree</u>	<u>Granted</u>
D.R. Shieh	Numerical Modeling of Compact Toroid Transport Processes	Ph.D. Nuc. Eng.	1985
F.B Mead	Compact Toroid Formation and Lifetime Studies with High Fill Pressure	Ph.D. Aero.	1986
J. Dooling	Nd-Glass Thomson Scattering in Low Density Plasmas	Ph.D. E.E.	1987
T. Kenney	Acceleration Mechanisms in MPD Thrusters	M.S. Aero.	1987
P. Mikellides	Computational Model of Flow in Magnetic Nozzle	M.S. AAE	1989
C. Zakrzewski	Performance of 1/4 Scale MPD Thruster	M.S. AAE	1990
G. Soulas	Experimental Study of Plasma Flow in a Magnetic Nozzle	M.S. AAE	1991
K. Li	Multi Beam Interferometer Study of Plasma Acceleration in Magnetic Nozzles	M.S. AAE	1992
H. Kamhawi	Experimental Study of 1/4-Scale MPD Thruster with Variable Magnetic Nozzles	M.S. AAE	1993
R. Perreo	Shock Wave Induced Chemistry Effects on Rocket Probes	M.S AAE	1994
T. Umeki	Energy Deposition in Pulsed Plasma Thrusters	Ph. D.	2000
H. Kamhawi	Inductively Powered Coaxial Plasma Thrusters	Ph. D.	2000
C. Scharlemann	Optimized Pulsed Plasma Thrusters	Ph. D.	2004
D. Marriott	Experimental Study of Fusion Plasma Flow Through Magnetic Nozzles	Ph. D.	2004
I. Claypool	Effects of Applied Magnetic Fields on Pulsed Plasma Thrusters	Ph. D.	2006

PROFESSIONAL ACTIVITY

Accomplishments during appointment at U.S.. Dept. of Energy , 1994 - 1998:

- Exec. Office of the President (U.S.), Office of Science and Tech. Policy (OSTP)
Presidential Review Directive (Committee) on "Government-University Partnership", Working Group Member

Report issued:

“Renewing the Federal Government-University Research Partnership for the 21st Century”, NSTC PRD-4 Report, Office of Science & Technology Policy, Executive Office of the President, 1999

- DOE Program Manager for the National Academy of Sciences
"Government-University-Industry Research Roundtable (GUIRR)."

DOE Program Manager for the National Academy of Sciences study on.
"Graduate Science and Education in the United States."
- Coordinator for the Reorganization of Technical Reviews/Management for the (18) DOE National Laboratories.

Other related duties 1994 - 1998

1. DOE Technical Review Oversight Pilot (for DOE National Laboratories)
- Committee Member
2. DOE Business Management Oversight Pilot (for DOE Nat Labs.)
- Committee Member and Liaison
3. DOE Environment, Safety & Health Oversight Pilot (for DOE Nat. abs.)
- Liaison
4. DOE Secretary of Energy Advisory Board (SEAB),
Laboratory .Operations Board (LOB)
"Strategic Laboratory Mission Plan"
Science and Technology Coordinator
5. DOE National Academy of Sci./Eng./Inst. Of Med.-
GE4 (Global Education for European Engineers and Entrep.)
GE4 International Board, Member
6. DOE Office of Chemical Sciences
Program Coordinator and Ass't. Sec'y Liaison
a) Program Coordinator: Combustion

Other related duties 1994 – 1998 (Cont.)

- DOE Office of Chemical Sciences
 Program Coordinator and Ass't. Sec'y Liaison (Cont.)
- b) Advanced Gas Turbine Systems Research Program
 Program Review, FETC, Morgantown, WVA
 Combustion Workshop, LBNL, Berkeley, CA
 - c) Combustion Coordinating Group, Secretary
 (organize activity across all DoE offices)
 - d) Partnership for Academic-Industrial Research Program,
 Coordinator for combustion proposals.
7. DOE Argonne National Laboratory
 Chemistry Department Review
 - Committee Member-
8. DOE Technical Reviews and Policy Deliberations, for example:
 R&D Council
 Advisory Committees
 Office of Naval Research (DoD in general)
 National Science Foundation
 NASA

Research Grants

Research Grants and Contracts:

<u>Dates</u>	<u>Title</u>	<u>Sponsor</u>	<u>Amount</u>
11/1/99 - 2005.	Breakthrough to Optimized Pulsed Plasma Thrusters	AFOSR	\$120,000.
9/1/98 - 2004.	Magnetic Nozzle Studies for Advanced Space Propulsion	NASA-Glenn	\$239,000.
7/1/94 - 6/30/98	IPA Appointment to Office of Planning and Analysis, Ass't. Sec'y for Energy Research, U.S. Dept. of Energy	DOE	\$520,000
2/1/89 - 8/30/93	IR and FIR Laser Diagnostics for Plasma Thrusters using CW CO ₂ Radiation	AFOSR	\$ 80,000
12/8/87 - 12/1/91	The Effects of Magnetic Nozzle Configuration on Plasma Thrusters	NASA-Lewis	\$225,000
12/1/88 - 6/30/90	Laser Diagnostics of Plasma Thrusters	AFOSR	\$88,430
1/86 - 2/87	Multi-Pulse Diagnostic Laser	DOE	\$40,000

Research Grants and Contracts (CONT)

<u>Dates</u>	<u>Title</u>	<u>Sponsor</u>	<u>Amount</u>
12/84 - 6/86	Plasma Conv. & Wall Interactions	DOE	\$140,000
6/85 - 12/85	Multi-Pulse Glass Laser	LANL	\$23,000
12/82 - 12/84	Plasma Convection and Wall Interactions	DOE	\$320,000
1/84 - 9/84	MPD Thruster Performance	Air Force RPL	\$12,863
11/83 - 12/84	High Power Laser Propulsion Experiments	AFOSR	\$130,000/2
6/83 - 6/84	Nd-Glass Laser System (Equipment and Expt. Res.)	ONR(AFOSR)	\$140,000
10/1/81 - 11/30/82	Plasma Convection and Wall Interactions	DOE	\$134,000
6/1/81 - 11/30/82	Analysis of Rocket Borne Probes for Study of Middle Atmosphere Composition and Electrodynamics	NSF	\$ 76,000
10/1/80	Plasma Convection and Wall Interactions in Magnetic Confinement Systems	DOE	\$87,350
6/1/80 - 11/30/81	Analysis of Rocket Borne Probes for Study of Middle Atmosphere Composition and Electrodynamics	NSF	\$76,000
10/1/79 - 9/30/80	A Study of Flow and Loss Processes at the End of a Linear Theta Pinch	DOE	\$158,000
6/1/79 - 9/30/79	A Study of Flow and Loss Processes at the End of a Linear Theta Pinch	DOE	\$58,000
6/1/78 - 5/31/79	Study of Flow and Loss Processes at the End of a Linear Theta Pinch	DOE	112,950
2/77 - 6/79	Studies of Rocket Borne Probes Used in Measurements of the Middle Atmosphere	NSF	102,100
6/1/77 - 5/31/78	A Study of Flow and Loss Processes at the End of a Linear Theta Pinch	DOE	105,000
6/1/76 - 5/31/77	A Study of Flow and Loss Processes at the End of a Linear Theta Pinch	DOE	128,000

Recognition and Honors:

The following at The Pennsylvania State University:

- 1985 Premier Teacher, College of Engineering
- 1983 Outstanding Teacher, College of Engineering
- 1979 Outstanding University Professor
- 1974 Outstanding Advisor ,College of Engineering

University Service:

Pennsylvania State University:

Committee Work on College, Department, and University Levels

1. 1969-75 Aerospace Engineering Department Curriculum Committee
2. 1971-72 Chairman, Aerospace Engineering Department Curriculum Committee
3. 1969-77 Aerospace Engineering Department Committee on Academic Dishonesty
4. 1971-73 College of Engineering Academic Committee
5. 1972-73 Secretary, College of Engineering Academic Committee
6. 1971-73 College of Engr. Ad Hoc Committee on Common Two Year Program
7. 1971-73 Chairman, Inter-College Committee on Mathematics Courses
8. 1972 College of Engr. Ad Hoc Committee on Technological Concepts
9. 1975-76 Aerospace Engineering Department Graduate Curriculum Committee
10. 1974-75 Electrical Engineering Department Review Committee
11. 1974-76 College of Engineering Academic Dishonesty Committee
12. 1975-76 Engineering Laboratory and Orientation Steering Committee
13. 1974-76 University Developmental Year Program for Disadvantaged Students
14. 1974-77 Chairman, Graduate School Committee on Thesis Policy and Procedures

15. 1975-77 Graduate School Committee on Program Review and Evaluation
 16. 1979-80 Engineering College Curriculum Task Force on Instructional Innovation
 17. 1979-80 Chairman, Engineering College Committee on Peer Evaluation of Faculty
 18. 1980,81 University Workshops on Instruction Development
 19. 1980-81 Graduate School Subcommittee on Courses and Programs
 20. 1980-81 University Committee for Selection of Evan Pugh Professorships
 21. 1980-81 Graduate Council - Course and Program of Study Committee
 22. 1982-83 Promotion and Tenure Committee (College and Department),
Graduate Council
Academic Standards Committee
New and Revised Programs
- Committee Work on College, Department, and University Levels (continued)

23. 1983-84 Graduate Curriculum Committee
Aersp. 405 Experimental Course Committee
Long-Range Planning Committee
Promotion and Tenure Committee
Equipment Proposal Evaluation Committee
Graduate Council
Academic Standards Committee, Chairman
New and Revised Course and Program Committee
Fellowship Awards Committee
24. 1984-85 College Strategic Planning Committee
Graduate Council
Chairman - New and Revised Programs and Courses - Grad. Council
Member - Academic Standards - Grad. Council
Member - Fellowships and Awards - Grad. Council
Member - Ad Hoc Committee on Grades - Grad. Council
Member - Committee on Committees - Grad. Council
Chairman - Research Equipment Proposal Evaluation Comm. (Engr.)
25. 1985-86 College Strategic Planning Committee
Grad. Council
Member - Committee on Committees - Grad. Council
Member - Fellowships and Awards Committee - Grad. Council
Member - Conflict of Interest & Ethics Committee - Grad. Council
Faculty Senate

Member - Academic Programs and Planning Committee
Dept. Rep. - DYP Advisor

26. 1986-87 University Scholars Selection Committee (University)
Faculty Senate
Parking Task Force (University)
Intercollege Research Program Review Committee (University)
Promotion & Tenure Committee (University)
Search Committee - Dean of Engineering
Chairman Undergraduate Course Committee (Department)
Chairman Awards Committee (Department)
Promotion and Tenure Committee (Department)

7/1/87 Assumed position as Chair AAE at Ohio State University

The Ohio State University:

- | | |
|---|-------------|
| Department Chair, Aeronautical and Astronautical Engineering | 1987 – 1991 |
| University Senate | !991 – 1994 |
| • Chair (1991-'92) University Committee to Investigate the Presidential Cancellation of the Columbus Telescope Project. (This international project to build the world's largest telescope was precipitously cancelled with National repercussions.)
This highly politicized committee successfully resolved all issues. | |
| Senate Committee on Academic Affairs | 1992 – 1994 |
| Chair, Steering Committee of the University Senate | 1993 – 1994 |
| • Chair of University Senate Steering, by my executive action, formed and organized the University Oversight Committee for Restructuring (OCR).
(This Committee successfully facilitated the reorganization of the university administrative structure.) | |
| Member, Women and Minorities Senate Committee. | 1993 - 1994 |
| Member, Senate Fiscal Committee | 1998 - 2000 |
| Member, University Executive Review Committee | 2000 – 2001 |
| Nominee (unsuccessful) for Secretary of the Faculty | 2000 |