Department of Aerospace Engineering
Annual Report

Prepared by: Richard Wlezien

Iowa State University
May 30, 2011
Section 1. Organization, leadership, and management

1. At the end of this report, attach a copy of your department’s organization chart, governance document, strategic plan, and key performance indicators. For the KPIs, recall that your department should have fewer than ten; show trends and targets; and present data concisely in tables or graphs. For instance, see how the university links its plan with internal and Regents’ performance indicators at:


With which constituency groups you have you shared your organization chart, governance document, strategic plan, and KPIs?

- Meeting of the IAC on April 8 2011, at which time the organization chart and KPIs were discussed
- This meeting included representatives from industry and government; undergraduate leadership from the departments also attended
- Strategic directions were discussed and subcommittees met to address topics to be included in the Aerospace Strategic Plan; strategic plan due to be finished in September 2011
- Governance document is being rewritten over the summer

2. Describe the areas of responsibility and authority delegated to your department’s associate chairs.

- Associate Chair for Research has responsibility for coordinating and growing department research portfolio, organizing coordinated research proposals among multiple faculty, identifying new research opportunities for the department, as well as serving as DOGE. This Associate Chair interfaces directly with the COE Associate Dean for Research.
- Associate Chair for Education has responsibility for Chairing the Aerospace Curriculum Committee, coordinating course schedules and teaching assignments, ABET accreditation, oversight of students advising, and student recruiting activities at the graduate and undergraduate level. This Associate Chair interfaces directly with the COE Associate Dean for Research.

3. Describe your department’s process for engaging students, faculty, and other stakeholders in budgeting, planning, and decision-making (e.g., an advisory council for differential tuition and technology fee funds).

- Student representation on the EFTF committee to determine technology priorities for the department
- Regular meetings with the leadership of the departmental organizations, such as AIAA and AAS
- Weekly meetings with the AerEpedia wiki team, and groups of undergraduates who serve as student mentors
- Biweekly faculty meetings to discuss departmental priorities
- Senior advisory council, consisting of Full Professors to address strategic issues within the department
4. Describe progress being made to improve efficiency and increase collaboration (with other departments, with the college, or with other organizations on campus).

- Working with affected departments to improve the delivery of the EM services courses. In the near term we are identifying and correcting deficiencies. In the long term, we are developing a cross-department model for the EM program.
- A proposal to upgrade EM laboratory equipment was developed as a collaborative effort between Aerospace, Civil, Construction, and Environmental and Agricultural and Biosystems Engineering departments. Senior Lecturer Joe Schaefer submitted and was awarded an EFTF proposal in the amount of $84,500 to purchase equipment for the EM 327 Strength of Materials Laboratory that will allow modern data collection and data analysis for experiments involving Beam Loading and Torsion Loading.
- Aerospace Engineering department is collaborating with the College of Design (and particularly the new Product Design Program) on a shared fabrication capability to be jointly used by students in both programs. The first purchase is a state of the art 3D printer.
- Our office staff initiates and or attends meetings with their peers from other departments to discuss policies and procedures, and to brainstorm best practices.
- Bill Rickard, who supervises the Department fabrication facility, regularly meets with staff in other departments to brainstorm requirements and share resources.
- Administrative Specialists currently work across departments to backup each other during vacations and other times of overload. Ann Laws is currently spending several hours a week in ECpE to assist a personnel transition.

5. Describe your department’s efforts and policy for mentoring early career faculty.

- Each Assistant Professor is assigned a faculty mentor from among the senior faculty to help them learn the procedures of the university and prepare for promotion and tenure.
- The Department Chair meets with each Assistant Professor on a monthly basis to update status and offer advice and assistance.

6. Describe your department’s efforts and policy for staff professional development.

- Staff is regularly encouraged to take training courses and attend seminars that will assist them with their job position. Training is discussed and encouraged during staff reviews each year.
- We supported an international trip for Kathy Platts, academic advisor, to participate in the Advisor Impact Trip to enhance collaboration among participating institutions and provider her with broader knowledge and experiences.
- We provide travel support for academic advisors to attend National Academic Advising Association (NACADA) conferences to enhance personal growth in their positions.
- Staff duties have recently been realigned to provide some staff with increased responsibilities to allow for personal career growth.
- All personnel are asked to synthesize a career development plan that will lead to opportunities beyond their current positions.
Section 2. External engagement, private fundraising, and gift stewardship

1. Describe efforts in your department to communicate and interact with alumni and corporations.

- We continue to work closely with development to visit prospective donors. In the past year, we have visited Boeing and Lockheed as well as a number of smaller companies.
- We continue to meet with prospective donors whenever the opportunity arises
- The makeup of our IAC is strategic with respect to companies and donors
- There are regular communications with key donors
- The Hall of Distinguished Alumni event has been elevated to a formal Department event

2. What are the top private fundraising priorities in your department?

In prioritized order:
- Support for the Make to Innovate initiative, which may include general support or funding for specific projects. This would also include funds to improve the quality of the undergraduate laboratories.
- Support for graduate fellowships to help in attracting top-quality graduate students
- Named endowed positions for junior faculty
- Undergraduate scholarships

3. Describe your efforts to steward current donors and their gifts.

- Yearly meetings with donors, where possible; we also encourage faculty having chaired positions to remain in regular contact with donors.
- Updates to existing and prospective donors on a regular basis
- Donor visits to campus, including tours and meetings with students.
- Continuing collaboration with the development staff

4. What process is used in your department for gift compliance (tracking that funds are being expended and balances are not unduly accumulating, ensuring that the donor’s intent is being met, and seeing that reports/letters are being sent)?

- Monthly budget planning meetings take place to review the status of department accounts, including Foundation accounts. Spending plans are developed that coordinate with Department goals.
- Expenditures that take place on the gift accounts are reviewed prior to posting to ensure that the expenses are allocable and allowable and consistent with the donor’s intent.
- Gift acknowledgement letters are prepared by the staff and personally signed by Chair on a monthly basis and are sent to donors.
Section 3: Faculty responsibilities

1. Do all faculty members have a signed Position Responsibility Statement?
   - All faculty received a revised PRS this year as part of the annual review process. In addition, all faculty completed their COI review and have received their annual review document.

2. Summarize your department’s policy on teaching load and definition of “research active.”
   - The nominal teaching load is two three-hour courses per semester.
   - A faculty who is “research active” will have this course load decreased by one.
   - A faculty who has a three-year running average research expenditure greater than $150K is defined to be research active.
   - Lecturers and faculty who have no research activities have a nominal teaching load of four courses per semester. This teaching load may be reduced for tenure-track faculty based on service activities or unfunded graduate student advising.

3. Summarize your department’s policy for a faculty member to buy-out of an assigned course using research funds.
   - Research active faculty may buy out up to two courses per year. Those who fall below the research active threshold may ask for special consideration (using the time to develop a research proposal, for example) for a one-course buyout.
   - We will ask for buyout plans for the following academic year at the end of the Spring semester, so that we have time to line up Lecturers to teach the courses.
   - The cost for a one-course buyout is one month of salary. The cost of buying out a second course in an academic year is an additional 1.5 months of salary. The cost for buyout of a lab course (a 1.5 course equivalent) is 1.5 times the cost (1.5 months of salary for the first course and an additional 2.25 months of salary for the second).
   - The buyout allocation will be used to support Lecturer salaries during the semester in which the buyout occurs.
Section 4. Teaching assignments

1. What is your department’s target for the maximum percentage of student credit hours (SCH), section credits (SC), or course sections (CS) instructed by non-tenure eligible faculty?

   - The department target for the maximum percentage of SCH taught by NTE faculty is 25%

2. How was that target determined? Has it been discussed with the faculty?

   - Based on data provided by the university, we were led to believe we were in near-compliance with this target. It was discussed briefly at one faculty meeting.
   - We recently gathered independent data that shows that we have exceeded the target in past years.
   - The sole reason for this excess is the assignment of three section of Statics to Peggy Boylan-Ashraf, resulting in as much as 30% of the department SCH being taught by her alone.
   - We have already addressed this issue by redistributing course assignments; this anomaly will not be repeated.

3. Provide explanation and justification if the target exceeds 25%.

   N/A
A. Student success

1. Describe efforts in your department to improve student retention.

- Launch Pad Learning Committee helps first and second semester freshman adjust to college life and link them with College activities.
- Have meetings with first and second semester freshman to help them discover what their needs may be.
- Established new Advising Center for all students
- Enrollment meetings with Sophomores, Juniors and Seniors
- Rework of AerE 160 to build excitement among students for Aerospace Engineering

2. Describe efforts to promote timely progress to degree (e.g., ensuring course availability, promoting curriculum flexibility, strengthening advising, and providing financial aid).

- The advisors make sure that all courses are made available to students every semester as needed.
- The advisors provide flexibility of courses when students have issues in the program and are out of sequence.
- We are developing an advising center where students can meet with advisors in privacy, and where they can feel they have a home.
- We do not provide financial aid but work with the college to help assign aid
3. Describe proactive efforts to recruit students, both direct entry and transfer.

- Calling students who have been offered admission to Iowa State, but have not yet accepted.
- Email students to welcome them to ISU.
- Actively support tours of incoming students and their parents.
- Looking towards recruiting visits in Iowa and surrounding states, particularly Minnesota.

B. Innovation

1. Describe how your department is improving the undergraduate student learning experience using the differential tuition funds allocated to your department’s block budget.

- Differential tuition funds were used to add an EM lecturer and pay salary for Peggy Boylan-Ashraf
- Differential tuition funds were used to add a second academic advisor, Kathy Platts
- Differential tuition funds were used to pay for Michael Garton to teach the capstone senior design course over the past year
- Contributed towards student open lab projects to provide hands on engineering experiences to students
- Differential tuition funds help support the renovations are taking place for a new student advising center

2. Describe how your department is improving the undergraduate student learning experience using the technology fee funds allocated to your department’s block budget.

- Upgraded the computer lab for use by undergraduates with modern computers. Typically no machine is retained for more than 6 years.
- Purchased a rapid prototyping machine, Objet Alaris-30, to enhance student learning for model testing. A second, more powerful machine will be purchased shortly to increase these capabilities.
- Digital image software for the flow visualization in aerodynamics studies.
- Purchase of instrumentation and computer hardware to support undergraduate labs in which analog instrumentation has been used in the past.

3. Describe the new undergraduate program initiatives underway in your department.

- Sustaining the Progress of Inspired Careers in Aerospace (SPICA):
  Faculty Advisor: Peggy Boylan-Ashraf and Kathy Platts
  This group focuses on ways to improve the experiences in the Aerospace Engineering Department, particularly among women. They are a critical part of helping the freshman become successful in the department by sharing their experiences and by experiencing mentoring opportunities from juniors, seniors, and alumni.

- AerEpedia
C. Student groups

Describe how your department supports student groups, particularly those with a strong project, design, and fabrication emphasis. Copy the section below as needed. It is not necessary to list information for every student group—only those groups with a strong connection to your department.

- Launch Pad Learning Community
  Faculty advisor: Kathy Platts and John Jacobson
  In PRS: Indirectly, as duty of Faculty Advisor
  We provide yearly Peer Mentor training in August for all current and new Peer Mentors. Weekly meetings are held to discuss concerns, issues, or plan social activities. Provide weekly hours for Peer Mentors to help the first semester & second semester freshman with current class work.

- Rubik Cube Club:
  Faculty Advisor: John Jacobson
  In PRS: Indirectly, as duty of Faculty Advisor
  This club helps to facilitate the social aspects for the International and US students. By having the students participate in friendly competitions this helps all students to get to know each other better. This course is semi-academic due to the interaction of all students.

- Air ISU:
  Faculty Advisor: Vinay Dayal
  In PRS: Indirectly, as Associate Chair for Undergraduate Education
  This group encourages the students to become involved in the construction and flying of a Light Sport Aircraft. This allows new engineering students to gain experience with aircraft construction, offers opportunities to interact with large engineering companies, and senior projects.

- Cyclone Business Jet:
  Faculty Advisor: Vinay Dayal
  In PRS: Indirectly, as Associate Chair for Undergraduate Education
The Cyclone Business Jet offers undergraduate engineers to work on designing and building of a 10-passenger business jet airplane. Their goal is to apply acquired skills to real life problems with a finished product in mind. Students from freshman to seniors take part and students from Design College have also joined.
Section 6: Graduate program

1. Describe how your department is improving the graduate student learning experience using the differential tuition funds allocated to your department’s block budget.
   - Provide support for graduate student organized meetings
   - Renovations for a new graduate office suite
   - Provide support for graduate students whose major professor’s money from grants is “in process”

2. Describe how your department is improving the graduate student learning experience using the technology fee funds allocated to your department’s block budget.
   - This fee has been used to upgrade computers for graduate students
   - The fee was used to purchase a high resolution 3D printer, which has been used frequently by graduate students to support their research
   - The fee furnished conference rooms regularly used for thesis defenses and for seminars
   - The fee also was used to purchase computer servers to support non-sponsored graduate students research; department funds were used to purchase servers for sponsored research and a service account will be set-up to make them self-supporting

3. Describe the new graduate program initiatives underway in your department.
   - We reduced the course requirement of a PhD degree in Aerospace Engineering from 48 to 36 credits. The reduced load will allow the students to focus more on their research and produce high impact results rather than to take courses which are not necessary
   - Recruiting event for our own junior and senior students with GPAs of at least 3.5
   - Invite top-notch and minority students to visit campus
Section 7. Diversity

1. Describe how your department has established, and is maintaining and promoting, a diversity initiative, as best suited to the need of your department, which is directed at recruitment, retention, and academic success of women and/or under-represented minority students.

- Statistics show that the percentage of the female students in AerE department is about 9% in 2010 (54 out of 582 undergraduate students), which is lower than the CoE average of 15% (ISU average is 43.8%). The percentage of the minority students enrolled in AerE department in 2010 is 10%, which is higher than the COE average of 8.2% (ISU average is 6.0%).
- AerE is working proactively to establish an “AerE Initiative for Diversity” (AID) Program for the recruitment, retention, and academic success of the women and under-represented minority students enrolled in ISU’ Aerospace Engineering program. More specifically, the following actions are being performed/planned under the AID program:
  - Develop innovative recruiting activities to encourage incoming freshman students, especially the women and under-represented minority students, to enroll in ISU’s aerospace engineering program.
  - Re-design the freshman courses with the objectives of retention of freshman students, especially the women and under-represented minority students, to stay in the aerospace engineering program.
  - Assign faculty mentors to the women and under-represented minority students enrolled in the Aerospace Engineering program.
  - To leverage ISU’s existing infrastructures such as Program for Women in Science and Engineering (PWSE) and Freshman Honors Program to provide scholarships and to encourage the women and under-represented minority students to work in AerE research laboratories as undergraduate research assistants and/or summer interns. We are funding one such student to work with the Department Chair this summer.

2. What is the name of that program?

- The name of the program is “Aerospace Initiative for Diversity” (AID) Program.

3. Who is the Professor-in-Charge of that program? Attach a copy of that faculty member’s Position Responsibility Statement and indicate that effort is acknowledged as an assignment.

- Dr. Hui Hu has been assigned to be the Professor-in-Charge for Diversity. Dr. Hu is also a member of the Diversity Committee of Engineering College of Iowa State University.
- This position is noted in Dr. Hui Hu’s Position Responsibility Statement.

4. Describe the staff support provided to this program.

- Laurie Hoifeldt is the designated staff member who supports AID. Additional support id provided by the two undergraduate advisors.
5. What are the goals and key performance indicators for this program?

- The goals of the AID program is “to promote and maintain the recruitment, retention, and academic success of the women and under-represented minority students in ISU’ Aerospace Engineering program”.
- The key performance indicators of the AID program are:
  - The percentage of the female students enrolled in Aerospace Engineering. The goal is to increase the percentage of the female students in AerE department to reach a minimum of 15%.
  - The percentage of the minority students enrolled in Aerospace Engineering. The goal is to keep on being a leader in the College of Engineering by growing minority students enrollment to 15%.
Section 8. International engagement

1. Describe how your department has established, and is maintaining and promoting, an international initiative, as best suited to the need of your department, which is directed at such opportunities as study abroad or co-op abroad programs, recruiting pipelines, research partnerships, distance education, and joint degrees.

   - Have established a 2+2 program with BITS, Dubai and a preferred treatment for MS and PhD program with the admission process (COE has signed a Memoranda).
   - Have an active exchange program (study abroad) with DTU, Denmark. We have exchanged several students and the experience has been very positive.
   - Currently working on a cooperative arrangement with Anna university (very initial stages), India which has a good Aerospace program. A delegation of Professors from COE visited the university about two years ago. Starting the process to see if we can reach a state where a memorandum of agreement is possible before the end of the calendar year.
   - The department has also signed a memorandum of agreement with Jiatong in China which is actively pursued by Ping Lu, who has spent time there in the last two years.
   - Prof. Bong Wie has had discussions about a program with a premier institution in Korea.

2. What is the name of that program?

   - The program is in early stages and has no formal name at this time

3. Who is the Professor-in-Charge of that program? Attach a copy of that faculty member’s Position Responsibility Statement and indicate that effort is acknowledged as an assignment.

   - Professor Ganesh Rajagopalan led this activity through the end of the Spring semester. We met recently with Professor Mufit Akinc and are looking at a change of leadership to someone who has a bit more time to devote to this activity. It will be written into the appropriate PRS.

4. Describe the staff support provided to this program.

   - Sue McLaughlin is the designated staff member who supports this activity.

5. What are the goals and key performance indicators for this program?

   - Preliminary KPI: Increase participation in co-op and international exchange programs to 25% of the students.
   - Develop ways to measure performance by expecting students to report their experience.
   - Realign the course offerings to enable students to go on these programs without undue delay in graduation.
Section 9. Other information

Some 2010 Faculty Highlights

• Ashraf Bastawros was involved in the development of the ionic membrane electrochemical patterning process and the application of magneto-rheological materials into nano-surface machining.
• Dale Chimenti was awarded two US patents and submitted a 370-page book manuscript on Ultrasonics in Composites.
• Paul Durbin was an invited lecturer for a short course on turbulence in rotation flow and turbomachinery at the VonKarman Instit., Belgium.
• Steve Holland's research is transforming vibrothermography from a laboratory curiosity to an industrially useful inspection.
• Wei Hong developed a theoretical model to explain the working mechanism of IPCNC, a type of polymer-metal composite may be used as actuators and sensors.
• Hui Hu published a total of 29 technical papers in 2010, and received 3 new research awards as the PI/Co-PI of the projects in 2010.
• Valery Levitas research work includes phase field theories for martensitic phase transformations and melting which are conceptually developed in four directions.
• The advanced ascent guidance algorithm developed by Ping Lu was a core technology in 2 projects funded by the Air Force.
• Ganesh Rajagpalan was one of the four PIs on the helicopter brownout MURI project.
• Alric Rothmaery conducted NASA and AFOSR sponsored research on aerodynamic flow control for aircraft and micro-air vehicles.
• Partha Sarkar is leading research on tornado-induced wind loads on buildings and other structures.
• Les Schmerr has developed a new approach to imaging of flaws in materials with ultrasound where quantitative information about the flaw is encoded directly in the image.
• Pete Sherman was invited to conduct research in the area of energy price forecasting at the Danish Technical University (DTU).
• Z.J. Wang and his group continue to develop unstructured grid based high-order CFD methods, and demonstrate them for real world 3D applications.
• Bong Wie continued to develop practically viable space technologies required for mitigating the impact threats of hazardous near-Earth objects (NEOs).
• Loren Zachary has an external professional focus on K-12 programs and issues. He is a member of the executive board for Iowa Mathematics and Science Education Partnership, a regents program.
Section 10. Faculty Activity

1. Complete the attached electronic spreadsheet with information on faculty activity.

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<th>Refereed publications</th>
<th>Refereed conference articles</th>
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2. Summary of publications and patents in the most recent year

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<td>Total patents awarded (not disclosures or pending)</td>
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3. List the major awards that were received by your faculty last year.

- Zhi J. Wang  
  Distinguished Service Award, Fluid Dynamics Technical Committee, AIAA, 2010

4. List the major external service roles of your faculty last year.

- Ashraf Bastawros  
  General Chair, Society of Engineering Science, 47th annual meeting, Hosted by Iowa State University  
  Associate Editor, ASME Journal of Engineering Materials and Technology
- Dale Chimenti  
  Series Co-Editor, Review of Progress in Quantitative Nondestructive Evaluation  
  Editor-in-Chief, NDT&E International
- Wei Hong  
  Editorial board Member, International Journal of Applied Mechanics  
  Secretary, Vice Chair, ASME Mechanics of Soft Materials Tech. Committee
- Hui Hu  
  Vice Chair of ASME Fluid Measurement and Instrumentation Technical Committee  
  Associate Editor, International Journal of Aerospace Engineering
- Valery Levitas  
  Editorial Board Member, Journal for Superhard Materials  
  Editorial Board Member, International Journal of Plasticity  
  Editor of Il’yushin Issue, Journal Engineering Mathematics
- Ping Lu  
  Associate Editor, AIAA Journal of Guidance, Control, and Dynamics  
  Editorial Board Member, Optimal Control Methods and Applications
- Partha Sarkar  
  President of the American Association for Wind Engineering  
  Organizer and Editor of Proceedings, UJNR/US-Japan Panel on Wind and Seismic Effects: Task Committee on Wind Engineering  
  Editorial Board Member, Journal of Wind and Engineering
- Les Schmerr
Editorial Board member, Journal of the Korean Society for Nondestructive Testing

- Zhi J. Wang
  Associate Editor, AIAA Journal
  Editorial Board Member, The Open Aerospace Engineering Journal
  Associate Editor, Advances in Applied Mathematics and Mechanics
Appendices

- Strategic Plan
- Organization Chart
- Key Performance Indicators
- Governance Document
Department of Aerospace Engineering

Strategic Goals

April 2011

• Become the primary supplier of talent to the aerospace community by evolving to meet the needs of employers in the 21st century
• Position aerospace engineering for continued growth as the pool of talented students continues to expand
• Continue to develop a solid graduate program based on funded research, and attract top talent to lead and participate in this work
• Develop key signature areas in which we can be viewed as best among peers, and which integrate across the diverse disciplines that comprise the scope of aerospace engineering

Research Activities

Interdisciplinary Research

Aeronautics

Space

Wind Energy and Engineering

Competencies

Computational Fluid Dynamics and Aerodynamics
Multiscale, Multifunctional Structures
Guidance, Navigation, and Control
Systems and Optimization

Strategic Plan is in Development
Department of Aerospace Engineering

Organization Chart

April 2011
KPI 1. Graduate Enrollment

Target: 100

The graduate enrollment is typically in the range of 40-50, which is small relative to the size of the department. As we grow the fraction of research-active faculty, this number will increase. In the interim we can increase the number of graduate students through online learning and non-thesis master’s degrees.
KPI 2. Undergraduate Enrollment

Undergraduate enrollment has grown dramatically over the past decade, and we will pursue continued growth. Given the continued hiring trend in the aerospace industry, we foresee continuing growth.

KPI 3. In-state vs Out-of-State Undergraduate Enrollment

Presently we have more out-of-state than in-state undergraduates, and with improved retention and outreach we foresee continuing growth in both groups.
KPI 4. Undergraduate Women and Minorities

Target: 15% minimum

With new attention to these groups, we target growth and stabilization in both populations.

KPI 5. Retention

Target: 80% minimum

The first-year attrition is significantly about the COE and the University, and to date we have paid little attention to this number. In fact we have prided ourselves in “weeding out” students. We are initiating a positive thrust to remediate this shortfall.
KPI 6. Undergraduate Degrees Awarded

Target: 150

With significant attrition, the growth in undergraduate degrees lags the growth in undergraduate students. We look to double this number.

KPI 7. Placement

Target: 80 at graduation; 100% after 1 year

Active co-op and internship programs have led to a good placement record. We plan to stabilize the year-to-year trends.
KPI 8. Student/Faculty Ratio

Target: 30 maximum

A combined growth in undergraduates and a declined in tenure track faculty has driven this number into the mid 30’s. Note that we have excluded administration (1), advising (1), and EM service course (3) faculty from this statistic. Hiring will bring this number to a reasonable range.

KPI 9. PhD per Faculty per Year

Target: 0.75

The PhD productivity has grown to a respectable value of 0.4, and with hiring and research growth can be expected to grow more.
DEPARTMENT
OF
AEROSPACE ENGINEERING

GOVERNANCE DOCUMENT

Approved 4/1/90
Amended 2/19/93
Amended 4/29/04 without Draft Appendix
I. INTRODUCTION

General

This document is supplementary and subordinate to the rules and practices of the College of Engineering, the Graduate College, the University administration, and actions of the State Board of Regents. Other documents which pertain to departmental governance include the ISU Office Procedure Guide, and the ISU Faculty Handbook, the ISU Graduate Faculty Handbook, the ISU Information Handbook. The rules of governance established in this document are subordinate to the official University policies as laid out in the above rules and documents.

Purpose

Since the department is the immediate point of contact between faculty and administration, a major influence on the success of faculty self governance is the role of the faculty in departmental governance. The success of a department depends on effective communication and interaction between the departmental administration and faculty, and departmental governance consists largely of promoting the widest and most effective participation possible in the departmental decision-making process. Such participation is best achieved through the traditional democratic machinery of open discussion, committee participation, and consensus as is necessary to effectively and efficiently govern the department. The objective of this document is to insure the maximum possible faculty participation in departmental governance without obstructing the governance process or placing an undue burden on the time of departmental faculty. In order to accomplish these objectives, this document establishes the general procedures to be followed in departmental governance.

II. FACULTY MEMBERSHIP AND VOTING RIGHTS

1) Membership in the faculty of this department is held by all tenure-track faculty with rank of assistant professor or above and adjunct and visiting faculty who have appointments in the department.

2) At departmental faculty meetings, only departmental tenure-track faculty with rank of assistant professor and above will each have one vote.

3) The Department Executive Officer (DEO) is the chairperson of the faculty. The DEO’s status as a faculty member will be determined by his/her academic rank.
III. RULES OF PROCEDURE

1) Unless specified elsewhere in this document all procedural matters will be governed by simple parliamentary procedures. A 2/3 vote of the faculty is needed if Robert's Rules of Order (latest edition) are to be invoked for procedural matters.

2) Faculty Meetings and Voting Procedures

a. A departmental faculty meeting will be called by the DEO for any of the following reasons: (1) at the discretion of the DEO or (2) at the request of the chairperson of a committee or (3) at the request of three or more faculty members. For reasons (2) or (3) above, the DEO will be required to call such a meeting within three weeks of receiving a written request for such a meeting. A departmental faculty meeting shall be conducted by the DEO or designated member of the faculty.

b. Written announcements of a departmental faculty meeting, together with the agenda for the meeting will be given to the faculty at least three days prior to the meeting. If a vote concerning department, College or University matters is to be taken, notice of such vote must be included in the agenda. This rule (including the vote notice in the agenda) may be suspended by a vote of three fourths of the faculty present. In such cases, no absentee ballots will be allowed.

c. Official faculty action can only be taken at meetings for which the three-day notice provision of b) above has been met. A quorum for a departmental faculty meeting is defined as 2/3 of the tenure-track faculty currently in residence.

d. The DEO may at his/her discretion call the faculty together to either disseminate information or ask for advice concerning department, College, or University business. The three-day notice provisions may be relaxed for such meetings, but no official faculty action can be taken at such meetings.

e. Votes on issues at a departmental faculty meeting shall be decided by a 2/3 majority of those present, if a quorum is present, except as specified in other sections of this document.

f. Any member of the faculty can demand a secret written ballot on any vote to be taken.

g. By consent of the simple majority of those members present, absentee ballots shall be accepted from faculty members with a legitimate reason for not attending the meeting.

h. Voting by proxy will not be allowed.

i. Absentee votes shall be cast on an unsigned, written ballot and placed in a sealed envelope on the face of which is the issue in question and the name of the voter. This shall be deposited with a teller. The faculty members present at the meeting shall determine whether conditions for casting an absentee ballot have been met in each particular case. If the conditions have been met, the absentee vote will be cast with the other votes.

If the conditions have not been met, the individual shall be given another chance to cast
their vote as soon as possible. For example, such a situation may arise if the statement of motion is significantly altered.

j. This document may be amended by a 2/3 vote of the members of the faculty in residence who are eligible to vote.

k. Only associate and full members of the graduate faculty who are also voting members as defined in Paragraph "II.2" are eligible to vote on all matters concerning graduate student education.

### IV. COMMITTEES

#### Selection

The process of selecting committee members shall be initiated during spring semester. This process shall consist of the DEO circulating a composition of current committee members and flag those who shall be replaced for the coming academic year. Each faculty member is requested to indicate committee preference. This process shall apply to all departmental standing committees and those College and University committees with departmental representatives who are selected by the department.

The department's three (3) general policies in committee member selection are:

a) a faculty member should not serve longer than six (6) successive years on a given committee,

b) the DEO shall make every effort to avoid overloading faculty members with committee assignments and other assignments that may significantly detract from a faculty member's professional development,

c) unless otherwise specified, the DEO is responsible for making committee assignments.

#### Standing Committees

The department's eleven (11) standing committees are described as follows (Student representatives serve without vote on committees 2, 3, 5 and 6):

1) **Academic Standards Committee**

The DEO shall appoint three (3) faculty members from the ranks of associate and full professors. The chairperson shall be appointed by the DEO.

The responsibility of this committee is to administer questions involving academic standards as outlined in the charge to the College of Engineering Academic Standards Committee. The committee is responsible for considering requests for appropriate course substitutions in the undergraduate curricula of the department.

This committee shall also be responsible for recommending the certification of English proficiency of all graduating undergraduates. Recommendations for the correction of deficiencies shall be made by this committee. The actual certification is a responsibility of the general faculty.

2) **Computational Facilities/Planning**
The DEO shall appoint five (5) members of the faculty, one undergraduate student and one graduate student, who represent the computational interests of the department. The chairperson shall be appointed by the DEO.

The responsibility of this committee is to administer usage and develop policy regarding acquisition and usage of computer equipment for the department. Any departmental representative to a College or University computer committee shall be selected from this committee. One member of this committee shall also serve on the departmental equipment committee (see Committee #5).

3) Curriculum

This committee shall consist of seven (7) faculty members, two undergraduate students and one graduate student, who are to be chosen at the discretion of the DEO. Three (3) members (one from each academic rank) with primary responsibility in Aerospace and three (3) members (one from each academic rank) with primary responsibility in Mechanics shall constitute six (6) of the committee membership. The chairperson shall be appointed by the DEO.

These members are to be appointed for three-year terms and are to be replaced in two's.

The Committee may choose to divide into subcommittees to consider particular aspects of the undergraduate curricula, the graduate programs, or course offerings of the department.

This committee will take immediate action on all curriculum matters so as to assure efficient utilization of course offerings on a university wide basis and also maintain constant vigilance over type and quality of departmental offerings.
4) **DEO Evaluation**

This committee shall consist of three (3) faculty members, one from each professorial rank. Members of this committee are elected by majority vote of the faculty at a department governance meeting once every other year. The chairperson of this committee shall be determined by the committee.

The purpose of this committee is to provide the DEO with formal feedback from the faculty concerning his or her performance as a DEO. An evaluation will be done once every two years, with each faculty member having the opportunity for input to the evaluation process as determined by the committee.

5) **Equipment Committee**

This committee shall consist of five (5) faculty members and one graduate student who represent the various laboratory and computation interests and shall be appointed by the DEO. The chairperson of this committee shall be appointed by the DEO.

The function of this committee will be to develop an equipment acquisition and maintenance plan, consistent with any College plan, for the department's teaching and research needs. The committee will also be responsible for writing off all (not needed, old, unserviceable, etc.) equipment. This equipment plan shall include computational equipment and associated software and is to be coordinated with the Computational Facilities/Planning Committee (see Committee #2). One member of this committee shall serve on the Computational Facilities/Planning Committee.

6) **Goals**

This committee shall consist of five (5) faculty members, and one graduate student, the DEO and at least one other from each rank of full, associate, and assistant professors. The members will be selected at the discretion of the DEO. The chairperson shall be appointed by the DEO.

The term of duty of those other than the DEO will be on a rotating scheme for new appointments so as to assure continuity of idea projection.

The function of this committee shall be to keep abreast of the broad developments in the fields of engineering and education and to recommend long range direction for the department with respect to teaching, research and outreach.

7) **Graduate Qualifier Examination Committee**

The DEO shall appoint six (6) faculty members who are associate or full members of the graduate faculty to this committee. Three (3) members shall represent the aerospace graduate program and three (3) members shall represent the mechanics graduate program. The chairperson shall be appointed by the DEO.
This committee is charged with coordinating the graduate qualifying examination for each discipline. The committee is responsible for overseeing development of the test, monitoring the test and supervising the grading of the test. The decision on whether or not to allow a graduate student to continue in their Ph.D. program is a responsibility of the entire departmental graduate faculty. The actual examination and grading should be distributed among the appropriate faculty.

Graduate student input regarding the departmental graduate qualifier examinations and related policies will be sought by the committee at least twice per year - at least once prior to and at least once following the spring semester exam dates.

8) **Promotion and Tenure**

This committee shall consist of all tenured faculty members with rank full professor. The chairperson of this committee shall be the DEO.

The function of this committee will be to review annually the promotion and tenure potential of all department faculty of rank instructor, assistant professor or associate professor. The results of the committee finding will be communicated in writing by the DEO to each faculty member who is reviewed.

The promotion and tenure policies and procedures to be followed in this department are those policies and procedures described in the Faculty Handbook (latest edition) and the Engineering College Promotion and Tenure Criteria Document.

9) **Post Tenure Review**

The department shall conduct regular reviews of all tenured faculty within the department. The procedures and policies for these reviews are given in Appendix B, *Criterion and Operational Procedures for Post Tenure Review*.

10) **Scholarship and Awards Committee**

The DEO shall appoint three (3) faculty members to this committee. The chairperson shall be appointed by the DEO.

This committee shall make recommendations to the general faculty for any scholarships and similar financial awards to any student within the department. This committee is also charged with any departmental administration of this award. The chairperson shall represent the department on the College of Engineering Scholarship and Awards Committee.

11) **Search and Hiring**

This committee shall consist of seven (7) faculty members: three (3) full professors, at least two (2) associate professors and at least one (1) assistant professor. If the position to be filled is not that of the DEO, the DEO shall select the members of the committee on a rotating basis. The DEO will then serve as chairperson of the committee.

If the position to be filled is that of the DEO, the committee structure shall be recommended to the Dean by election by the faculty at a department governance meeting. Each faculty member may vote for three (3) full professors, three (3) associate professors and one (1) assistant professor. The three full professors, the three associate professors and the one assistant professor receiving the most votes shall be recommended as a search and hiring committee for the DEO to the Dean of Engineering.
The function of this committee will be to serve as a screening committee in the hiring of new faculty or a new DEO.
12) **Seminar Committee**

The DEO shall appoint two (2) faculty members and two (2) Ph.D. candidate graduate students to this committee. The chairperson shall be appointed by the DEO.

This committee shall be charged with organizing and coordinating departmental seminars. This includes, but is not limited to: soliciting speakers, organizing rooms and equipment, posting notices and serving refreshments when appropriate. It is recommended that a target seminar frequency of one to two per month be adopted.

**Ad hoc Committees**

The DEO has the responsibility of appointing ad hoc committees as needs arise. A request by three (3) faculty members to the DEO for the establishment of an ad hoc committee will require the DEO to either establish such ad hoc committee, or to bring the establishment of the ad hoc committee to the faculty of the department for consideration at a departmental faculty meeting.

**Committee Recommendations**

The recommendations of the Curriculum Committee and the Equipment Committee are to be presented at least once a year to the faculty for discussion and appropriate faculty action.

The recommendations of the Goals Committee are to be presented to the faculty for discussion and appropriate faculty action.

The recommendations of the Search and Hiring Committee and the Promotion and Tenure Committee are to be transmitted to the DEO for appropriate action.

The recommendations of the DEO Evaluation Committee are to be transmitted to the faculty, the DEO and the Dean of Engineering.

**V. CRITERIA FOR PROMOTION AND TENURE**

The criteria for promotion and tenure to be followed by this department will be consistent with those in the Faculty Handbook (latest edition) and the Engineering College Promotion and Tenure Criteria Document. The philosophy of departmental criteria for promotion and tenure is stated in the Appendix A. A description of specific departmental procedures for annual promotion and tenure review is also contained in Appendix A.

**VI. POLICIES ON NON-TENURE ELIGIBLE POSITIONS**

**Adjunct Faculty**

The department has periodic need to appoint non-tenure eligible faculty in adjunct positions. Adjunct appointments recommended by the department must be approved by the college and the provost.

Adjunct appointments are full-time or part-time renewable term positions with these possible titles: adjunct professor, adjunct associate professor, and adjunct assistant professor. Adjunct appointments will
not exceed five years for each term appointment, requiring a notice of one year of intent not to renew, except when the appointment is for a year or less.

The college may approve hires of adjunct faculty in the following categories:

**Experts employed elsewhere.** Adjunct titles may be used for persons who are employed elsewhere but have faculty responsibility at Iowa State. This would include persons currently employed and paid by businesses, government, and other organizations without direct connection to ISU. These appointments are normally part time, made to recognize the appropriate teaching, extension/professional practice, and/or research responsibilities of these individuals. Any temporary full-time appointments of these individuals would be for a special need and usually last no longer than one-year. Adjunct faculty should be individuals holding a terminal degree in an appropriate field. Under extraordinary circumstances, individuals without the terminal degree but with national or international reputations in their field might be considered for appointment in an adjunct position.

**Adjuncts employed only by the university.** In the University’s quest to hire and retain excellent faculty, including dual-career couples, as well as to carve out new areas of academic expertise, and attract experts on extra mural grants and contracts, certain individuals may be hired in full time positions as adjunct faculty. These should be persons with the terminal degree in their field. They will likely function as faculty with significant research or extension/professional practice responsibilities, usually funded by extramural grants and contracts. Whenever possible, these individuals should be considered for tenure-eligible positions. Faculty hired primarily for teaching purposes should be hired as lecturers or clinicians. New appointments in this category will be rare in the college.

1) **Hiring**

Adjunct faculty will be hired through established university search processes. Tenure-line faculty should work with the department chair to coordinate the search process.

2) **PRS**

Each adjunct faculty member will have a position responsibility statement reflecting the nature of his or her responsibilities. Reviews will be based on the PRS and will consider performance in all areas of responsibility.

3) **Review**

**Annual review.** Annual review of adjunct faculty will follow procedures outlined for the review of other non-tenure-eligible faculty positions.

**Renewal review.** Renewal review will follow procedures outlined for the renewal review of other non-tenure-eligible faculty, except that there is no requirement that adjunct faculty must be advanced after a particular period of time.

**Advancement review.** When an adjunct assistant professor or adjunct associate professor and the department chair agree that it is appropriate to seek advancement to the next adjunct level, the same faculty committee which considers advancement from lecturer to senior lecturer and from clinician to senior clinician will review the record of the adjunct faculty member.
**Materials for advancement review.** Materials to be submitted for review will include documentation of all areas of responsibility; departments will specify the materials needed in their disciplines. Requests for advancement forwarded to the college and provost should include a summary of the review results and a statement regarding the continuing need of the unit. If a department does not recommend an advancement, no recommendation should be forwarded to the college.

Recommendations for advancement must originate in the department and be approved by the college and provost. Since advancement is *not* a part of the promotion and tenure process, department schedules for this review may differ from P&T review.

**Criteria for advancement from Adjunct Assistant Professor to Adjunct Associate Professor.** For the department to recommend advancement to Adjunct Associate Professor, the faculty member must demonstrate effective performance in all areas of responsibility and must demonstrate excellence in scholarship (scholarship is defined in the Faculty Handbook).

**Criteria for advancement from Adjunct Associate Professor to Adjunct Professor.** For the department to recommend advancement to Adjunct Professor, the faculty member must demonstrate effective performance in all areas of responsibility and must demonstrate distinction in scholarship (scholarship is defined in the Faculty Handbook).

4) **Continuous adjunct appointments**

No changes to the status, title, and privileges of persons already holding continuous adjunct non-tenure-eligible faculty positions shall be made unless requested by such a person. These faculty will continue to be reviewed under the P&T process as specified in the Faculty Handbook.

**Professional and Scientific (P&S) Employees with Non-Tenure Faculty Appointments**

Employees on P&S status in the university may be appointed to renewable, term non-tenure-eligible appointments, from one to five years, to carry out faculty duties in departments in the college.

Individuals holding a full or part-time P&S position may have no more than 30% of their total work responsibilities assigned as teaching.

1) **Titles**

The following titles will be employed for P&S employees assuming faculty responsibility in the college. These titles will be in addition to their title within the P&S system.

When the faculty work undertaken is similar to that of a department’s Lecturers and Clinicians, the title of Lecturer and Clinician (or Senior Lecturer and Senior Clinician) is appropriate. These titles should only be given to employees with an advanced degree in an appropriate field.

When the faculty work undertaken is substantially different from the work of department Clinicians and Lecturers, which often occurs when the work is focused on research or extension/professional practice, the P&S employee may be given the title of Adjunct Assistant Professor, Adjunct Associate Professor, or Adjunct Professor. The qualifications for these titles should be similar to those required to hire at the Assistant, Associate or Full Professorial ranks under the tenure-eligible system. These titles should only be given to employees with the terminal degree in the field.
P&S employees who, as of August 2003, have adjunct rank at the Assistant, Associate or Full Professorial levels may retain these titles, with appropriate review and approval by the departments in which the title is held. College approval is also necessary. The term of these appointments shall be as previously specified or for a renewable term not to exceed five years.

Adjunct Instructor will not be used as a classification for P&S employees.

All titles can be given for terms not to exceed five years, when a department foresees a continuing need for the P&S employee’s service in faculty roles. There is no required notice of intent not to renew for the non-tenure-eligible titles given to P&S employees. Termination of the P&S appointment will also mean the termination of the non-tenure-eligible appointment.

P&S employees should not be teaching courses in the college without a non-tenure-eligible title.

2) **Appointment**

Appointment of P&S employees to non-tenure-eligible faculty positions will be recommended by the department chair with faculty input. The department chair can make such initial appointments of P&S employees for one year without faculty input, but reappointment (or initial appointment beyond one year) will require faculty vote (a simple majority is needed for approval).

All appointments will be reported to the Provost’s Office on the “Non-tenure-eligible faculty appointment of P&S employees” form. A form should be on file with the college and provost for each P&S employee assigned a non-tenure-eligible title.

The awarding (and renewing) of the titles of senior lecturer, senior clinician, adjunct assistant professor, adjunct associate professor, or adjunct professor must be approved by the department, the college, and the provost.

3) **Review**

A person employed in a P&S position and assigned non-tenure-eligible faculty responsibilities and title shall be regularly evaluated by the department employing the person for faculty work (this may be a separate department from that in which the P&S appointment is located).

While the P&S employee will not have a Position Responsibility Statement, the department chair should specify in writing, at the time of appointment, the responsibilities associated with the non-tenure-eligible appointment.

In general, the same procedure used to review other non-tenure-eligible faculty will be employed.

- **Annual review.** Each P&S employee with non-tenure-eligible title will have faculty work evaluated annually by the department chair.
- **Faculty Review.** At least every four years and before any re-appointment, these employees will have their faculty work reviewed by a faculty committee.

3) **Advancement**
For P&S employees with non-tenure-eligible titles, there is no minimum or maximum time in rank. For example, an employee may continue with the title of “lecturer” for an indefinite time, with appropriate review.

**P&S employees with adjunct appointments.** If the department chair and the P&S employee believe the employee may qualify for a change in adjunct title, the P&S employee would go through the same procedure described above for advancement of adjunct faculty.

**P&S employees with lecturer and clinician appointments.** If the department chair and the P&S employee believe the employee may qualify for a change to senior lecturer or senior clinician status, the P&S employee member would go through the advancement procedure described in department governance documents.
APPENDIX A
Criteria and Operational Procedures for Promotion and Tenure

The Philosophy of Criteria for Hiring, Promotion and Tenure

The function of this department is fourfold:

a) to administer and provide courses for the undergraduate curricula in Aerospace Engineering and Engineering Science

b) to provide service courses in the areas of Aerospace Engineering and Engineering Mechanics for the College of Engineering and university

c) to administer the graduate program leading to advanced degrees in Aerospace Engineering and Engineering Mechanics

d) to conduct research in the appropriate areas of the engineering sciences

Education of students is the primary function of the faculty. The four activities that support this primary function are Teaching, Research, Service and Professional Practice/Professional Development.

1) Teaching

Effective teaching is the responsibility of every faculty member. Among the important items to be considered for evaluation in teaching are: quality of classroom presentation, breadth of outlook, scholastic preparation, preparation of notes and textbooks, advising, thesis supervision, development and improvement of teaching methods, innovative methods of teaching, and participation in meetings, symposia, workshops, etc. which will keep and enhance contact with the environment in which the student will eventually work.

2) Research

Research in appropriate areas of the engineering sciences is an important function of faculty members in the department. Important items to be considered for evaluation are: publications in refereed journals, presentations at technical meetings, external research funding and research program development. It is recognized that the number of papers, etc. connected with any research endeavor will vary from year to year. The evaluation of a faculty member's research activities should take this variability into account by considering research activities over the past several years.

3) Service

An important part of a faculty member's function will be active participation in departmental, college and university committees, councils, etc.
Other service needs to be filled by faculty members and to be considered in the evaluation process include: involvement in extension services, participation in honors programs, faculty advisor to student organizations such as the American Institute of Aeronautics and Astronautics, the Engineering Science Club, Veishea faculty advisor, etc.

4) **Professional Practice/Professional Development**

Participation in appropriate professional organizations, professional development activities and professional practice is encouraged. Consulting, periods of industrial work experience and active involvement in professional societies are important to the development of well rounded faculty members. Professional development and practice increase the effectiveness of faculty members as teachers and researchers.

**Operational Procedures for Annual Promotion and Tenure Review**

The procedures described below are intended to provide a framework for the guidance, development, and assessment of progress toward promotion of the assistant and associate professors of the department. The procedures provide a formal mechanism for the full professors of the department to participate in this important aspect of faculty and departmental development. The procedures are described in terms of a series of chronological steps, with the understanding that in individual cases (particularly for joint appointees) the timing of some of the steps may be adjusted appropriately to meet constraints of the college or university procedures. The procedures are to be followed for all tenure track and adjunct assistant and associate professors of the department on an annual basis.

1. All assistant and associate professors are asked to prepare updated vitae by the first week in October.

2. Files of recent instructor evaluations, previous promotion and tenure committee assessments and updated vitae are assembled for each assistant and associate professor and the DEO appoints two three-person subcommittees of the full Promotion and Tenure Committee - one to evaluate assistant professors and one to evaluate associate professors. The membership of the subcommittees is rotated so that at least one, but no more than two, of the members serve for two consecutive years.

3. The subcommittees review available material on each of the assistant and associate professors and report to full P. & T. Committee in late October. Recommendations include specific evaluations of teaching, research, service and overall contributions to the department, college, university and profession as appropriate for each individual. Recommendations are presented regarding promotion for the current year, and suggestions for further development of those not recommended for promotion are also presented. Subcommittees are encouraged to seek appropriate information to facilitate a thorough review including input from other faculty members of the department, college or university.

4. Copies of the complete files for all assistant and associate professors are available during the review period (October and early November) in the department offices for review by P. & T. committee members who are not members of one of the subcommittees.

5. The full Promotion and Tenure Committee discusses and acts upon subcommittee recommendations in late October or early November. Possible actions are to endorse, reverse, seek reconsideration of or request further information regarding each recommendation. Input regarding appropriate external reviewers will be sought from the full Promotion and Tenure Committee for candidates who are recommended for promotion and/or tenure. A final decision on a recommendation to promote and/or
tenure is generally not made until after external review letters have been received.

6. The DEO informs individual faculty members of the Promotion and Tenure Committee's recommendation and incorporates appropriate substantive items from final subcommittee reports into the annual evaluation of assistant and associate professors.

7. The DEO is responsible for preparing appropriate documentation for transmission to the Engineering College in cases involving recommendations for promotion, tenure or termination of faculty. If the departmental promotion and tenure committee and the DEO are not in agreement on a particular recommendation, and the disagreement cannot be resolved at the department level, the DEO shall transmit both recommendations along with appropriate documentation to the Engineering College.

8. Assistant and associate professors have the normal college and university rights of appeal regarding decisions of the promotion and tenure committee.