Graduate Program Review
2001-2006

Department of
Mechanical Engineering
Jharna Chaudhuri, Chair

Edward E. Whitacre Jr.
College of Engineering
Pamela Eibeck, Dean

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PROGRAM REVIEW OUTLINE
Mechanical Engineering

I. Program Overview

II. Graduate Curricula and Degree Programs
A. Scope of Programs within the Department
B. Number and Types of Degrees Awarded
C. Undergraduate and Graduate Semester Credit Hours
D. Number of Majors in the Department for the Fall Semesters
E. Course Enrollments over the Past Six Years
F. Courses Cross-Listed

III. Faculty
A. Number, Rank, and Demographics of the Graduate Faculty
B. List of Faculty Members
C. Summary of the Number of all Publications and Creative Activities
D. Responsibilities and Leadership in Professional Societies
E. Assessment of Average Faculty Productivity for Fall Semesters Only

IV. Graduate Students
A. Demographics of Applicants and Enrolled Students
B. Test Scores (GRE and TOEFL) of Enrolled Students
C. GPA of New Students
D. Time to Degree in Years
E. Number of RA’s, TA’s, GPTI’s, and Scholarship Holders
F. Initial Position and Place of Employment of Graduates Over the Past 6 Years
G. Types of Financial Support Available for Graduate Students
H. Number of Students Who Received Awards
I. Percentage of Students Who Received Financial Support
J. Average Financial Support Provided to Master’s and Doctoral Students
K. Graduate Student Publications and Creative Activities
L. Programs for Mentoring and Professional Preparation of Graduate Students
M. Departmental Efforts to Retain Students and Improve Graduation Rates
N. Percentage of Full-Time Master’s and Doctoral students
O. Student-Core-Faculty Ratio
P. Research: Dissertation and Thesis Titles
V. Department 51
   A. Department Operating Expenses 51
   B. Summary of Proposals (submitted) 52
   C. External Research expenditures 52
   D. Internal Funding 54
   E. Scholarships and Endowments 55
   F. Departmental Resources for Research and Teaching 55
   G. HEAF Expenditures 57
   H. External Program Accreditation 57

VI. Conclusion 58

VII. Appendices 60
    A. Strategic Plan 61
    B. Graduate Course Offerings 61
    C. Recruitment Materials 65
    D. Graduate Student Handbook 68
    E. Graduate Student Association(s) 68
    F. Graduate Faculty Information 69
I. Program Overview

The mission of the Department of Mechanical Engineering (ME), in the Edward E. Whitacre Jr College of Engineering (COE) at Texas Tech University (TTU), is to educate, conduct research, and disseminate knowledge through nationally recognized academic programs. The vision is to be recognized as a top research and graduate ME department in the nation and the undergraduate ME department of choice in Texas. ME offers programs leading to the Bachelor of Science in Mechanical Engineering (BSME), Master of Science in Mechanical Engineering (MSME), and the Doctor of Philosophy (PhD) degrees. Research is conducted within the traditional core areas of solid mechanics and materials, the thermal-fluids, the dynamics and controls, and the design.

For ME to achieve its mission, while remaining truthful to its vision, it is guided by nine goals; (1) recruit, retain, and graduate a larger, more academically prepared, and diverse student body; (2) attain national recognition as a top publicly funded engineering school; (3) build community connections that enhance the quality of life for students and the community; (4) maximize the use of technology in the delivery of services; (5) build strategic partnerships and alliances to support the teaching, research, and service mission of COE; (6) maintain a quality work force and work environment; (7) enhance the national image of ME and of COE; (8) enhance the fiscal stability through development activities that support students, faculty, and COE operations; and (9) enhance planning, performance, assessment, and public accountability.

The MSME is a graduate degree usually requiring an additional 18 to 24 months of study beyond the BSME. Currently, three general plans of study are available for the Master of Science degree: the thesis option, the nonthesis report option, or the nonthesis coursework only option. The MSME (thesis option) requires a minimum total of 30 hours, consisting of a minimum of 24 hours of coursework, and six hours of Master’s Thesis. The MSME (nonthesis report option) requires a minimum of 36 hours consisting of 33 hours of coursework and three hours of Master’s Report. The MSME (nonthesis coursework only option) requires a minimum of 36 hours consisting entirely of coursework. Completion of the PhD normally requires approximately 36 to 40 months beyond the master’s degree. The doctorate requires at least 60 semester hours of graduate work, exclusive of the dissertation. Students who hold a master’s are required to take four graduate courses, and the remaining 18 hours may consist of individual studies or additional graduate courses. Additionally, they are required to take at least 12 credit hours of Doctor's Dissertation.

In the fall semester of 2007, the department had 23 full-time faculty with an enrollment of 931 students, and in the academic year 2006-2007 awarded 161 degrees. With respect to the student size, ME is the largest department in COE. For the past six years, the enrollment of master’s students has been about 68% of the total graduate student body, while that of the doctoral students has been about 32%. Both the
doctoral and master’s student enrollment has steadily increased. The doctoral enrollment of the period 2006-2007 doubled from what it was in the period of 2001-2002.

In the last six years, the average number of applicants to ME has been 100. On the average only 54% of the applicants are awarded admission into the graduate program. Usually, on average only 45% of the applicants awarded admission actually join ME as new graduate students. In the period under review (2001-2007), the graduate enrollment has steadily increased. For 2005-2006 the fall enrollment was 71, while for 2006-2007, the fall enrollment was 131. The ME goal is to maintain an enrollment of about 100 graduate students as set forth in the strategic plan, while at the same time trying for 40% of the graduate student body as PhD students. The percentage of female students has steadily increased. In 2007, the female graduate students were 14% of the total graduate student body. This percentage is close to the 15% target espoused in the strategic plan. The average GRE score for the enrolled graduate students is 1172, with 441 in the verbal section and 731 in the quantitative section. The GPA of the master’s students has consistently been above 3.50. In the last four years, the GPA of the doctoral students has been around the 4.0 level. In ME, the average time to degree for master’s students is 2 years, for doctoral students (with master’s degrees) about 3.5 years, and for doctoral students (without master’s degrees) about 4.5 years. In the past six years, 45% of the department’s graduating doctoral students secured jobs as faculty members at colleges in the USA and overseas. Most of the department’s graduates with master’s degrees take on jobs as engineers. The financial support available to graduate students includes: teaching assistantships, research assistantships, graduate part-time teaching instructorships, scholarships administered by the graduate school, scholarships administered by the COE, and scholarships administered by the department. There has been a healthy increase in the refereed publications co-authored by graduate students. Starting in the academic year 2006-2007, ME now requires a manuscript accepted for publication from PhD students on graduation. This requirement is an attempt to encourage the publication culture in the department. The graduate student-to-faculty ratio has averaged about 4:1 for the last several years. ME continues to make efforts toward improvements of graduate student time to graduate, retention, and graduation rates.

Since the start of the period of this review, the number of tenured and tenure-track faculty has slightly increased. The number of non-tenured faculty has also increased slightly. At the end of the period of this review, Fall of 2006-2007, the department had 11 professors (tenured), 5 associate professors (tenured), and 7 assistant professors (tenure-track). All 23 faculty members were graduate faculty. Compared to Fall of 2001-2002, the number of professors and assistant professors has nearly doubled, while the number of associate professors has decreased by about half. During the period of this review, there was a sharp increase in the publication of the full-time faculty. Closely following this, the number of citations also increased. This increase may continue to improve the department’s visibility and ranking in the coming years. The increase, post 2002, was steady and without lapse, which points to a healthy and fundamental shift in how the faculty view publications in the department. This trend can be viewed as the improvement of future funding levels for ME. Most of the proposals granted to the faculty are by
federal agencies such as National Science Foundation, Department of Energy, Department of Defense, NASA and Office of Naval Research. Considering an average 20 ME faculty at Texas Tech, the average research grant per faculty was approximately $60K per year from 2002-2003 to 2006-2007. In 2007, we had five Fellows in the department.
II. Graduate Curricula and Degree Programs

A. Scope of Programs within the Department

The MSME is a graduate degree requiring an additional 18 to 24 months of study beyond the undergraduate degree. Currently, three general plans of study are available for the Master of Science degree: the thesis option, the nonthesis report option, of the nonthesis coursework only option. Students in pursuing each program option must select and designate a major area of study from the four stems or areas available, namely, the solid mechanics area, the thermal-fluids area, the dynamics and controls area, and the design area. Nine hours of coursework must be selected from the designated core courses in the students’ selected stem. Each master’s student is required to have a Faculty Advisor from the graduate faculty in the department to advise her/him on academic, thesis, or report matters. The department’s Graduate Advisor will temporarily serve as the Faculty Advisor for each student during the student's first semester. The Faculty Advisor will assist the student with the selection of a thesis or report topic and the courses needed to satisfy the requirements of the MSME degree. Both master’s and doctoral students are required to submit degree plans in their second semester in the department.

The MSME (thesis option) requires a minimum total of 30 hours, consisting of a minimum of 24 hours of coursework, and six hours of ME 6000 Master’s Thesis. Here, the master’s thesis represents the results of original and significant research work in Mechanical Engineering conducted by the student under the supervision of the Faculty Advisor and Advisory Committee. The MSME (nonthesis report option) requires a minimum of 36 hours consisting of 33 hours of coursework and three hours of Master’s Report. The master’s report is not as extensive as a thesis and may represent work other than original research, but the quality of the work and the level of activity will still be expected to meet the high standards required for a master’s degree in mechanical engineering. The MSME (nonthesis coursework only option) requires a minimum of 36 hours consisting entirely of coursework. Most of the students in the nonthesis coursework only option are in this group primarily because they have not found faculty ready to advise them on a thesis or report. The department’s Graduate Advisor acts as the Faculty Advisor for the students pursuing the MSME (nonthesis coursework only option). As to the degrees awarded in the department, about 55% of the master’s degrees are for students in the thesis option, about 32.1% for students in the nonthesis report option, and the remaining 13% for students in the nonthesis coursework only option. For the past six years, the enrollment of the master’s students has been about 68% of the total graduate student body.

The PhD in Mechanical Engineering usually requires a minimum of three years of graduate study beyond the undergraduate degree. It is awarded to students who have completed a program of graduate courses, a final examination, and a dissertation. Completion of the PhD normally requires approximately 36 to 40 months beyond the master’s degree. The doctorate requires at least 60 semester hours of graduate work, exclusive of the dissertation. No more than 30 semester credit hours of an earned
master’s degree from another institution may be transferred. A student will be required to take 4 graduate courses (12 hours). The remaining 18 hours may consist of ME 7000, ME 6331, or additional graduate courses. A student may not include more than 9 hours each of ME 7000 or ME 6331 courses. The balance of the graduate courses required for a degree program may be selected from mathematics, science, and engineering with the approval of the Faculty Advisor and Advisory Committee. For the past six years, the enrollment of the doctoral students has been about 32% of the total graduate student body.

B. Number and Types of Degrees Awarded

The academic degrees awarded in the department are shown in Figure II-1 and Figure II-2. Of all the degrees offered in the department, 18% are graduate degrees. About 12% of the graduate degrees awarded in the department are doctoral degrees. The department has awarded on the average two PhD’s per year.

![Degrees Awarded - Academic Year (ME)](image)

**Figure II-1: Degrees Awarded per Academic Year**
The comparison of the degrees awarded by the department with its peer institutions is depicted in Table II-1. The department awarded the most bachelor’s degrees, i.e., an average of 90 bachelor’s degrees. The number of master’s degrees awarded by the department (i.e., 17.5 degrees) was higher compared to the average of the peer institution (i.e., 10.3 degrees). On the other hand, the number of doctoral degrees awarded by the department (i.e., 2.3 degrees) was only slightly lower compared to the average of the peer institution (i.e., 2.8 degrees).

The number of master’s degrees awarded in the three master’s options are depicted in Table II-2. About 55% of the master’s degrees awarded are to students that pursued the thesis option. Only 13% of the master’s degrees awarded are to students who pursued the nonthesis coursework only option.
Table II-1: Comparison of Degrees Awarded

<table>
<thead>
<tr>
<th>Name of Program</th>
<th>01/02</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
</tr>
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<tr>
<td>Bachelor’s</td>
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<td>78</td>
<td>97</td>
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<td>15</td>
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<td>14</td>
<td>3</td>
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<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>83</td>
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<td>76</td>
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<tr>
<td>Master’s</td>
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<td>9</td>
<td>14</td>
<td>8</td>
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<td>1</td>
<td>2</td>
<td>2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s</td>
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<td>41</td>
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<td>57</td>
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<tr>
<td>Master’s</td>
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<td>10</td>
<td>14</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Doctorates</td>
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<td>8</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>2</td>
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<tr>
<td>University of Missouri</td>
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<td></td>
</tr>
<tr>
<td>Bachelor’s</td>
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<td>81</td>
<td>81</td>
<td>84</td>
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<td>97</td>
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<td>Master’s</td>
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<td>4</td>
<td>4</td>
<td>8</td>
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<tr>
<td>Doctorates</td>
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<td>1</td>
<td>1</td>
<td>4</td>
<td>9</td>
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<tr>
<td>Texas Tech</td>
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</tr>
<tr>
<td>Bachelor’s</td>
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<td>61</td>
<td>76</td>
<td>97</td>
<td>102</td>
<td>147</td>
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<td>Master’s</td>
<td>11</td>
<td>10</td>
<td>27</td>
<td>24</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>Doctorates</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
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</tr>
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</table>

Table II-2: Program Graduate Degrees Awarded

Program Degrees Awarded – Grad Programs Only

Source: Institutional Research Services

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<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>MS (Nonthesis Coursework Only Option)</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS (Nonthesis Report Option)</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>7</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>MS (Thesis Option)</td>
<td>5</td>
<td>8</td>
<td>18</td>
<td>14</td>
<td>11</td>
<td>6</td>
</tr>
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<td>PhD</td>
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<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>12</td>
<td>29</td>
<td>27</td>
<td>24</td>
<td>14</td>
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</tbody>
</table>
C. Undergraduate and Graduate Semester Credit Hours

Figure II-3: Total Semester Credit Hours per Academic Year

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Undergraduate</th>
<th>Graduate</th>
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</thead>
<tbody>
<tr>
<td>01/02</td>
<td>3,081</td>
<td>668</td>
</tr>
<tr>
<td>02/03</td>
<td>3,647</td>
<td>724</td>
</tr>
<tr>
<td>03/04</td>
<td>4,458</td>
<td>604</td>
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<tr>
<td>04/05</td>
<td>4,898</td>
<td>560</td>
</tr>
<tr>
<td>05/06</td>
<td>5,766</td>
<td>1,003</td>
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<tr>
<td>06/07</td>
<td>5,837</td>
<td>1,081</td>
</tr>
</tbody>
</table>
D. Number of Majors in the Department for the Fall Semesters

Figure II-5, Figure II-6, and Table II-3 show the enrollment trend for the last six years. The undergraduate enrollments, which have now leveled at 800, are the highest in the COE. Both the doctoral and master’s student enrollments increased. The doctoral enrollment of the period 2006-2007 doubled from what it was in the period of 2001-2002.
Figure II-5: Fall Enrollment by Level
Comparison of the departmental enrollment and those of the peer institutions is shown in Table II-4. The master’s enrollment in the department (i.e., 53.8) was higher compared to the average of the peer institution (i.e., 36.2). Likewise, the doctoral enrollment in the department (i.e., 25.2) was also higher compared to the average of the peer institutions (i.e., 21.5).
Table II-4: Comparison of Fall Enrollments

<table>
<thead>
<tr>
<th>Comparison of Enrollment - Fall Data</th>
<th>01/02</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
</tr>
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<td><strong>Kansas State University</strong></td>
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<tr>
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<td>600</td>
<td>624</td>
<td>638</td>
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<td>18</td>
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<td><strong>University of Alabama</strong></td>
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E. Course Enrollments over the Past Six Years

In Table II-5, the total in some cases includes the same class being offered more than once a year.

F. Courses Cross-Listed

Cross-listed courses are not officially available in the department. In the past, about two courses have been offered on a trial basis as cross-listed courses.
Table II-5: Enrollment Trends by Course

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<th>Dept</th>
<th>Subject</th>
<th>Course</th>
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<th>02/03</th>
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III. Faculty

A. Number, Rank, and Demographics of the Graduate Faculty

According to Figure III-1, the number of tenured and tenure-track faculty has slightly increased. The number of non-tenured faculty has also increased slightly. On the other hand, the number of TA’s has increased substantially.
Figure III-1: Fall Teaching Resources
At the end of the period of this review, Fall of 2006-2007, the department had 11 professors (tenured), 5 associate professors (tenured), and 7 assistant professors (tenure-track) (see Figure III-2). All 23 faculty members were graduate faculty. Compared to Fall of 2001-2002, the number of professors and assistant professors has nearly doubled, while the number of associate professors has declined by about half.

Figure III-2: Fall Tenured and Tenure-Track Faculty

The comparison of full-time faculty in ME and its peer institutions is depicted in Table III-1. The department has the most TA’s, i.e., an average of 18 TA’s. The average number of non-tenure-track faculty in the department (i.e., 3.7) was higher compared to the average of the peer institution (i.e., 1.2). The average number of tenure-track faculty in the department (i.e., 20.3) was also higher compared to the average of the peer institution (i.e., 17.3).
Table III-1 Comparison of Full-time Faculty

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B. List of Faculty Members

A list of all faculty who were employed by the department during the six years of this review is shown in Table III-2. As of 9/1/2008, Drs. Chaudhuri, Ma, Han, Bhattacharya, Smirnov, He, Tate, Jankowski, Hui, and Yang joined the department, while Drs. Burton, Dunn, and Levitas departed from the department.
### Table III-2: Faculty Employed by Department

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<th>END DATE</th>
<th>Member of Grad Faculty? Y or N</th>
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### C. Summary of the Number of all Publications and Creative Activities

The publications and creative activities of the full-time faculty are shown in Table III-3 and Figure III-3. According the table and figure, there has been a sharp increase in the publication of the full-time faculty. Closely following this, the number of citations has also increased. This increase may continue improving the department’s visibility and ranking in the coming years. The increases, post 2002, are steady and without lapse; this is an indication of a fundamental healthy shift in how the faculty view publications in the department. This trend can be viewed as a precursor to improvement of future funding levels in the department.
Table III-3: Full-time Faculty Publications and Creative Activities

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<td>F = # of full-time faculty in department</td>
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D. Responsibilities and Leadership in Professional Societies

As shown in Table III-4, the graduate faculty is active in chairing theses and dissertations, and serving on theses and dissertation committees. According to the faculty resume in the appendix, several of them also served on committees outside the department. This participation was not included in the table. Also according the faculty resume, a good number held leadership positions in professional societies.
### Table III-4: Service on Master’s and Doctoral Committees

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<td>Oler, Walt</td>
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<td>11 4</td>
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<td>Rasty, Jahangir</td>
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<td>2</td>
<td>7 5</td>
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<td>Smirnov, Sergey</td>
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<tr>
<td>Tate, Derrick</td>
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<tr>
<td><strong>Departmental Total</strong></td>
<td><strong>73</strong></td>
<td><strong>20</strong></td>
<td><strong>101</strong></td>
</tr>
</tbody>
</table>

E. Assessment of Average Faculty Productivity for Fall Semesters Only

The SCH/FTE in the department has been consistently higher than the COE SCH/FTE for every single year of this review (see Figure III-4 and Figure III-5). The department’s average SCH/FTE is 190, while the COE’s average SCH/FTE is 159.

**FACULTY WORKLOAD - Fall Data (ME)**

*Source: Institutional Research Services*

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
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<td>University</td>
<td>11.45</td>
<td>11.34</td>
<td>12.24</td>
<td>16.23</td>
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<td>16.08</td>
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<td>College</td>
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<td>12.22</td>
<td>13.74</td>
<td>14.43</td>
<td>14.83</td>
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</table>
Figure III-4: Fall College SCH/FTE

Figure III-5: Fall Department SCH/FTE
IV. Graduate Students

A. Demographics of Applicants and Enrolled Students

Based on Fall data, Figure IV-1 shows graduate student summary by Category while Figure IV-2 shows graduate student summary by year. In the last six years, the average number of applicants to ME has been 100. On the average only 54% of the applicants are awarded admission into the graduate program. Usually, on average only 45% of the applicants awarded admission actually join ME as new graduate students. The goal is to attain the 100 graduate students set fourth in the strategic plan, while at the same time moving towards 40% of the graduate student body as PhD students.
Traditionally, most of the applicants in the departmental graduate program have been international applicants (see Figure IV-3). The ratio has fluctuated around 6:1. Even with this lopsided statistic, the department has made continual efforts to increase the number of master’s students to about 50% domestic students. Currently the percentage of domestic students to international students is 32%.
Figure IV-3 Graduate Applicants by Region – Fall Data
Table IV-1: Graduate Applicants - Fall Data

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
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<td>M</td>
<td>F</td>
<td>M</td>
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<tr>
<td>Amer Ind</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Asian</td>
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<td>Hispanic</td>
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<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>8</td>
<td>70</td>
<td>14</td>
<td>125</td>
<td>1</td>
<td>61</td>
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<td>1</td>
<td>4</td>
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<td>White</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>11</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

Gender Total: 10 92 15 139 3 76 7 61 12 85 20 112
Total Applicants: 102 154 79 68 97 132

Table IV-2: Admitted Graduate Students - Fall Data

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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<tr>
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<td>13</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Gender Total: 2 50 7 57 3 44 6 29 8 55 11 63
Total Admitted: 52 64 47 35 63 74

Table IV-3: Enrolled New Graduate Students - Fall Data

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>3</th>
<th>4</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<td>0</td>
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<tr>
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<td>8</td>
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<td>5</td>
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</table>

Gender Total: 2 25 1 18 1 7 1 10 4 35 9 37
Total Enrolled: 27 19 8 11 39 46
Table IV-4: Demographics of Enrolled Graduate Students - Fall Data

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<td>20</td>
<td>3</td>
<td>22</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Gender Total</td>
<td>3</td>
<td>68</td>
<td>6</td>
<td>76</td>
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</table>

Table IV-5: Demographics of Enrolled Undergraduate Students - Fall Data

<table>
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<th></th>
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<th>2003</th>
<th>2004</th>
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<th>2006</th>
<th>2007</th>
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<td></td>
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<td>F</td>
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<td>F</td>
<td>M</td>
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<tr>
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<td>2</td>
<td>1</td>
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<td>18</td>
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<td>11</td>
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<td>19</td>
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<td>22</td>
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<td>76</td>
</tr>
<tr>
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<td>499</td>
<td>31</td>
<td>607</td>
<td>37</td>
<td>635</td>
</tr>
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<td>Gender Total</td>
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<td>40</td>
<td>723</td>
<td>51</td>
<td>766</td>
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</table>

Table IV-5 shows demographics of enrolled graduate students according to Fall data. It is important to note a steady increase in the percentage of female students. In 2007, the female graduate students were 14% of the total graduate student body, increasing from just 4% in 2004. The 2007 female student proportion is close to the 15% target declared in the strategic plan. Whereas this statistic is very encouraging, it should be noted the percentages for blacks and Hispanics are still deficient as regards the departmental strategic plan.
B. Test Scores (GRE and TOEFL) of Enrolled Students

In Figure IV-4, the average GRE score for the enrolled graduate students is 1172, with 441 in the verbal and 731 in the quantitative section. This number is slightly lower than the average score of 1200 of incoming international students. In Figure IV-4, it is observed that as expected the quantitative score is consistently above 700. The verbal score has had a slightly decreasing trend since 2002. The verbal score is in part a reflection of the high number of international students (see Figure IV-3), for whom English is a second language, or third in some cases. The department is making an effort to raise the general verbal score of its international students.

![Average GRE Scores for Enrolled Graduate Students - Fall Data (ME)](chart)

**Figure IV-4: Average GRE Score for Enrolled Graduate Students – Fall Data**

While the GRE is an important criterion, it is not the only one used. Also considered in the admissions process are the students’ GPA, reference letters, and personal statements. Recently, the department has instituted phone interviews for PhD students. Since one of the objectives is to improve the quality and significantly increase the quantity of the graduate student body, the GRE may be used one of the assessments of this improvement.
C. GPA of New Students

As indicated in Figure IV-5, the GPA of the master’s students has consistently been above 3.50. In the last four years, the GPA of the doctoral students has been close to 4.0. Since the department has continually been recruiting the highest caliber doctoral students, the GPA can be considered a testament to the quality of the doctoral students among the new graduate students.

![Figure IV-5: New Graduate Students’ GPA by Level – Fall Data](image)

D. Time to Degree in Years

Figure IV-6 shows the average years to graduate for all students graduating each year. The average time to degree for master’s students is 2 years, for doctoral students (with master’s degrees) is about 3.5 years, and for doctoral students (without master’s degrees) is about 4.5 years. If a graduate student is a
TA, support by the department is provided only for this duration. There are usually some exceptions in the average time to degree: for example for 2003-2004, the two students (see Table IV-7) that received the doctorates in about two years were continuing related research with the professors who chaired their master’s theses.

**Figure IV-6: Time to Degree – Academic Year**
E. Number of RA’s, TA’s, GPTI’s, and Scholarship Holders

The number of RA’s, TA’s, and scholarship holders is shown in Table IV-6.

<table>
<thead>
<tr>
<th>Year</th>
<th>Teaching Assistantship</th>
<th>Research Assistantship</th>
<th>Scholarship</th>
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<td>-</td>
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<td>2006</td>
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<td>131</td>
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<tr>
<td>2007</td>
<td>36</td>
<td>16</td>
<td>31</td>
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</table>

F. Initial Position and Place of Employment of Graduates Over the Past 6 Years

According to Table IV-7, 45% of the department’s graduating doctoral students secure jobs as assistant professors at colleges. This statistic is clearly in line with department’s objective to “improve the quality and significantly increase the quantity of the graduate student body” in the strategic plan. One of the assessments of this objective (student quality) is the employment secured by ME’s PhD graduates.
### Table IV-7: Doctoral Degrees Awarded

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Initial Position</th>
<th>Initial Employer</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>Xiaobin Le</td>
<td>Assistant Professor</td>
<td>Wentworth Inst of Tech</td>
<td>Boston, MA</td>
</tr>
<tr>
<td></td>
<td>Mert Doganli</td>
<td>Engineer</td>
<td>Ford Motor Company</td>
<td>Istanbul, Turkey</td>
</tr>
<tr>
<td></td>
<td>Overton L. Parish</td>
<td>PhD Staff</td>
<td>Thermotek</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>2003-2004</td>
<td>Sanjeeva Maithripala</td>
<td>Associate Professor</td>
<td>University of Ruhuna</td>
<td>Galle, Sri Lanka</td>
</tr>
<tr>
<td></td>
<td>Mehmet Tugrul Samir</td>
<td>Engineer</td>
<td>Applied Material</td>
<td>Santa Clara, CA</td>
</tr>
<tr>
<td>2004-2005</td>
<td>John Joseph Granier</td>
<td>Engineer</td>
<td>Energetic Mat Products</td>
<td>Austin, TX</td>
</tr>
<tr>
<td></td>
<td>Emily McFather Hunt</td>
<td>Assistant Professor</td>
<td>West Texas A &amp; M Univ</td>
<td>Canyon, TX</td>
</tr>
<tr>
<td></td>
<td>Junning Sun</td>
<td>Engineer</td>
<td>Energo Engineering</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>2005-2006</td>
<td>N.K. Chandrashekar</td>
<td>Assistant Professor</td>
<td>University of Waterloo</td>
<td>Waterloo, Can</td>
</tr>
<tr>
<td></td>
<td>Bulent Gumus</td>
<td>Assistant Professor</td>
<td>TOBB University</td>
<td>Ankara, Turkey</td>
</tr>
<tr>
<td></td>
<td>Taek Hyun Jang</td>
<td>Post-doc Res Assoc</td>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>2006-2007</td>
<td>Matthew Noel Jackson</td>
<td>Assistant Professor</td>
<td>West Texas A &amp; M Univ</td>
<td>Canyon, TX</td>
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<tr>
<td></td>
<td>Jihwan Kim</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
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<td></td>
<td>Morshed P.H. Khandaker</td>
<td>Assistant Professor</td>
<td>U of Central Oklahoma</td>
<td>Edmond, OK</td>
</tr>
<tr>
<td>2007-2008</td>
<td>R. Kunnavakkamvinjamur</td>
<td>Research Engineer</td>
<td>Fatigue Technology</td>
<td>Seattle, WA</td>
</tr>
<tr>
<td></td>
<td>Istemi Baris Ozsoy</td>
<td>Assistant Professor</td>
<td>TOBB University</td>
<td>Ankara, Turkey</td>
</tr>
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<td></td>
<td>Emre Selvi</td>
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<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td></td>
<td>Resul Aksoy</td>
<td>Instructor</td>
<td>Meridyen Teaching Inst</td>
<td>Ankara, Turkey</td>
</tr>
<tr>
<td></td>
<td>Luke Nyakiti</td>
<td>Post-doc Res Assoc</td>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
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</table>
### Table IV-8: Master’s Degrees Awarded

<table>
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<tr>
<th>Name</th>
<th>Initial Position</th>
<th>Initial Employer</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2002-2003</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emily McFather Hunt</td>
<td>PhD Candidate</td>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Morshed P.H. Khandaker</td>
<td>PhD Candidate</td>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Caglar Ozerdim</td>
<td>Engineer</td>
<td>Trinity Industries</td>
<td>Dallas, TX</td>
</tr>
<tr>
<td>Kadir Bulent Unuvar</td>
<td>Engineer</td>
<td>Ford Motor Company</td>
<td>Istanbul, Turkey</td>
</tr>
<tr>
<td>Bryan S. Bockmon</td>
<td>Engineer</td>
<td>Applied Res Associates</td>
<td>Littleton, CO</td>
</tr>
<tr>
<td>Joon-Yeoun Cho</td>
<td>PhD Candidate</td>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>John Joseph Granier</td>
<td>PhD Candidate</td>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Georg Christian Kamm</td>
<td>Engineer</td>
<td>Unknown</td>
<td>Moshi, Tanzania</td>
</tr>
<tr>
<td>Kenneth R. Shifflett</td>
<td>Engineer</td>
<td>Severn Trent De Nora</td>
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</tr>
<tr>
<td>Nishant Kumar</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td><strong>2003-2004</strong></td>
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</tr>
<tr>
<td>Resul Aksoy</td>
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<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Shantanu Bhattacharya</td>
<td>PhD Candidate</td>
<td>U of Missouri-Columbia</td>
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</tr>
<tr>
<td>Kumar M.V.N. Buduri</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>N.K. Chandrashekar</td>
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<td>Texas Tech University</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Courtney Holt Cowden</td>
<td>Medical Student</td>
<td>Surf Warfare Med Inst</td>
<td>San Diego, CA</td>
</tr>
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<td>Anish A. Deshpande</td>
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<td>Northrop Grumman</td>
<td>Annapolis, MD</td>
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<tr>
<td>Ali Bilal Raja</td>
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<td>Engro Chemicals Ltd.</td>
<td>Dharki, Pakistan</td>
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<td>P.S. Ramakrishnan</td>
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<td>Unknown</td>
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<tr>
<td>Etam Guclu Sayin</td>
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<td>Zachary James Scholz</td>
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</tr>
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<td>Sandeep Singh Thakur</td>
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<td>V. Chakkarapani</td>
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<tr>
<td>Ae Rook Kim</td>
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<tr>
<td>Deepak Kumar</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>William Francis Legget</td>
<td>Engineer</td>
<td>ThermoTek</td>
<td>Dallas, TX</td>
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Mechanical Engineering
Table IV-8: (continued)

<table>
<thead>
<tr>
<th>Name</th>
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<td>Preeda Meekangvan</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>S.S.P. Dumbre</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Deepak Sahini</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>2004-2005</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Robert C. Anderson</td>
<td>Engineer</td>
<td>Sandia National Lab</td>
<td>Albuquerque, NM</td>
</tr>
<tr>
<td>Ronald Lynn Bennett</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Zafer Yener Cehiz</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Aaron Wayne Cordaway</td>
<td>Unknown</td>
<td>Unknown</td>
<td>NC</td>
</tr>
<tr>
<td>John Timothy Foster</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Uday Bhagajirao Godse</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Kalyani Navaratnam</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Griffin Carter Phillips</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Rochelle Carroll Pritchard</td>
<td>Engineer</td>
<td>NASA</td>
<td>Houston, TX</td>
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<tr>
<td>Scott Eugene Rose</td>
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<td>Unknown</td>
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<tr>
<td>Sanket Anil Unhale</td>
<td>PhD Candidate</td>
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<td>Kevin Scott Brigham</td>
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<td>Nathan Ross Francis</td>
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<tr>
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<td>Unknown</td>
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<tr>
<td>Matthew Noel Jackson</td>
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<td>Lubbock, TX</td>
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<tr>
<td>Kevin Lip-Tee Lim</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Kevin Michael Moore</td>
<td>Engineer</td>
<td>Raytheon Company</td>
<td>McKinney, TX</td>
</tr>
<tr>
<td>Erika Beth Washington</td>
<td>PhD Candidate</td>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
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<td>Matthew David Whigham</td>
<td>PhD Candidate</td>
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<td>Lubbock, TX</td>
</tr>
<tr>
<td>Allen Dean White</td>
<td>Design Engineer</td>
<td>Smith International</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Gagan-Deep Bhasin</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Amit Rajnarayan Mishra</td>
<td>Engineer</td>
<td>CPP Engineering</td>
<td>Fort Collins, CO</td>
</tr>
<tr>
<td>K.-K Raghunath</td>
<td>Engineer</td>
<td>ICS</td>
<td>Unknown</td>
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<tr>
<td>Swapil P. Wankhede</td>
<td>Engineer</td>
<td>Lauren Engineering</td>
<td>Abilene, TX</td>
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<tr>
<td><strong>2005-2006</strong></td>
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<td></td>
</tr>
<tr>
<td>Vikas C. Subramanian</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Ilgaz Cumalioğlu</td>
<td>Engineer</td>
<td>Plug Power Inc.</td>
<td>Albany, NY</td>
</tr>
<tr>
<td>Kumar Gautam</td>
<td>Engineer</td>
<td>United Mot of America</td>
<td>Miami, FL</td>
</tr>
<tr>
<td>Tyler William Harrist</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Balasaheb D. Kawade</td>
<td>Engineer</td>
<td>Oceaneering Inter</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Kristopher A. Kopnicky</td>
<td>Unknown</td>
<td>Unknown</td>
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### Table IV-8: (continued)

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<tbody>
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<td>Nirman Marwaha</td>
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<td>Rakshith Naik</td>
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<td>Oil Company</td>
<td>TX</td>
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<tr>
<td>Shriniwas S. Nayak</td>
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<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Ranjith Poduval</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Ashutosh Arun Potdar</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Jagdevsingh Sandhu</td>
<td>Engineer</td>
<td>Smith International</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Vinay Ravi Shankar</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Sachin Vitthal Kholamkar</td>
<td>Engineer</td>
<td>Consulting Firm</td>
<td>TX</td>
</tr>
<tr>
<td>Dustin Travis Osborne</td>
<td>Engineer</td>
<td>Southwest Res Institute</td>
<td>San Antonio, TX</td>
</tr>
<tr>
<td>Daniel Joseph Prentice</td>
<td>Engineer</td>
<td>Idaho National Lab</td>
<td>Idaho Falls, ID</td>
</tr>
<tr>
<td>Matthew Lee Reagan</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Seyul Son</td>
<td>PhD Candidate</td>
<td>Virginia Tech</td>
<td>Blacksburg, VA</td>
</tr>
<tr>
<td>Randy Brian White</td>
<td>Engineer</td>
<td>Raytheon</td>
<td>Dallas, TX</td>
</tr>
<tr>
<td>Gowri S. Seetharaman</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Arun P. Sethuraman</td>
<td>Unknown</td>
<td>Unknown</td>
<td>California</td>
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#### 2006-2007

<table>
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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Luis Carlos Caro-Delgado</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Houston, TX</td>
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<tr>
<td>Birci Dikici</td>
<td>PhD Candidate</td>
<td>Texas Tech</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Peter Clemens Jung</td>
<td>Engineer</td>
<td>United Space Alliance</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Joseph Steven Greco</td>
<td>Engineer</td>
<td>Lockheed Martin</td>
<td>Fort Worth, TX</td>
</tr>
<tr>
<td>Emrah Gumus</td>
<td>PhD Candidate</td>
<td>Texas Tech</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Faruk Gungor</td>
<td>PhD Candidate</td>
<td>Texas Tech</td>
<td>Lubbock, TX</td>
</tr>
<tr>
<td>Rac Gyu Lee</td>
<td>Engineer</td>
<td>Hyundai</td>
<td>South Korea</td>
</tr>
<tr>
<td>Anna Michelle Gentry</td>
<td>Engineer</td>
<td>Chicago Iron &amp; Steel</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Ryan Zachary Goode</td>
<td>Engineer</td>
<td>General Motors</td>
<td>Milford, MI</td>
</tr>
<tr>
<td>Ganesh Sonajirao Lodge</td>
<td>Engineer</td>
<td>Penloyd</td>
<td>Tulsa, OK</td>
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<tr>
<td>Kyle William Watson</td>
<td>Engineer</td>
<td>Pantex</td>
<td>Amarillo, TX</td>
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<tr>
<td>Ross Bonnette Wilson</td>
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#### 2007-2008

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<tr>
<td>Shamik Bhattacharya</td>
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<td>Lubbock, TX</td>
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<tr>
<td>Jonathan Burkhard</td>
<td>Engineer</td>
<td>Utility Engineering</td>
<td>Amarillo, TX</td>
</tr>
<tr>
<td>Garima Chauhan</td>
<td>Engineer</td>
<td>Foster Wheeler</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Kaushik Das</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Ketan Doshi</td>
<td>Unknown</td>
<td>Unknown</td>
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</tr>
<tr>
<td>Andrew Francis</td>
<td>Engineer</td>
<td>Excel Energy</td>
<td>Amarillo, TX</td>
</tr>
<tr>
<td>Brian Hermis</td>
<td>Engineer</td>
<td>Oil Company</td>
<td>Houston, TX</td>
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<tr>
<td>Brice Hughes</td>
<td>Engineer</td>
<td>Halliburton</td>
<td>Duncan, OK</td>
</tr>
</tbody>
</table>
Most of the department’s graduates with master’s degree take on jobs as engineers (see Table IV-8). A greater majority of these graduates are able to secure jobs in the state of Texas. A small percentage of the students who take the thesis option stay on to pursue their doctorates, while others are admitted doctoral programs at other universities.

G. Types of Financial Support Available for Graduate Students

The financial support available to graduate students includes: teaching assistantships, research assistantships, Graduate Part-Time Teaching Instructorships, scholarships administered by the graduate school, scholarships administered by the COE, and scholarships administered by the department. As seen from Table IV-6, the percentage of the graduates supported by any of these means fluctuates. Most of the master’s students are supported by scholarships administered by the department. Usually, the
The department supports all qualified incoming master’s students with scholarships. The second level of support for master’s students is teaching assistantships, and followed by research assistantships. All doctoral students who do not have their own support are supported as RA’s or TA’s.

H. Number of Students Who Received Awards

The number of students who received awards is depicted in Table IV-9. The graduate students in the department have had most success with is the AT&T Chancellor’s fellowship followed by the Helen DeVitt Jones Award. Starting with the academic year 2004-2005, all of the PhD students have been supported as TA’s or RA’s, which has reduced the necessity of applying for awards. Since not all master’s students are supported by the department, they make up most of the award recipients. The notable award in this review period was the National Science Foundation Graduate Research Fellowship awarded to Ms. Dana Rosenbladt. This was of the amount $40,500 for period 2007-2010. Additionally, she was also one of the two students that received that AT&T Chancellor's Endowed Fellowship for period 2007-2008.

Table IV-9: National and University Fellowships, Scholarships, and Other Awards

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<tr>
<th>AWARD</th>
<th>01/02 $</th>
<th># Students</th>
<th>02/03 $</th>
<th># Students</th>
<th>03/04 $</th>
<th># Students</th>
<th>04/05 $</th>
<th># Students</th>
<th>05/06 $</th>
<th># Students</th>
<th>06/07 $</th>
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<tbody>
<tr>
<td>AT&amp;T Chancellors Hazlewood</td>
<td>$9,000</td>
<td>3</td>
<td>$3,000</td>
<td>1</td>
<td>$6,000</td>
<td>2</td>
<td>$3,000</td>
<td>1</td>
<td>$6,000</td>
<td>2</td>
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<tr>
<td>Helen DeVitt Jones McNair</td>
<td>$7,000</td>
<td>2</td>
<td>$7,000</td>
<td>2</td>
<td>$3,500</td>
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<tr>
<td>NSF Grad Research Summer</td>
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<td>$2,300</td>
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<td>$2,325</td>
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</table>
I. Percentage of Students Who Received Financial Support

Table IV-10 shows the percentage of full-time master’s and doctoral students who received financial support. This data was generated from the information in Table IV-6 without consideration of the fellowships and awards in Table IV-9. Which would have lead to double counting due to the fact that some graduate students who are RA’s, TA’s or hold scholarship can also be awarded the university or COE scholarships. On the average, the percentage of graduate students under support has been a little over 60%.

<table>
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<tr>
<th>Year</th>
<th>Percentage Supported</th>
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<tr>
<td>2001</td>
<td>39%</td>
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<td>2002</td>
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<td>2003</td>
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<tr>
<td>2004</td>
<td>88%</td>
</tr>
<tr>
<td>2005</td>
<td>44%</td>
</tr>
<tr>
<td>2006</td>
<td>42%</td>
</tr>
<tr>
<td>2007</td>
<td>66%</td>
</tr>
</tbody>
</table>

J. Average Financial Support Provided to Master’s and Doctoral Students

Table IV-11 depicts the financial support provided per full-time graduate student. The numbers quoted in this table are from 2007, and have gradually increased since 2001. The students’ support can be broken up into six categories: namely, doctoral research assistant, master’s research assistant, doctoral teaching assistant, master’s teaching assistant, graduate part-time teaching instructor, and scholarship. Generally, the RA’s and TA’s are supported for the whole year, while the GPTI's are supported for only nine months. In the summer terms, the GPTI’s are supported as graders. It should be noted that the department does not pay tuition rebates to the students; instead it makes tuition payments directly to the university. The amounts indicated in the table do not include the amounts the students may receive from fellowships and awards.
Table IV-11: Current Average Financial Support Provided to Students

<table>
<thead>
<tr>
<th>Role</th>
<th>Department’s Payment to Student</th>
<th>Department’s Tuition Payment to University</th>
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<tbody>
<tr>
<td>Research Assistant (PhD)</td>
<td>$18,000</td>
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<tr>
<td>Research Assistant (MS)</td>
<td>$16,000</td>
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</tr>
<tr>
<td>Teaching Assistant (PhD)</td>
<td>$15,000</td>
<td>$5,106</td>
</tr>
<tr>
<td>Teaching Assistant (MS)</td>
<td>$13,200</td>
<td>$5,106</td>
</tr>
<tr>
<td>Graduate Part-Time Teaching Instructor</td>
<td>$15,000</td>
<td>$5,106</td>
</tr>
<tr>
<td>Scholarship</td>
<td>$1,000</td>
<td>$0</td>
</tr>
</tbody>
</table>

K. Graduate Student Publications and Creative Activities

Publications co-authored by graduate students are used as an assessment of the objective to “improve the quality and significantly increase the quantity of the graduate student body” in the department’s strategic plan. As indicated in Table IV-12, there has been a healthy increase in the refereed publications co-authored by graduate students. Starting the academic year 2006-2007, the department has required a manuscript accepted for publication from PhD students on graduation. This is an attempt to encourage the publication culture in the department.

It should be noted that the data in Table IV-12 may contain some minor omissions, since the graduate students did not provide this information directly. The Web of Science database was used to compile this data. First, the publications of the faculty members were looked up, and then the students who co-authored the papers were identified. All the publications of the identified student were then searched with the data. It is possible some students may have published papers with faculty members from other departments or the students may have published papers as sole authors.
### Table IV-12: Graduate Student Publications and Creative Activities

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>2007</td>
<td>12</td>
<td>9</td>
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<td></td>
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<tr>
<td>2006</td>
<td>17</td>
<td>18</td>
<td></td>
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<tr>
<td>2005</td>
<td>14</td>
<td>11</td>
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<td>2004</td>
<td>5</td>
<td>13</td>
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</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

L. Programs for Mentoring and Professional Preparation of Graduate Students

There is no formal mentoring and professional preparation of graduate students conducted by the department. The mentoring is informal and is often carried out by the thesis or dissertation advisor. Generally, the doctoral students are strongly encouraged to attend conferences to present their research or that of their research group. Additionally, the department requires graduate students to attend the Mechanical Engineering Graduate Seminar Series.

M. Departmental Efforts to Retain Students and Improve Graduation Rates

The department tackles the student retention, graduation rates, and reduction of time degree with a combination of formal and informal strategies. The formal strategies include the degree plans, selection of thesis advisors, departmental support duration, three-year course schedule, and new graduate student orientation. When students arrive in the department, they have to attend the new graduate student orientation. At this orientation, the students are provided the essential information to assist them with the navigation through the graduate curriculum. For example, the students are advised to look for research topics and thesis/dissertation advisors as soon as they start attending lectures. The department has a four-year course schedule (see Figure IV-7) that helps the students and their advisors plan their coursework and submit their degree plan by the required start of the second semester. Additionally, the department
informs students with TAships or scholarships that their support runs for a limited time. This duration is four long semesters for master’s students, 3.5 years for doctoral students with master’s, and four years for doctoral students without master’s degrees.

Additionally, the department has a graduate student advisory board that consists of ten students. The composition of the board is diverse and representative of the graduate students in the department. During the long semesters, the board meets once a month with the department chair and the director of the graduate program. During the meetings, the board shares with the departmental graduate administration the concerns the larger student body may have. This is an important effort to retain students and improve the graduation rates.

N. Percentage of Full-Time Master’s and Doctoral students

All students in the department’s graduate program are full-time students.

O. Student-Core-Faculty Ratio

The student-to-faculty ratio is depicted in Table IV-13. The student-to-faculty ratio has averaged about 4:1 for the last several years. It should be noted that not all the master’s students are pursuing the thesis option in the program.

<table>
<thead>
<tr>
<th>Table IV-13: Student-Core-Faculty Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Enrollment</strong></td>
</tr>
<tr>
<td>2001-2002</td>
</tr>
<tr>
<td>2002-2003</td>
</tr>
<tr>
<td>2003-2004</td>
</tr>
<tr>
<td>2004-2005</td>
</tr>
<tr>
<td>2005-2006</td>
</tr>
<tr>
<td>2006-2007</td>
</tr>
<tr>
<td>2007-2008</td>
</tr>
</tbody>
</table>
## Total courses offered in Semester (Term)

<table>
<thead>
<tr>
<th>Term</th>
<th>f07</th>
<th>sp08</th>
<th>sum08</th>
<th>f08</th>
<th>sp09</th>
<th>sum09</th>
<th>f09</th>
<th>sp10</th>
<th>sum10</th>
<th>f10</th>
<th>sp11</th>
<th>sum11</th>
<th>f11</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>6</td>
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<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>7</td>
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</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
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<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Courses

1. **ME5321** Thermodynamics
2. **ME5338** Advanced Fluid Mechanics
3. **ME5327** Advanced Heat Transfer
4. **ME5322** Conduction Heat Transfer
5. **ME5325** Convection Heat Transfer
6. **ME5326** Combustion
7. **ME6330** Environmental Fluid Dynamics
8. **ME5360** Biofluid Mechanics
9. **ME5336** Computational Fluid Dynamics
10. **ME5335** Mathematical Models of Turbulence
11. **ME5340** Elasticity
12. **ME5342** Fracture and Failure Analysis
13. **ME5345** Computational Mechanics I
14. **ME5346** Computational Mechanics II
15. **ME5350** Mechanics of Composite Material
16. **ME5330** Mechanics of Nano-materials I (NEW)
17. **ME5344** Intro. High Pressure Science & Tech
18. **ME5311** Advanced Dynamics
19. **ME5312** Control Theory I
20. **ME5314** Nonlinear Dynamics
21. **ME5316** Advanced Vibrations
22. **ME5385** Introduction to Microsystems (MEMS) I
23. **ME5317** Robot and Machine Dynamics
24. **ME5353** Transdisciplinary Design & Process
25. **ME6330** Automotive Systems
26. **ME5351** Advanced Engineering Design
27. **ME5352** Probabilistic Design
28. **ME5355** Complexity Theory for Design & Process
29. **ME5301** Analysis of Engineering Systems I
30. **ME5302** Analysis of Engineering Systems II

### Stream

- **Thermal / Fluids**
  - Anderson, Bhattacharya, Chyu, He, James, Maxwell, Oler, Pantoya, Para, Smirnov
- **Materials / Mechanics**
  - Chaudhuri, Hashemi, Idesman, Jankowski, Levitas, Ma, Rasty
- **Dynamics / Controls**
  - Barhorst, Berg, Han
- **Design**
  - Ekwaro-Osire, Ertas, Maxwell, Tate
- **Math**
  - Bhattacharya

---

**Figure IV-7: Four-Year Graduate Course Schedule**
P. Research: Dissertation and Thesis Titles

**Mechanical Engineering Doctorates**


Naveen Kugwe Chandrashekar, *Sex Based Differences in Mechanical Properties and Ultrastructure of Human Anterior Cruciate Ligament and Patellar Tendon*, 2005.


---

**Mechanical Engineering Master’s**


Jonathan Nicholas Burkhard, *Characterizing the Energy Transfer from a Thermite Reaction to a Target*, 2007.


Peter Clemens Jung, *Initiation and Detonation in Lead Azide and Silver Azide at Sub-Millimeter Geometries*, 2006.


**Reports, Mechanical Engineering Master’s**


Kevin Scott Brigham, *Correction for Interference of Oversize Models within the Wind Tunnel Structure*, 2005.


V. Department

A. Department Operating Expenses

![Department Operating Cost - Academic Year (ME)](source: Institutional Research Services)

**Figure V-1: Department Operating Cost – Academic Year**

**Table V-1: Department Operating Costs as a Fraction of Employees**

<table>
<thead>
<tr>
<th></th>
<th>01/02</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept Operating Cost $</td>
<td>$260,226</td>
<td>$263,361</td>
<td>$281,798</td>
<td>$268,363</td>
<td>$283,729</td>
<td>$311,019</td>
</tr>
<tr>
<td>Faculty &amp; Staff %</td>
<td>22.15</td>
<td>22.27</td>
<td>26.02</td>
<td>27.88</td>
<td>30.13</td>
<td>31.05</td>
</tr>
<tr>
<td>Dept Op Cost /FS $</td>
<td>$11,748</td>
<td>$11,826</td>
<td>$10,830</td>
<td>$9,625</td>
<td>$9,416</td>
<td>$10,016</td>
</tr>
</tbody>
</table>
B. Summary of Proposals (submitted)

The data in Table V-2, compiled from the annual grant report as published by the Office of Research Service (ORS) are exact. Most of the proposals are submitted to and granted by federal agencies such as National Science Foundation, Department of Energy, Department of Defense, NASA and Office of Naval Research. A small fraction of the proposals are submitted to and funded by a state agency such as ARP/ATP and TXDOT. The column labeled ‘others’ indicates proposals funded mainly by industry.

<table>
<thead>
<tr>
<th>Table V-2: Summary of Number of Proposals Written and Accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundation</strong></td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>2006</td>
</tr>
<tr>
<td>2005</td>
</tr>
<tr>
<td>2004</td>
</tr>
<tr>
<td>2003</td>
</tr>
<tr>
<td>2002</td>
</tr>
<tr>
<td>2001</td>
</tr>
</tbody>
</table>

D = proposals written by Co-PI's from your department only
M = proposals written by Co-PI's from multiple departments

C. External Research expenditures

The data from the ORS shown in Table V-3 indicate the annual research grant obtained by the department. The $2 M obtained in 2001/2002 is partly from in-kind support. The average external research expenditure from 2003 to 2007 is approximately $1,229,364 per year. Most of these grants are obtained from various federal agencies with very little in-kind contribution.

Considering on an average 20 ME faculty at Texas Tech, the average research grant per faculty who approximately $60K per year from 02/03 to 06/07. This is low compared to our peer institutions for the same time period, i.e., $210K for Kansas State University, $89K for Mississippi State University, and $92K for University of Alabama per faculty per year, but is comparable to University of Missouri ($58K per faculty per year).
Table V-3: Summary of Faculty Awards by Home Department

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Awards</th>
<th>Facilities &amp; Administrative</th>
<th>Award Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/02</td>
<td>15.30</td>
<td>$245,337</td>
<td>$2,088,540</td>
</tr>
<tr>
<td>02/03</td>
<td>15.93</td>
<td>$316,213</td>
<td>$1,200,415</td>
</tr>
<tr>
<td>03/04</td>
<td>13.89</td>
<td>$251,049</td>
<td>$1,287,312</td>
</tr>
<tr>
<td>04/05</td>
<td>17.23</td>
<td>$227,273</td>
<td>$1,305,505</td>
</tr>
<tr>
<td>05/06</td>
<td>13.06</td>
<td>$235,722</td>
<td>$1,128,101</td>
</tr>
<tr>
<td>06/07</td>
<td>14.57</td>
<td>$205,621</td>
<td>$1,225,488</td>
</tr>
<tr>
<td>Totals:</td>
<td>89.98</td>
<td>$1,481,215</td>
<td>$8,235,360</td>
</tr>
</tbody>
</table>

Source: Office of Research Services

Figure V-2: Research Expenditures

Research Expenditures (ME)

Source: Institutional Research Services

Sponsored

<table>
<thead>
<tr>
<th>Year</th>
<th>01/02</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>$2,088,540</td>
<td>$1,200,415</td>
<td>$1,287,312</td>
<td>$1,305,505</td>
<td>$1,128,101</td>
<td>$1,225,488</td>
</tr>
</tbody>
</table>

Mechanical Engineering
Table V-4: Comparison of Research Expenditures

<table>
<thead>
<tr>
<th></th>
<th>01/02</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas State Univ</td>
<td>$3,474,470</td>
<td>$3,675,996</td>
<td>$4,543,386</td>
<td>$4,316,403</td>
<td>$5,206,527</td>
<td>$5,442,110</td>
</tr>
<tr>
<td>Mississippi State Univ</td>
<td>n/a</td>
<td>$1,474,336</td>
<td>$2,382,527</td>
<td>$1,898,243</td>
<td>$1,764,996</td>
<td>$2,345,972</td>
</tr>
<tr>
<td>Univ of Alabama</td>
<td>$860,000</td>
<td>$970,000</td>
<td>$910,000</td>
<td>$1,980,000</td>
<td>$2,170,000</td>
<td>$1,800,000</td>
</tr>
<tr>
<td>Univ of Missouri</td>
<td>$4,766,043</td>
<td>$1,462,719</td>
<td>$2,971,596</td>
<td>$1,587,926</td>
<td>$1,294,017</td>
<td>$1,518,986</td>
</tr>
<tr>
<td>Texas Tech Univ</td>
<td>$2,088,540</td>
<td>$1,200,415</td>
<td>$1,287,312</td>
<td>$1,305,505</td>
<td>$1,128,101</td>
<td>$1,225,488</td>
</tr>
</tbody>
</table>

D. Internal Funding

The data in Table V-5 are exact data as obtained from ORS, Graduate School and TECHFIM.

Table V-5: Source of Internal Funds (TTU)

<table>
<thead>
<tr>
<th>Source of Internal Funds (TTU)</th>
<th>01/02</th>
<th>02/03</th>
<th>03/04</th>
<th>04/05</th>
<th>05/06</th>
<th>06/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Enhancement</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Research Incentive</td>
<td>$10,250</td>
<td>$17,678</td>
<td>$59,843</td>
<td>$47,496</td>
<td>$47,333</td>
<td>$65,509</td>
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<tr>
<td>Line Items</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Interdisciplinary Seed Grants</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>New Faculty Start-ups</td>
<td>$240,000</td>
<td>$95,420</td>
<td>$100,000</td>
<td>$515,950</td>
<td>$245,052</td>
<td></td>
</tr>
<tr>
<td>Matching from VP of Research</td>
<td>$12,267</td>
<td>$27,542</td>
<td>$12,542</td>
<td>$43,649</td>
<td>$279,088</td>
<td>$1,091,948*</td>
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<tr>
<td>Special needs and opportunities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Research Promotion</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Graduate School Fellowships</td>
<td>$7,000</td>
<td>$19,000</td>
<td>$10,000</td>
<td>$8,300</td>
<td>$8,825</td>
<td>$6,000</td>
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<tr>
<td>HEAF</td>
<td>$30,818</td>
<td>$11,783</td>
<td>$50,459</td>
<td>$121,017</td>
<td>$70,152</td>
<td>$94,843</td>
</tr>
<tr>
<td>TOTALS:</td>
<td>$60,335</td>
<td>$316,003</td>
<td>$228,264</td>
<td>$320,462</td>
<td>$921,348</td>
<td>$1,503352</td>
</tr>
</tbody>
</table>

*General, matching commitments, faculty start-up commitments
**Includes VPR Internal Grant of $300,000
E. Scholarships and Endowments

Table V-6 lists the endowment the ME has, excluding scholarships, since most of the scholarships are given to undergraduates. In addition, ME receives approximately $30,000 graduate tuition each year which is used to offer graduate scholarships. The department receives small gifts from industries and alumni. The ME Academy consists of about one hundred distinguished alumni. The Academy raises $6,000 to $7,000 each year which is used for faculty travel, web page development, etc.

<table>
<thead>
<tr>
<th>Type of Endowment</th>
<th>Endowment Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowed Chair</td>
<td></td>
</tr>
<tr>
<td>J. W. Wright Regents Chair</td>
<td>$1,184,107</td>
</tr>
</tbody>
</table>

F. Departmental Resources for Research and Teaching

ME shares the mechanical engineering building with the engineering technology department. The space occupied by ME consists of offices, lecture rooms, teaching and research labs, and space for the machine shop (see Table V-7).

The departmental office includes the chair’s office, twenty five faculty offices, an office for the senior business supervisor, two advisor offices, and a general office area with space for one senior business assistant and one student assistant. The offices for faculty are completely occupied. The ME department is growing in size due to mainly large undergraduate enrollment (currently 830 undergraduate students). ME does not have any faculty office space available for the new faculty who will be joining the department in Fall, 2009. The mailroom contains the copy machine, FAX machine, and supplies. There are two conference rooms, one holds fifteen and the other about forty people. The conference rooms are used for the senior final design class and final defense presentations by the graduate students.

Graduate students occupy six offices. Many graduate students have desks in their respective research lab. ME does not have spaces for one hundred graduate students. ME provides space only for TAs and RAs.

There are four classrooms. ME 132 is an auditorium-type classroom that holds 100 students. All of the sophomore and Junior ME classes are scheduled in that classroom. The second classroom, ME 146,
holds 45 students. Mostly senior and graduate courses are scheduled there. The third class, room ME 217, holds only 20 students. That classroom is mainly used by the Department of Engineering Technology. Some graduate ME classes are also scheduled in ME 217. The fourth classroom is a technology classroom with each student having access to a computer during the class. The technology classroom is mainly used to teach computer-aided courses. ME does not have enough classroom space to schedule all ME courses in the department. Many of the ME courses are held in other engineering departments.

<table>
<thead>
<tr>
<th>Type of Space</th>
<th>Number of Rooms</th>
<th>Total Assignable Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICES:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty &amp; Administration</td>
<td>3</td>
<td>300</td>
</tr>
<tr>
<td>Clerical</td>
<td>2</td>
<td>601</td>
</tr>
<tr>
<td>Graduate Assistant</td>
<td>6</td>
<td>1216</td>
</tr>
<tr>
<td>Technician</td>
<td>1</td>
<td>420</td>
</tr>
<tr>
<td>CLASSROOMS:</td>
<td>4</td>
<td>5241</td>
</tr>
<tr>
<td>LABS:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Instruction Labs</td>
<td>4</td>
<td>5749</td>
</tr>
<tr>
<td>Research Labs</td>
<td>9</td>
<td>15805</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>1</td>
<td>4428</td>
</tr>
<tr>
<td>STORAGE:</td>
<td>2</td>
<td>253</td>
</tr>
<tr>
<td>SEMINAR ROOM:</td>
<td>2</td>
<td>2010</td>
</tr>
<tr>
<td>TOTAL SQUARE FEET</td>
<td></td>
<td>40910</td>
</tr>
</tbody>
</table>

There are five instruction laboratories used mainly for undergraduate instruction purposes. These are thermal systems, mechanics and materials, system and vibration, and an open computer laboratory with thirty computers. In addition, all graduate students offices and research laboratories have enough computers to provide all TAs and RAs one computer each.

There are nine research laboratories used by faculty who perform experimental and simulation work. These are energetic materials, high pressure materials, nanomaterials, biomechanics, failure analysis, bio fluid mechanics, robotics, water tunnel, and fluid mechanics simulation laboratories. In addition, Dr. Darryl James’ tornado simulator and Dr. Tim Maxwell’s Eco-car research are at the Reese Center. Both of these facilities are shared by another department and are not included in Table V-7. One faculty, Dr. Jordan Berg, does his research at the Nano Tech Center. Another faculty member, Dr. He, has part of his research facility in the Experimental Sciences Building. ME is in urgent need of additional research.
laboratory space. To accommodate all the faculty members’ research, ME needs at least 30% more research space.

The department maintains a machine shop in which undergraduate students do their design projects and graduate students build parts they need for their research equipment. The two technicians train the students in the use of machines in the shop.

G. HEAF Expenditures

The HEAF was created to allow state universities in Texas to purchase equipment not otherwise funded. ME received very little HEAF prior to 2005 compared to some other departments. Since the ME undergraduate laboratories have expensive equipment, much of the HEAF is used to keep them in working condition. The undergraduate laboratories were in poor condition prior to 2005. In that year, all the funding was used to renovate the thermal systems laboratory. In 2006 and 2007, approximately $30,000 was used for upgrading undergraduate laboratories. The rest of the HEAF was used mainly for new faculty start-up, with which faculty bought either computers or research equipment. Obtaining more HEAF will certainly help to keep both instruction and research laboratories in better condition.

<table>
<thead>
<tr>
<th></th>
<th>Labs</th>
<th>Classroom</th>
<th>Other (identify)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$30,000</td>
<td>$48,788</td>
<td></td>
<td>$78,788</td>
</tr>
<tr>
<td>2006</td>
<td>$30,000</td>
<td>$28,835</td>
<td></td>
<td>$58,835</td>
</tr>
<tr>
<td>2005</td>
<td>$103,599</td>
<td></td>
<td>$103,599</td>
<td></td>
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<tr>
<td>2004</td>
<td>$47,184</td>
<td></td>
<td></td>
<td>$47,184</td>
</tr>
<tr>
<td>2003</td>
<td>$15,750</td>
<td></td>
<td></td>
<td>$15,750</td>
</tr>
<tr>
<td>2002</td>
<td>$24,200</td>
<td></td>
<td></td>
<td>$24,200</td>
</tr>
<tr>
<td>2001</td>
<td>$65,618</td>
<td></td>
<td></td>
<td>$65,618</td>
</tr>
</tbody>
</table>

H. External Program Accreditation

Not Applicable.
VI. Conclusion

In this section, ME lists it needs and also areas of significant contribution. ME has divided our needs into four categories: graduate student recruitment, graduate education program, research, and facilities.

1. Graduate Student Recruitment:

Recruitment of good graduate students is essential for the success of the graduate program and research. A large number of international students with excellent GRE and high GPA apply each year for the MS program. The acceptance rate of international students in the MS program is low, so that a balance of domestic and international students is maintained and so that students are given some form of financial support. ME recruits highly from its own undergraduate student pool through the 150 hour BS/MS program. Currently, there are twenty-six students in that program. Recently, ME has also been successful in recruiting a number of domestic students from other universities by playing the active role of inviting them to visit campus when they apply.

The department likes to concentrate its effort on hiring both international and domestic high-caliber PhD students. So far, ME has not been successful, outside of individual faculty effort. One of the reasons for this low success is the low stipend offered to PhD students compared to our peer institutions (see Table IV-11). For example, currently the Chair is trying to recruit a PhD student from the Virginia Polytechnic Institute (VPI). The only reason the student might turn her down is the low stipend. Many of our own undergraduate students also join other universities (mostly VPI, Georgia Tech, and UT Austin) even to pursue a master’s degree because of ME’s low stipend. ME has a pending proposal to the Graduate School on this point (Growing Graduate Program). ME also needs to aggressively attempt to recruit high-caliber students. Recently the COE arranged a workshop titled “101 Great Ideas for recruiting graduate students.” In that workshop, we learned that a good strategy for recruiting is that we need to invite students to apply or even give them an offer as soon as their GRE report is available. Since only the Graduate School receives this information, it will be very helpful if they can provide us with this information. ME recently published an attractive brochure for its graduate program (see Figure VII-1 and Figure VII-2). ME has a yearly newsletter which is mailed to mechanical engineering departments across the nation. ME is also continuously improving our web page. Thus, having more funding available to offer higher stipends and early information on potential graduate students will take us to the next level of graduate student recruitment.

2. Graduate Educational Program:

ME groups its research and graduate program in fours areas, namely, solid mechanics and materials, thermal-fluids, dynamics and controls, and design. In each of these areas three courses are offered in one year (see Figure IV-7), providing sufficient courses for graduate students to take so that they graduate on
time. COE has originated a Bioengineering graduate program. Once this program is approved, ME will teach a few courses for that program. Since ME has a large undergraduate program, all of its faculty teach undergraduate courses. Additional resources are necessary to hire instructors who can take care of undergraduate courses so that ME graduate faculty can be freed to teach bioengineering courses at the graduate level.

3. Research:

In order to expand the research in the department, ME needs to recruit successful faculty members with established research and funding records at the Associate and Full Professor level. Other than the Endowed Chair, all our recent hires are at the Assistant Professor level. The newly hired Assistant Professors are excellent faculty, but it takes some time for them to get established. TTU must acknowledge that supporting new faculty is a top priority and it needs to invest its resources accordingly.

4. Facilities

As pointed out in the departmental resources section, ME needs at least 50% more research space than it currently has. The newly hired faculty cannot be given any research space due to lack of space. Recently, Dr. Ma purchased some unique nanomaterials processing equipment, through VPR’s internal grant ($500,000), which cannot be assembled due to lack of space and is still in boxes. TTU must acknowledge that not having enough research space is a problem and it needs to invest significant funding to acquire more research space.
VII. Appendices

A. Strategic Plan

B. Graduate Course Offerings

C. Recruiting Materials

D. Graduate Student Handbook

E. Graduate Student Association(s)

F. Graduate Faculty Information
A. Strategic Plan

Our departmental strategic plan is located at the following website:

http://www.me.ttu.edu/Home/The%20Department/Strategic%20Plan.php

B. Graduate Course Offerings

5120. Graduate Seminar (1:1:0). Discusses mechanical engineering research topics. Teaches written and oral communication techniques for professional engineers. Required first semester for all ME graduate students.


5302. Numerical Analysis of Engineering Systems (3:3:0). Prerequisite: ME 3315, MATH 3350, or consent of instructor. Numerical analysis of ordinary and partial differential equations and other advanced topics as applied to mechanical engineering problems.

5311. Advanced Dynamics (3:3:0). Prerequisite: ME 3331, 3433, or consent of instructor. Newtonian dynamics of particles and rigid bodies, rotating coordinate systems, coordinate and inertia property transformations, Lagrangian and Hamiltonian mechanics, Gibbs-Appell equations, and gyroscopic mechanics.

5312. Control Theory I (3:3:0). Prerequisite: MATH 2360, 3354, 4351, or consent of instructor. Linear dynamical systems, stability, frequency response and Laplace transform, feedback, state space description, and geometric theory of linear systems. (MATH 5312)

5313. Control Theory II (3:3:0). Prerequisite: MATH 5312, 5316, 5318, or consent of instructor. Quadratic regulator for linear systems, Kalman filtering, nonlinear systems, stability, local controllability, and geometric theory of nonlinear systems. (MATH 5313)

5314. Nonlinear Dynamics (3:3:0). Prerequisite: ME 5311, or 5316. Nonlinear oscillations and perturbation methods for periodic response; bifurcations and chaotic dynamics in engineering and other systems.
5316. Advanced Vibrations (3:3:0). Prerequisite: ME 3331, 3433, or consent of instructor. Vibration of single and multiple-degree of freedom systems, continuous systems, FE formulation, computer sided modal analysis, random vibrations.

5317. Robot and Machine Dynamics (3:3:0). An overview of planar mechanism (cams and linkages) and set analysis and synthesis. Introduction to spatial mechanisms and robotics kinematic and dynamic analysis and control. An extended and in-depth project is required. (ME 4335)

5321. Thermodynamics (3:3:0). Prerequisite: ME 3322 or consent of instructor. Classical macroscopic theory with an emphasis on availability concepts in nonreacting, reacting, single phase, and multicomponent systems.

5322. Conduction Heat Transfer (3:3:0). Prerequisite: ME 3371 or consent of instructor. Fundamental principles of heat transmission by conduction. Multidimensional steady and transient analysis using various analytical and computational methods.

5323. Two-Phase Flow and Heat Transfer (3:3:0). Prerequisite: ME 3371. Liquid-vapor two-phase flow hydrodynamics, boiling and condensation heat transfer, mechanisms and prediction methods.

5325. Convection Heat Transfer (3:3:0). Prerequisite: ME 3371 or consent of instructor. Fundamental principles of heat transmission by convection; theoretical, numerical, and empirical methods of analysis for internal and external flows.

5326. Combustion (3:3:0). Prerequisite: ME 3322 and 3371. Introduction to combustion kinetics; the theory of premixed flames; turbulent combustion; formation of air pollutants in combustion systems; examples of combustion devices which include internal combustion engines, gas turbines, furnaces and waste incinerators; alternative fuel sources.


5330. Boundary Layer Theory (3:3:0). Prerequisite: ME 3370 or consent of instructor. Fundamental laws of motion for Newtonian viscous fluids in steady laminar and turbulent boundary layers. Utilization of analytical and approximate methods to obtain solutions for viscous flows.

5332. Potential Flow (3:3:0). Prerequisite: ME 3370. The study of inviscid incompressible flows. Topics include stream functions and velocity potential, vorticity dynamics, and applications to aerodynamics.

5334. Gas Dynamics (3:3:0). Prerequisite: ME 3370 or consent of instructor. Development of basic equations for compressible flow, normal and oblique shocks, flow-through nozzles and ducts, external flows.

5336. Computational Fluid Dynamics (3:3:0). Prerequisite: ME 5302 or equivalent. Simultaneous solution of momentum, heat, and mass transfer problems by applying various computational techniques.

5338. Advanced Fluid Mechanics (3:3:0). Basic laws, fundamental theories, and engineering applications in fluid mechanics, including Stokesian dynamics, lubrication theory potential flow, vortex dynamics, boundary layers and turbulence.

5340. Elasticity (3:3:0). Prerequisite: Consent of instructor. Stress, deformation, and strain; basic equations; analytical solution; energy principles and principles of virtual displacements; finite element method; and solutions of problems with elements of design.

5341. Plasticity (3:3:0). Prerequisite: Consent of instructor. Stress-strain relations for plasticity and viscoplasticity, variational principles, finite element method, radial return algorithm, elements of limit analysis, and solutions of problems with elements of design.


5345. Computational Mechanics I (3:3:0). Prerequisite: One or more of the following courses ME 5311, 5340, 5341, 5343. Finite element method for elastic problems, Galerkin weighted residual and variational approaches to numerical solutions of mechanical problems, error estimates and adaptive FE refinement, iterative algorithms for nonlinear problems, static elastoplastic and elastoviscoplastic problems, general purpose finite element codes.

5346. Computational Mechanics II (3:3:0). Prerequisite: One or more of the following courses ME 5311, 5340, 5341, 5343. Finite element method for dynamic elastic problems, time integration schemes for dynamic problems, iterative algorithms for nonlinear dynamic problems, heat transfer analysis, coupled thermomechanical problems, accuracy analysis, general purpose finite element codes.

5348. Phase Transformation II (3:3:0). Prerequisite: ME 5341 and 5347. Strain-induced phase transformations, transformation-induced plasticity. Continuum thermodynamics and kinetics of interaction between phase transformation and plasticity.


5350. Mechanics of Composite Material (3:3:0). Prerequisite: ME 5340. Introduction and analysis of the governing principles of the strength and stiffness of uni- and multi-directional composite materials as well as failure analysis and design applications of those materials.


5353. Fundamental of Transdisciplinary Design and Process (3:3:0). The fundamental aspects of design and process which cut across the boundaries of all disciplines and provide a means for solving complex problems.

5354. Systems Engineering Principles (3:3:0). An overview of the systems engineering design process focusing on defining both the business and the technical needs and required functionality early in the development cycle, documenting requirements with design synthesis and system validation is presented.


5362. Orthopedic Biomechanics (3:3:0). The study of kinematics and kinetics of the human musculoskeletal system with emphasis on injuries (sports and trauma), orthopedic fixation, fixation, fixation device design.
5385. Introduction to Microsystems (MEMS) I (3:3:0). Fundamentals of microelectromechanical (MEMS) and microfluidic systems. Project-based course introduces basic microsystem design, analysis, simulation, and manufacture through several case studies using representative devices.

5386. Introduction to Microsystems (MEMS) II (3:3:0). Prerequisite: ME 5385. Application of microfabrication to create microsensor systems. Integration of optics, optoelectronics and microfluids. Includes other MEMS projects.

5387. Introduction to Microsystems (MEMS) III (3:3:0). Prerequisite: ME 5386 or consent of instructor. Leadership of a design team in an interdisciplinary environment. Simulation and computer-aided MEMS design and analysis.

6000. Master’s Thesis (V1-6).

6301. Master’s Report (3).

6330. Advanced Topics in Mechanical Engineering (3:3:0). Expose students to new and advanced technology pertaining to topics in the mechanical engineering field with the most current research information available.

6331. Theoretical Studies (3:3:0). Prerequisite: Consent of instructor. Theoretical study of advanced topics selected on the basis of the departmental advisor’s recommendation. May be repeated for credit in different areas.

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

C. Recruitment Materials

Our departmental graduate recruiting materials are located at the following websites:

http://www.me.ttu.edu/ (select the “Graduate Program” tab)

A recruitment graduate program brochure is attached on the next two pages.
The Department of Mechanical Engineering offers programs leading to the Master of Science and the Doctor of Philosophy degrees in Mechanical Engineering. The majority of the M.S. and Ph.D. graduates find employment in private industry or in government laboratories. The graduate programs feature extensive student/faculty interaction as means of enabling students to achieve their educational goals.

**Programs of Study**

- **Master's of Science in Mechanical Engineering**
  - **Thesis Option**
    The thesis option requires a minimum total of 30 hours, consisting of a minimum of 24 hours of course-work, and six hours of Master's Thesis.
  - **Non Thesis Options**
    The Report Option requires a minimum of 36 hours, consisting of 33 hours of course-work and three hours of Master's Report.
    The Course-Work Option requires a minimum of 36 hours, consisting entirely of course work.

- **Doctor of Philosophy**
  The Doctorate requires at least 60 semester hours of graduate work, exclusive of the dissertation. No more than 30 semester credit hours of an earned master's degree from another institution may be transferred.

[www.me.ttu.edu](http://www.me.ttu.edu)

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**Graduate Study in Mechanical Engineering**

For additional Information contact:

Dr. Stephen Ekwaro-Osira  
Asstoc. Professor, Director of Graduate Studies  
Department of Mechanical Engr.  
Texas Tech University  
Lubbock, Texas, 79409-1021  
Tel: 806.742.3563 ext. 223  
Fax: 806.742.3540  
stephen.ekwaro-osira@ttu.edu

[www.me.ttu.edu](http://www.me.ttu.edu)

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**Figure VII-1: First Page of Graduate Program Recruitment Brochure**
Research in Mechanical Engineering at Texas Tech University

**Biomechanical engineering:** Orthopedic biomechanics, biofluid mechanics, tissue mechanics, bio-transport, cardiovascular mechano-biology, human injury implant design, cardiovascular fluid mechanics, bio-materials.

**Primary Faculty:** Dr. A. Barhorst, Dr. M. Chyu, Dr. S. Ekwaro-Osire, Dr. J. Hashemi, Dr. Z. He.

**Dynamic Systems and Controls:** Control of nonlinear systems, microsensors, robotics, modeling design control and fabrication of micro systems, multibody elasto-dynamics and control, acoustic and noise control, vibrations, random vibration, mechanics of offshore platforms and marine structures, experimental and theoretical study of nonlinear dynamics.

**Primary Faculty:** Dr. A. Barhorst, Dr. J. Berg, Dr. A. Ertas, Dr. S. Han.

**Mechanics:** Fracture mechanics, finite element analysis, computational mechanics, nanotechnology, multiscale modeling, high pressure mechanics, high order accurate numerical methods, micromechanics, continuum mechanics, solid mechanics, high pressure mechanochemistry, wave propagation in solids.

**Primary Faculty:** Dr. J. Chaudhuri, Dr. J. Hashemi, Dr. A. Idesman, Dr. A. Jankowski, Dr. V. Levitas, Dr. J. Rasty.

**Enrollment:** With 707 undergraduate and 123 graduate students (Spring 2006) the Mechanical Engineering Department is the largest department in the College of Engineering at Texas Tech University.

**Faculty:** The Mechanical Engineering Department is served by 23 full time faculty members.

**Courses and Laboratories:** The department offers 30 graduate level courses with 16 different laboratories to support the extensive research in various core areas.

**Dr. J. Chaudhuri**
Professor & Chair, Department of Mechanical Engineering

**Dr. A. Jankowski**
J.W. Wright and Regents Chair Professor

**Design and Manufacturing:** Probabilistic design and analysis, transdisciplinary design, automotive / vehicle systems design, quantum design, tribology, non-conventional energy systems, gears, axiomatic design, thermal system design, environmentally conscious design.

**Primary Faculty:** Dr. S. Ekwaro-Osire, Dr. A. Ertas, Dr. T. Maxwell, Dr. D. Tale.

**Materials:** Nanomaterials, superhard materials, energetic materials, synchrotron x-ray measures, electronic materials, high pressure / high temperature phase transitions, polymer nano composites, high pressure spectroscopy, gas chromatography, failure analysis and forensic.

**Primary Faculty:** Dr. J. Chaudhuri, Dr. J. Hashemi, Dr. A. Idesman, Dr. A. Jankowski, Dr. V. Levitas, Dr. Y. Ma, Dr. M. Pantoya, Dr. J. Rasty.

**Thermal and Fluid Sciences:** Superconducting systems, experimental / numerical heat transfer, computational fluid dynamics, simulation of tornado like vortices, aerodynamics, combustion, statistical mechanics of physiochemical flows, rotating and stratified flows, combined mode heat / transfer fluid mechanics.

**Primary Faculty:** Dr. E. Anderson, Dr. S. Bhattacharya, Dr. M. Chyu, Dr. D. James, Dr. W. Oler, Dr. M. Pantoya, Dr. S. Parameswaran, Dr. S. Smirnov.

www.me.ttu.edu
D. Graduate Student Handbook

Our graduate student handbook can be viewed at the departmental website:

(Doctor of Philosophy Degree Program)

http://www.me.ttu.edu/Home/Graduate%20Program/PhD%20Program.php

(Master of Science Program -- Requirements)

http://www.me.ttu.edu/Home/Graduate%20Program/MS%20Program/Program%20Requirements.php

(Master of Science Program -- Thesis Option)

http://www.me.ttu.edu/Home/Graduate%20Program/MS%20Program/Thesis%20Option.php

(Master of Science Program -- Report Option)

http://www.me.ttu.edu/Home/Graduate%20Program/MS%20Program/Report%20Option.php

(Master of Science Program -- Coursework Option)

http://www.me.ttu.edu/Home/Graduate%20Program/MS%20Program/Coursework%20Option.php

E. Graduate Student Association(s)

Our department does not have a Graduate Student Association. Some of our graduate students do participate in the activities of the following organizations:

1. American Society of Mechanical Engineers
2. National Society of Black Engineers
3. Society of Hispanic Professional Engineers
4. Society of Women Engineers
5. Texas Society of Professional Engineers (Student Chapter)

At the departmental level, these organizations are essentially undergraduate organizations. The American Society of Mechanical Engineers (ASME), like most of these organizations, is organized at
the national level. The graduate students often attend the ASME Congress and Exposition to present their research. Together with their advisors, they also publish their research in the many ASME journals.

F. Graduate Faculty Information

All tenured or tenure-track faculty in the department have graduate faculty status. Six-year graduate program-related activities, for the faculty, are listed in the following pages.

Graduate Faculty in the Department (2001-2008)

- Anderson, Ed
- Bhattacharya, Sukalyan* 
- Chyu, Ming 
- Ertas, Atila 
- He, Zhaoming* 
- James, Darryl 
- Ma, Yanzhang* 
- Pantoya, Michelle 
- Smirvov, Sergey* 
- Barhorst, Alan 
- Burton, Tom 
- Dunn, Jerry 
- Han, Seon* 
- Hui, Qing‡ 
- Jankowski, Alan* 
- Maxwell, Tim 
- Parameswaran, Siva 
- Tate, Derrick* 

* Initial appointment after 2002 
‡ Initial appointment on 9/1/2008 

Berg, Jordan 
Chaudhuri, Jharna* 
Chaudhuri, Jharna* 
Ekwaro-Osire, Stephen 
Hashemi, Javad 
Idesman, Alex 
Levitas, Valery 
Oler, Walt 
Rasty, Jahangir 
Yang, Jingzhou‡
Name: Anderson, Edward
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   Purdue University: Ph.D., Mechanical Engineering 1972
   Iowa State University: M.S., Mechanical Engineering 1966
   Iowa State University: B.S., Mechanical Engineering 1964

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Ray Butler Distinguished Educator, College of Engineering, Texas Tech University Aug., 2005-
      Present
   Texas Piper Professor 2003-2004
   H.T. Person Professor, College of Engineering, University of Wyoming Spring 2000
   Professor, Dept. of Mech. Engr., Texas Tech University Jan., 1986-Present
   Professor, Dept. of Mech. Engr., University of Nebraska Sept., 1980-Dec., 1986
   Associate Professor, Dept. of Mech. Engr., University of Nebraska Sept., 1976-Aug., 1980
   Assistant Professor, Dept. of Mech. Engr., South Dakota School of Mines and Technology Sept.,
      1974-Aug., 1976
   Assistant Professor, Dept. of Mech. Engr., University of Southwestern Louisiana Sept., 1972-
      Aug., 1974
   Visiting Assistant Professor, Dept. of Mech. Engr., Iowa State University, Sept., 1971-May., 1972
   Instructor, Dept. of Mech. Engr., Purdue University Sept., 1968-May., 1969
   Teaching Assistant and Instructor, Dept. of Mech. Engr., Iowa State University Sept., 1964-
      May., 1968
   Director, Teaching, Learning, and Technology Center, Texas Tech University, Sept., 2004-Aug.,
      2006
   Associate Director, Teaching, Learning, and Technology Center, Texas Tech University May.,
      1996-Aug., 2004
   Assistant Dean, College of Engineering and Technology, University of Nebraska Sept., 1980-
      Dec., 1986
   Interim Chairman, Dept. of Mech. Engr., University of Nebraska Fall, 1986
   Director, Engineering Research Center, University of Nebraska Sept., 1980-Dec., 1986
   Summer Faculty Fellow, Argonne National Laboratories 1975
   Summer Faculty Fellow, Lyndon B. Johnson Space Center, 1973 & 1974
   Summer Senior Engineer and Consultant, Southwind Division, Stewart-Warner Corporation 1968
   Summer Engineer, Advanced Systems Group, Sandia National Laboratories 1967
   Summer Staff Engineer, Boeing Corporation 1965

Mechanical Engineering
Consultant, Little Giant Crane and Shovel Company 1964-1966

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
None

IV. Other Service on Graduate Committees in the last six years (excluding III)
None

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
None

VI. Published Research and Creative Activity in the last six years


VII. Current Participation in Professional Associations


Presented two workshops at these conferences

Participated on one discussion panel

ICREE Annual Conference, 2007 (by Invitation)


HEFAT, 2007

FIE, 2008

Participated on one discussion panel

VIII. Professional Papers and Abstracts for the last six years


Mechanical Engineering

IX. Grant and Contract Activity for the last six years

"Retaining and Preparing Reflective and Self-Directed Learners in the STEM Disciplines”, (with R. Taraban, J. Surles, D. Lamp) TTU VPR, 2008-2010, $125,000
"Application of Statistical Classification Analysis to Engineering Student Recruitment,” (with James Surles)NSF, 2008-2009, 99,006
"Design and Development of a Computer-Based Materials Science Laboratory”, $74,913, NSF (with J. Hashemi) 2003-2004
"Electronic Learning Equipment Grant,” TIFB, $737,331 2001-2002
"Refinement of Introductory Thermodynamics Computer-Based-Instructional Materials, $240,000, NSF (with R. Taraban and M.P. Sharma) 2001-2004

X. Indicate other professional activities during the last six years that contribute to graduate education

NSF, 2007
One invited presentation to Engineering Education and Research Centers Division.
Developed two online courses
Developed two online assessment tools

Mechanical Engineering
Ray Butler Distinguished Educator Award
Texas Piper Professor Award
Name: Barhorst, Alan A.
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)

II. Professional Experience, Academic and Nonacademic (begin with present position)
1. Professor: Department of Mechanical Engineering, Texas Tech University, September, 2006– present.
3. Faculty Development Leave, Sandia National Labs, Center for Integrated Nanotechnology (CINT), Fall 2006.
5. Associate Professor: Department of Mechanical Engineering, Texas Tech University, September, 1998–August, 2006.
7. Assistant Professor: Department of Mechanical Engineering, Texas Tech University, September, 1992–August, 1998.
8. Visiting Assistant Professor: Department of Mechanical Engineering, Texas Tech University, September, 1991–August, 1992.

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)


IV. Other Service on Graduate Committees in the last six years (excluding III)
I don’t keep track of this. But I was on several committees over these years.

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

VI. Published Research and Creative Activity in the last six years


Mechanical Engineering

VII. Current Participation in Professional Associations

Professional Societies
1. Member, American Society of Mechanical Engineers (ASME).
2. Member, American Society for Engineering Education (ASEE).
3. Member, American Institute of Aeronautics and Astronautics (AIAA).

Journal Article Reviewer
17. Nonlinear Dynamics.
18. Materials and Design.

Proposal Reviewer
1. DEPSCoR Alabama 2002.

Conference Paper Reviewer
1. ASME, Vibrations, ETC&E, ESDA, WAM, DETC, and IMECE.
2. IEEE, CDC, Robotics.
3. ACC Conference.
4. AIAA Conference.

VIII. Professional Papers and Abstracts for the last six years


Experimental Verification of Frictional Contact-Impact in Loose Bolted Joint Elastic
Structures. To appear in The 5th ASME International Conference on Multibody Systems,
Multibody Dynamic System with Contact using a Polynomial Interpolated Taylor Series
Method. To appear in The 5th ASME International Conference on Multibody Systems,
of Robust Control on Damage Growth. In Proceedings of the IMAC XXII conference,
February, Orlando, FL.
Model of the Human Arm. Proceedings of 2003 ASME International Mechanical Engineering
in Skeletal Structures. Proceedings of 2002 American Control Conference, Anchorage, Alaska,
May 8-10, pp 2319-2322.

IX. Grant and Contract Activity for the last six years.

Funded
1. Modeling of Elasto-Mechanical Phenomena Involved in the Motor-Driven Assembly of
Nanomaterials. Funded by The Center for Integrated Nanotechnologies (CINT/DOE). June 1,
2008–September 1, 2009, Funds half time of CINT colleague and provides lab and user space
at CINT/Sandia.
2. Cadaveric Knees, Fall 2006, Funded by TTU V. P. for Research, $5,000.
3. Elasto-dynamical modeling of collisions between cargo-carrying biomolecular shuttles. Funded
by The Center for Integrated Nanotechnologies (CINT/DOE). September, 2006–January 15,
2007, Funds half time of CINT colleague and provides lab and user space at CINT/Sandia.
4. Elasto-dynamical modeling of collisions between cargo-carrying biomolecular shuttles. Faculty
Texas Tech University, $75,184.
5. Analysis of Biomechanics of Failure in the Human Anterior Cruciate Ligament Based on
Gender–A Cadaveric Study, with J. Hashemi (PI) and M. Zumwalt. Funded by Texas Tech
University Interdisciplinary Seed Grant, 2005, $17,500.


X. Indicate other professional activities during the last six years that contribute to graduate education Awards and Fellowships


3. Nominated and finalist for the TBΠ Outstanding Professor Award, Spring 2003.


Name: Berg, Jordan M.

Rank: Professor

I. Academic Background

Ph. D., Mechanical Engineering and Mechanics, Drexel University, 1992
M. S., Mathematics, Drexel University, 1992
M. S. E., Mechanical and Aerospace Engineering, Princeton University, 1984
B. S. E., Mechanical and Aerospace Engineering, Princeton University, 1981

II. Professional Experience, Academic and Nonacademic (begin with present position)

Professor of Mechanical Engineering
Texas Tech University
9/07–present

Associate Director
Texas Tech University Nano Tech Center
5/06–present

Associate Professor of Mechanical Engineering
Texas Tech University
9/01–9/07

Assistant Professor of Mechanical Engineering
Texas Tech University
8/96–8/01

Postdoctoral Member, Program on Mathematical Methods in Material Science
Institute for Mathematics and Its Applications, University of Minnesota
9/95–8/96

NRC Resident Research Associate
USAF Wright Laboratory, Flight Dynamics Directorate
8/93–9/95

Senior Analyst
Aerospace Design, Inc.
1/91–9/91

Member Technical Staff
General Electric Astro Space Division

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)

Dr. D. H. S. Maithripala

Mechanical Engineering
IV. Other Service on Graduate Committees in the last six years (excluding III)

2 Doctoral Students

Mechanical Engineering
Mechanical Engineering Department
TTU
2 Doctoral Students
Biology Department
TTU
1 Doctoral Student
Electrical Engineering Department
TTU
1 Doctoral Student
Chemical Engineering Department
TTU
1 Doctoral Student
Mathematics Department
TTU

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
Texas Tech University
ME 5372/5385 (MEMS I)
F ’00, F ’01, F ’03, F ’08
ME 6301/5386 (MEMS II)
S ’02, S ’03
ME 6301 (MEMS III)
S ’02, S ’03, S ’05
ME 6331 (Introduction to Microfabrication)
F ’03

VI. Published Research and Creative Activity in the last six years.
Refereed Journal Articles (* denotes corresponding author, students and postdocs in italics, students and postdocs under supervision of J. M. Berg in bold)


Mechanical Engineering


Edited Book Chapters


Mechanical Engineering


Non-Refereed Publications


Patents and Invention Disclosures


VII. Current Participation in Professional Associations
Editorial


Panel Review

NSF ECS Unsolicited, 2005.

External Committees


Conference Organization

Finance Chair, 2007 American Control Conference.
Technical Program Committee member, 2007 IEEE Conference on Decision and Control.
Finance Chair, 2005 American Control Conference.
Vice Chair for Invited Sessions, 2002 American Control Conference.
Topical Organizer, “Sensors and Actuators,” 2004 IMECE.
Topical Organizer, “Intelligent Sensors and Sensor Networks,” 2003 IMECE.
International Program Committee member, 2005 International Conference on Mechanical Engineering and Mechanics.
International Program Committee member, 2005 IASTED Conference on Control and Applications.
Technical program committee member, 2000 Conference on Control Applications.

Other Conference Service

Session Chair, “Control Theory and Applications,” 2005 ACC
Session Co-Chair, “Theory and Application of Nonlinear Control,” 2005 ACC
Session Chair, “Sensing and Instrumentation,” 2005 IMECE
Session chair, “Advances in Sensing and Actuation,” 2004 IMECE.
Session chair, “Control Education,” 2004 American Control Conference.
Session co-chair, “Control of micro, nano, and quantum systems,” 2004 American Control Conference.
Session co-chair, “Intelligent Sensors and Sensor Networks I,” 2003 IMECE.
Session co-chair, “Intelligent Sensors and Sensor Networks II,” 2003 IMECE.
Reviewer, American Control Conference, 1997–98.

**Journal Reviews**

Analytica Chimica Acta
Automatica (IFAC)
Applied Physics Letters
Biotechnology Progress (American Chemical Society
Circuits, Systems and Signal Processing
Control and Intelligent Systems (IASTED)
INEER Special Volume
Intelligent Systems Magazine (IEEE)
International Journal of Control
International Journal on Intelligent Automation and Soft Computing
International Journal of Robust and Nonlinear Control
International Journal of Systems Science
Iranian Journal of Science & Technology
Journal of the Astronomical Sciences
Journal of Dynamic Systems, Measurement, and Control (ASME)
Journal of Engineering for Industry (ASME)
Journal of Fluid Engineering (ASME)
Journal on Matrix Analysis and Applications (SIAM)
VIII. Professional Papers and Abstracts for the last six years

Conference Proceedings


Keynote Addresses

Institute of Science, University of Peradeniya, the Institute of Engineers of Sri Lanka, and the National Science Foundation of Sri Lanka, Kandy, Sri Lanka.


Invited Presentations (Listed by General topic)

Control of Electrostatic MEMS
12/05 University of Ruhuna, Faculty of Engineering Seminar, Galle, Sri Lanka.
12/04 Texas A&M University, Mechanical Engineering Graduate Seminar, College Station, TX.

Modeling, Fabrication, and Characterization of Energetic Nanocomposites
12/03 NSF Nanoscience and Engineering Grantees’ Workshop, Arlington, VA.

Conference Presentations (Listed by General topic)

Sensors and Microfabrication
3/05 SPIE Conference on Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, 6–10 March, 2005, San Diego, CA.
10/04 Third International Conference on Earthquake Engineering, Nanjing, PRC.

Control of Electrostatic MEMS
12/05 IEEE International Conference on Information and Automation, Columbo, Sri Lanka.
11/05 International Mechanical Engineering Congress & Exposition 2005, Orlando, FL.
9/05 Tex-MEMS V, University of Texas-El Paso, El Paso, TX.
9/04 Tex-MEMS IV, Texas A&M University, College Station, TX.
11/03 International Mechanical Engineering Congress & Exposition 2003, Washington, DC.

Graduate Engineering Education

IX. Grant and Contract Activity for the last six years

Selected Awarded Peer-Reviewed Grants (Amount credited to J. M. Berg)

7/05 NSF Unsolicited Proposal, CHE-0514706, “Liquid Behavior Unique to Nanochannels,”


9/02 NSF Grant Opportunities for Academic Liaison with Industry (GOALI) ECS-0218245.

X. Indicate other professional activities during the last six years that contribute to graduate education.
Senior Member IEEE, Member ASME, Member ASEE.
Name: Bhattacharya, Sukalyan
Rank: Assistant Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   Ph.D. Mechanical Engineering, Yale University, 2005
   M.S. Mechanical Engineering, University of Connecticut (Storrs), 2000
   B. M. E. Jadavpur University, Kolkata, India, 1997

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Assistant Professor, Texas Tech University, 2005-present
   Engineering Trainee, Development Consultant Limited, Kolkata, India, 1997-1998

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   2 Master’s committee chaired

IV. Other Service on Graduate Committees in the last six years (excluding III)
   1 Master’s committee

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
   ME 5301, ME 5301, ME 5338

VI. Published Research and Creative Activity in the last six years.


VII. Current Participation in Professional Associations

Member of the American Institute of Chemical Engineers (AIChE), 2004 - present
Member of the American Physical Society (APS), 2005 – present
Reviewer for Physical Review E
Chair at AIChE session.

VIII. Professional Papers and Abstracts for the last six years


"Many-particle hydrodynamic interactions in parallel wall geometry: the role of the far-field flow," S. Bhattacharya, J. Blawzdziewicz, E. Wajnryb; AIChE 2005 Annual Conference, Cincinnati, Ohio, 171d, October 30-November 4, 2005


Mechanical Engineering
"Motion of a rigid sphere between two parallel walls," S. Bhattacharya, J. Blawzdziewicz; AIChE 2002 Annual Conference, Indiana Convention Center, Indianapolis, IN, 94d, November 3-8, 2002.


IX. Grant and Contract Activity for the last six years

X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Burton, Tom D.
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
B.S. Aeronautical Engineering California Institute of Technology 1969
M.S. Mechanical Engrg & Applied Mechanics University of Pennsylvania 1972
Ph.D. Mechanical Engrg & Applied Mechanics University of Pennsylvania 1976

II. Professional Experience, Academic and Nonacademic (begin with present position)
1995-5/31/2005 Professor of Mechanical Engineering
1995-2004 Chairman, Dept of Mechanical Engineering
1977-1995 Professor, Assoc. Professor, Asst. Professor, Washington State University, Dept of Mechanical Engineering
1969-1977 Engineer, Missile and Space Division, General Electric Co.

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
1 Doctoral committee chaired
1 Masters’ committee chaired

IV. Other Service on Graduate Committees in the last six years (excluding III)
2 Doctoral committee
8 Masters’ committee

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

VI. Published Research and Creative Activity in the last six years.
VII. Current Participation in Professional Associations

- American Society of Mechanical Engineers
- American Society for Engineering Education
- Society of Experimental Mechanics
- Society of Engineering Science

VIII. Professional Papers and Abstracts for the last six years


IX. Grant and Contract Activity for the last six years


X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Chaudhuri, Jharna
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   B. S. (1967): Physics, Lady Brabourne College, Univ. of Calcutta, Calcutta, India
   M. S. (1975): Physics, State University of New York at Albany, Albany, NY 12222

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Jan., 2005 – Present: Professor and Chair, Mechanical Engineering Dept., Texas Tech University, Lubbock, TX.
   June, 2001 – December, 2004: Professor and Chair, Mechanical Engineering Dept., Wichita State Univ., Wichita, KS.
   August, 2000 – May, 2001: Graduate Coordinator, Mechanical Engineering Dept., Wichita State Univ., Wichita, KS.
   August, 1997 – December, 2004: Full Professor, Mechanical Engineering Dept., Wichita State Univ., Wichita, KS.
   August, 1990 -July, 1997: Associate Professor, Mechanical Engineering Dept., Wichita State Univ., Wichita, KS.
   Aug., 1984 - July, 1990: Assistant Professor, Mechanical Engineering Dept., Wichita State University, Wichita, KS.
   1970 -1973 – Lecturer, Barasat Govt. College, Barasat, West Bengal, India

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   Ph. D. DISSERTATIONS ADVISED
   “Characterization of AlN-SiC alloys by sublimation growth”, J. Chaudhuri, August, 2004
   M. S. THESIS ADVISED
“Characterization of Dislocation Density in GaN”, Uday Gupta, Dec., 2002

IV. Other Service on Graduate Committees in the last six years (excluding III)
Emri Selve, Vijoya Kaithi

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
   ME 5340

VI. Published Research and Creative Activity in the last six years.

VII. Current Participation in Professional Associations

Member of ASME (American Society of Mechanical Engineers)
Member of ASM (American Society for Metals)
Member of MRS (Materials Res. Soc.)
Member of ASEE (American Soc. of Eng. Education)
Member of SWE (Society of Woman Engineers)

VIII. Professional Papers and Abstracts for the last six years

Made over 90 presentations in National and International Conferences including, many invited presentations.


IX. Grant and Contract Activity for the last six years

Co-Principal Investigator – “Materials Science at the Nanoscale, An Interdisciplinary Education and Research Program, National Science Foundation (NSF) - IGERT Full-proposal submitted by invitation (pending), $2,981,918, 06/01/08 – 05/31/11, S. Simon(PI).

Principal Investigator – “Collaborative Research: The effects of oxygen on the bulk crystal growth and properties of aluminum nitride”, NSF, $269,107, 06/01/08 – 05/31/11 (Pending).
Co-Principal Investigator – “Grain boundary structure effects on the deformation of ultra-high strength, nanocrystalline alloys”, NSF, $544,123, 06/01/08 – 05/31/11 (Pending), A. F. Jankowski (PI).
Co-Principal Investigator – “Wire Explosion System”, TTU VPR Internal Grant for Nanomaterials Equipment ($506,000), 01/01/07-12/31/08, Y. Ma (PI), Z. He, A. Jankowski, and G. Li.

Co-Principal Investigator - “In-situ Raman scattering system for laser-heated diamond anvil cells”, NSF Grant ($430,000), Y. Ma (PI).

Principal Investigator – “Analysis of Defects and Their Causes in Bulk Aluminum Nitride Crystals”, National Science Foundation Grant # DMR0515858, $267,633, 06/01/04 – 05/31/08 (Co-PI: Prof. J. H. Edgar, Kansas State University, Manhattan, KS, amount $220,000).


X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Chyu, Ming
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   Ph.D.  Iowa State University, Ames, Iowa, Mechanical Engineering, 1984.
   M.S.  Iowa State University, Ames, Iowa, Mechanical Engineering, 1979.
   B.S.  National Tsing Hua University, Taiwan. Power Mechanical Engineering, 1977.

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Department of Mechanical Engineering, Texas Tech University, Lubbock, TX.
   Founding Coordinator, Healthcare Engineering, College of Engineering, Texas Tech University, Lubbock, TX, 2008-present.
   Joint Professor, Department of Health, Exercise, and Sport Sciences, Texas Tech University, Lubbock, TX, 2005 – present.
   Adjunct Professor, Department of Pathology, School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX, 2004 – present.
   Assistant Professor, 1984 - 1987. Department of Mechanical and Aerospace Engineering, University of Missouri-Columbia/Kansas City.
   Research Assistant, 1979 - 1980, Institute of Process Engineering, University of Hannover, Hannover, Germany.

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)

IV. Other Service on Graduate Committees in the last six years (excluding III)

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
   Conduction Heat Transfer
   Convection Heat Transfer
   Two-Phase Flow and Heat Transfer
   Advanced Heat Transfer

Mechanical Engineering
VI. Published Research and Creative Activity in the last six years.


VII. Current Participation in Professional Associations

SOCIETY MEMBERSHIPS
American Society of Mechanical Engineers
American Society of Heating, Refrigerating, and Air Conditioning Engineers
American Institute of Chemical Engineers
American Institute of Aeronautics and Astronautics
Society of Automotive Engineers
American Nuclear Society
American Society for Engineering Education
National Society of Professional Engineers
American College of Sport Medicine
Pi Tau Sigma

PROFESSIONAL ACTIVITIES
American Society of Mechanical Engineers (ASME)

Mechanical Engineering
Heat Transfer Division
K-10 Committee on Heat Transfer Equipment, member, 1984 – present.
Advanced Energy Systems Division
Superconductivity Technical Committee:
Secretary, 1991 - 1992
Vice Chairman, 1992 - 1993
Chairman, 1994 - present
American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
Technical Committee TC 8.5, Liquid to Refrigerant Heat Transfer, member, 1997 - present.
Reviewer, Georgian National Science Foundation, Tbilisi, Republic of Georgia. 2008.
Review Panelist, Division of Industrial Innovation and Partnerships (IIP), National Science Foundation, 2007.
Reviewer, National Research Council, Cooperation in Applied Science and Technology Program. 1995 - present.
Reviewer, National Science Foundation, Division of Chemical and Transport Systems, 1985 - present
Reviewer, Kansas Defense 2010 DEPSCoR program.
Reviewer, US Civilian Research and Development Foundation.
Journal Reviewer,
Applied Mechanics Reviews (ASME)
Applied Superconductivity
Applied Thermal Engineering
ASHRAE Transactions
Canadian Journal of Chemical Engineering
Chemical Engineering Communications
Cryogenics
Experimental Heat Transfer
Experimental Thermal and Fluid Science
Heat Transfer Engineering
Heat and Fluid Flow
IEEE Transactions on Components and Packaging Technologies
International Journal of Heat and Fluid Flow
International Journal of Heat and Mass Transfer
International Journal of Heating, Ventilating, Air-Conditioning and Refrigerating Research (ASHRAE)
International Journal of Transport Phenomena
Journal of Energy Resources Technology (ASME)
Journal of Enhanced Heat Transfer
Journal of Heat Transfer
Journal of Thermophysics and Heat Transfer (AIAA)
Microscale Thermophysical Engineering
Member, Program Committee, the Eighth World Conference on Integrated Design & Process Technology, Beijing China, June, 2005.
Member, Program Committee, the Seventh World Conference on Integrated Design & Process Technology, Beijing China, June, 2003.
Chairman/co-chairman of more than 10 technical paper sessions at international conferences and conferences of ASME.

VIII. Professional Papers and Abstracts for the last six years


“Physical Activity and Bone Health.” Garrison Institute on Aging, Texas Tech University Health Sciences Center, Lubbock, TX, Jan. 18, 2008.

"Tai Chi and Women's Health - Biomechanics". National Women's Health Week Seminar Series, Texas Tech University Health Sciences Center, Lubbock, TX, sponsored by U.S. Department of Health and Human Services, Office on Women's Health, May 15, 2006.

"Benefits of Tai Chi to Type 2 Diabetes“. Diabetes Education Center, Texas Tech University Medical Center, June, 2005.


“Comparison of Effects of Resistance Training and Tai Chi on Bone Metabolism of the Elderly”, Carillon Senior Living Campus, Lubbock, TX, 2004.
“Applications of Superconductivity”, ASME Texas Section, 1996.
“ASHRAE Research Projects Conducted at Texas Tech University”, West Texas Chapter of
“Study of Plate-Fin Heat Exchanger and Cold Plate for the Thermal Control System of Space
Station,” McDonnell Douglas Space Systems Company, Space Station Division, Houston,
“Questionable Issues in Superconductor Stability Theory”, Argonne National Laboratory,
Argonne, IL, 1989.
A series of lectures on Enhanced Boiling Heat Transfer, Beijing Polytechnic University, Beijing,
“Analysis of Local Boiling Dryout Phenomenon in a Tube-Baffle Region”, 18th Annual Pittsburgh
“Enhancement of Falling-Film Evaporator Using Structured Heat Transfer Surfaces”, Columbia
University, New York, NY, 1986.
“Enhancement of Nucleate Boiling Heat Transfer in Industrial Equipment”, The Trane Company,
La Crosse, WI, 1983.

IX. Grant and Contract Activity for the last six years

1. “Modified Tai Chi Exercise During Outpatient Hemodialysis Therapy”, Chwan-Li Shen (PI),
   Sorot Phisitkul, M.-C. Chyu, Texas Tech University Health Sciences Center, Clinical and
   Basic Science Research Seed Grant, $20,000, 2008-2009.
2. “Green Tea Polyphenols and Tai Chi for Bone Health: a Pilot Study.” C.-L Shen (PI), J-S
   Wang, M-C Chyu, C Felton, BH Arjmandi, JK Yeh, J Magaziner, KT Xu, BC Pence.
   National Institutes of Health (NIH)/National Center for Complementary and Alternative
3. “Development of an in situ high-pressure high-temperature Raman scattering system”, Y. Ma
   (PI), J. Chaudhuri, M.-C. Chyu, G. Li, National Science Foundation (NSF), $429,215, 2006-
   2008.
4. "Community Based Approaches to Overweight and Obesity Among Young Children in West
   Texas", Chris Esperat (PI), Du Feng, Arthur Islas, Robert Hastings, Mallory Boylan, Ming
   Chyu, Debra Reed, Leslie Thompson, Joaquin Borrego, Darrell Williams, US Department of
5. “Evaporation in Flooded Corrugated Plate Heat Exchangers with Ammonia and
   Ammonia/miscible Oil”, M. Sultan Khan (PI), M.-C. Chyu, American Society of Heating,
6. “Exercise and Glycemic Control in People with Diabetes”, Chris Esperat (PI); Du Feng, Yan Zhang, Leslie Shen, Ming Chyu, Co-Investigators, Texas Tech University Health Sciences Center, $20,000, 1/1/06 - 8/31/07.

7. “Effects of Tai Chi on Biomechanical Responses Related to Risk of Falls in Elderly Women with Osteoporosis”, M Chyu (PI), D Dunn, C Shen, S Sawyer, R James, J-M Brismee, KT Xu. TTU 2004 Inter/Multidisciplinary seed grant, 2005-2006, $8,988.

8. “Effect of Tai Chi on glycemic index of type II diabetes.” C-L Shen (PI), M-C Chyu, CM Esperat, D Feng, B Irons. School of Nursing, Texas Tech University Health Sciences Center. $10,000, 8/1/2004-7/31/2005.


X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Dunn, Jerry
Rank: Associate Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   B.S. Mechanical Engineering Lamar State College of Technology 1962
   M.S. Mechanical Engineering Georgia Institute of Technology 1964
   Ph.D. Mechanical Engineering Georgia Institute of Technology 1972

II. Professional Experience, Academic and Nonacademic (begin with present position)
   1975-5/31/2005 Associate Professor of Mechanical Engineering
   1990-2004 Associate Chairman, Dept of Mechanical Engineering
   1974-1975 Research Engineer, Electric Power Research Institute, Palo Alto, California
   1973-1978 Part Time Research Engineer, Stanford Research Institute, Huntsville, Alabama
   1973 Fulltime Research Engineer, Stanford Research Institute, Huntsville, Alabama
   1966-1975 Assistant Professor, Department of Mechanical Engineering, Auburn University
   1964-1966 Research Assistant, Dept of Mechanical Engr, Georgia Institute of Technology
   1963-1964 Teaching Assistant, Dept of Mechanical Engr, Georgia Institute of Technology
   1962 Engineering Assistant, Texaco, Inc., Port Arthur Refinery, Port Arthur, Texas

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)

IV. Other Service on Graduate Committees in the last six years (excluding III)
   1 Masters’ committee

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

VI. Published Research and Creative Activity in the last six years.

VII. Current Participation in Professional Associations

VIII. Professional Papers and Abstracts for the last six years
   Pi Tau Sigma
   Sigma Xi
IX. Grant and Contract Activity for the last six years

X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Ekwaro-Osire, Stephen
Rank: Associate Professor

I. Academic Background (begin with last degree; include post-doctoral work)

Texas Tech University, Ph.D. (1993), Department of Mechanical Engineering.
Texas Tech University, M.S. (1989), Department of Mechanical Engineering.
FH Osnabrück (Germany), Dipl.-Ing. (1985), Department of Mechanical Engineering.

II. Professional Experience, Academic and Nonacademic (begin with present position)

Air Force Research Laboratory, Air Force Summer Faculty Fellow, Structural Materials Life Prediction Division (5/08–7/08).
Fulbright Scholar (07–08).
Texas Tech University, Director of Graduate Studies and Graduate Advisor, Department of Mechanical Engineering (1/07–present).
Air Force Institute of Technology, Adjunct Associate Professor of Systems Design & Management (6/06–present).
Texas Tech University, Associate Professor of Mechanical Engineering (9/04–present).
Texas Tech University, Assistant Professor of Mechanical Engineering (1/98–8/04).
NASA Glenn Research Center, NASA Faculty Fellow, Life Prediction Branch (6/02–8/02, 6/03–8/03).
Texas Tech University, Visiting Lecturer, Department of Mechanical Engineering, (1/94–5/94).
Texas Tech University, Graduate Teaching Assistant, Department of Mechanical Engineering, (9/87–5/90, 7/90–5/91, 9/92–8/93).
Texas Tech University, Graduate Research Assistant, Department of Mechanical Engineering, (6/87–8/87, 6/90–6/90, 6/91–8/91).

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)

Doctoral Students Graduated
[1] J. Sun, Ph.D., May 2005. (Department of Mechanical Engineering)

Master’s Students Graduated
IV. Other Service on Graduate Committees in the last six years (excluding III)

Doctoral Committees
14 Students, Department of Mechanical Engineering, Texas Tech University
1 Student, Department of Mechanical Engineering, Boğaziçi University, Turkey.
3 Students, Department of Industrial Engineering, Texas Tech University
1 Student, Department of Civil Engineering, Texas Tech University

Master’s Committees
18 Students, Department of Mechanical Engineering, Texas Tech University

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

[3] ME 58b.01 Special Topics: Probabilistic Design. (Fall 2007) (Boğaziçi University, Turkey.)

VI. Published Research and Creative Activity in the last six years.


VII. Current Participation in Professional Associations

Membership in Professional Societies

[2] Society for Design and Process Science (Founding Member)
[1] Society for Experimental Mechanics

Review of Tenure Cases

[1] Concordia University, Montreal, Canada, 2006

Editorial Boards

Book Reviews
[4] Elsevier Science Publisher (4/03)
[1] Thomson Delmar Learning (4/04, 2/05)

Journal Reviews
[3] Journal of Sound and Vibration (5/03, 2/05, 5/05, 7/05, 10/05, 6/06)

Conference Paper Reviews
[6] ASEE Annual Conference & Exposition (1/05, 2/06, 2/07, 2/08)
[3] ASME International Mechanical Engineering Congress & Exposition (7/05, 6/06)
[1] International Symposium on Management, Engineering and Informatics (11/07, 4/08)

Grant Review Panels

Conferences


VIII. Professional Papers and Abstracts for the last six years


IX. Grant and Contract Activity for the last six years


X. Indicate other professional activities during the last six years that contribute to graduate education

INVITED PRESENTATIONS AND SEMINARS
Name: Ertas, Atila
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   1984 Ph.D. in Mechanical Engineering, Texas A&M University.
   1978 M.S. in Mechanical Engineering, Texas A&M University.
   1970 B.S. in Mechanical Engineering, Istanbul State Academy of Engineering and Architecture (Yildiz), Turkey.
   1968 B.S. in Marine Machine Engineering, Merchant Marine Academy, Istanbul, Turkey.

II. Professional Experience, Academic and Nonacademic (begin with present position)
   09/1992 - Present: Professor, Department of Mechanical Engineering, Texas Tech University.
   09/1988-1992: Associate Professor, Department of Mechanical Engineering, Texas Tech University.
   09/1985-1988: Assistant Professor, Department of Mechanical Engineering, Texas Tech University.
   01/1985-08/1985: Visiting Assistant Professor, Texas A&M University, Department of Mechanical Engineering.
   08/1982-12/1984: Full Time Lecturer, Texas A&M University, Department of Mechanical Engineering (during Ph.D study).
   Summer 1983: Research Engineer, AMOCO Research Center, Tulsa, Oklahoma.
   08/1968-11/1974: Marine Engineer (First Engineer), Turkish Cargo Lines, Istanbul, Turkey.

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   a) Dissertation Chaired
      Dr. Mert Doganli, May 2003--Ford Motor Company, Turkey
      Dr. Tugrul Sabir, December 2003--Applied Materials
      Dr. Bulent Gumus December 2005--OnBoard Software, Inc., San Antonio, TX
   b) MS Thesis Chaired
      J. Neville (May 2001); Tugrul Sabir (May 2001); Bradley Whittington (December 2001); Auldwyn "Danny" Grubb (December 2001); Jo Alamares (December 2001); Robert H. Price (December 2001); Richard L. Landis (December 2001); William W. Kaake Jr. (December 2001); Steve Clemons (December 2001); Bulent Unuvar (December 2002); Susan L. Armitage (December 2002); Belinda Brown (December 2002); S.S. Jernigan (December 2002); M. Clay Harden
IV. Other Service on Graduate Committees in the last six years (excluding III)

5 Doctoral committees
18 Masters’ committees

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

Mechanical Engineering
VI. Published Research and Creative Activity in the last six years.

REFEREED JOURNAL PUBLICATIONS


EDITORSHIP OF BOOKS AND PROCEEDINGS

Books


VII. Current Participation in Professional Associations

Fellow, The American Society of Mechanical Engineers (ASME)
Fellow, Society for Design and Process Science (SDPS)
Senior Research Fellow, IC2 Institute, The University of Texas at Austin
Registered Professional Mechanical Engineer (Texas, No: 65110)
Invited Guest Editor of International Journal of Systems Integration (Vol. 8, No. 2, May 1998)
ASME Petroleum Division Executive Committee Member (until 1997).
ASME ESDA (Engineering System Design and Analysis) Executive committee member.
Symposium Vice-Chairman, ASME (ETCE) Offshore and Arctic Operation Symposium at Dallas (February, 1987).
Symposium Chairman, ASME (ETCE) Offshore and Arctic Operation Symposium at Houston, 1989.
International Scientific Committee, COMES'S 93 (Computational Mechanical Engineering Science), Mechanism Design and Analysis Conference.
International Program Committee member of the CAST'94 (Fourth International Workshop on Computer Aided Systems Technology).
Advisory Board of Systems and Software Engineering Institute, University of Texas at Austin. Acting President, Society for Design and Process Science (December 1994- December 1995).
Steering Committee Chairman and Organizer, SDPS, The Fifth Biennial World Conference on Integrated Design and Process Technology, Dallas, Texas, June 4-8, 2000.

Mechanical Engineering


Organized Workshop on Transdisciplinary Education and Research, October 28, 2002, Texas Tech University, College of Engineering, Lubbock, Texas.

Organized Workshop (with Dr. Tanik and Dr. Maxwell) on Cyberinfrastructure Development for Engineering Research and Education through Transdisciplinary Paradigm, December 6, 2003, Austin, Texas.


Executive Director, Society for Design and Process Science Board (December 1999 - present).

VIII. Professional Papers and Abstracts for the last six years


IX. Grant and Contract Activity for the last six years

Dr. Ertas has been PI or Co-PI on over 50 funded research projects totaling several million dollars funding sponsored by the State of Texas (Texas State Energy Conservation Office,TxDOT, AREP, ATP and TD&T programs); National Science Foundation; D-Technologists; Lithium
Corporation of America; The American Society for Engineering Education and General Motors Corporation; H. S. Precision; Center for Disease Control, Department of Health and Human Service; Teledyne Merla; Exxon Production Research Company; Norton Chemical Process Products; Allen-Bradley; Tubular Finishing Works Corporation; Long Shot Inc.; Sumitomo Metal America; Ford Motor Company; DeLeon Peanut Company; TTU, Health Sciences Center; AT&T; Southwest Research Institute, Raytheon Systems Comp.

X. Indicate other professional activities during the last six years that contribute to graduate education

Attended many conferences, symposiums and workshops

Faculty Development leaves in 2000-2001. Worked on Development of the Transdisciplinary Research and Education: A New Model in Engineering Education and Research with Dr. George Kozmetsky, at Icc Institute, University of Texas at Austin
Name: Hashemi, Javad
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
Drexel University, Ph.D. (1988), Department of Mechanical Engineering and Mechanics
Drexel University, M.S. (1983), Department of Mechanical Engineering and Mechanics
Drexel University, B.S. (1981), Department of Mechanical Engineering and Mechanics

II. Professional Experience, Academic and Nonacademic (begin with present position)
2007-Present  Associate Dean of Research, College of Engineering, Texas Tech University, Lubbock, TX 79409-1033
2005-2007  Director of Graduate Studies and Advisor, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX 79409-1021
2005-present  Adjunct Professor, Department of Orthopedic Surgery, Texas Tech University Health Sciences Center, Lubbock TX 79430.
2004-present  Professor, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX 79409-1021
2002-present  Adjunct Associate Professor, Department of Orthopedic Surgery, Texas Tech University Health Sciences Center, Lubbock TX 79430.
1997-2004  Associate Professor, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX 79409-1021
1991-1997  Assistant Professor, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX 79409-1021
1988-1990  Research Associate and Postdoctoral Instructor, Department of Mechanical Engineering and Mechanics, Drexel University, Philadelphia, PA 19104

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
Doctor of Philosophy
N. Chandrashekar, Texas Tech University, 2005.
J. N. Wilson, Texas Tech University, May 2001.

Master of Science (Thesis Option)
B. Hermis, Texas Tech University, Dec. 2007.
R. Naik, Texas Tech University, December 2005.
C. Cowden, Texas Tech University, August 2003.
T. Souther, Texas Tech University, August 2003.

IV. Other Service on Graduate Committees in the last six years (excluding III)
   1 Doctoral committee
   1 Master’s committee

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
   ME 5352

VI. Published Research and Creative Activity in the last six years.

Textbook

Journal Articles by Area of Research
Orthopedic Biomechanics


High Pressure Materials Research


Ultra-High-Pressure Synthesis of Materials


Corrosion of Aircraft Metals


Acoustic Emissions and Fracture in Composites


Engineering Education


Metal Forming, Manufacturing, and Computational Mechanics

Book Chapter

VII. Current Participation in Professional Associations

Reviewer, National Science Foundation, Division of Research to Aid People with Disabilities (RAPD).

Member of Engineering Research Council, ASEE.

Reviewer, Journal of Biomechanics (JOB)

Reviewer, ASME Journal of Biomechanical Engineering

Reviewer, Journal of Orthopedic Research (JOR)

Reviewer, Journal of Biomaterials

Reviewer, Journal of Applied Physiology

Reviewer, ASME Journal of Engineering Materials and Technology

Reviewer, ASME Journal of Energy Resources and Technology

Reviewer, ASME Journal of Pressure Vessel Technology

Reviewer, SEM Journal of Experimental Techniques

Reviewer, Scanning Journal

VIII. Professional Papers and Abstracts for the last six years

Abstracts, Conference Papers, and Presentaions Related to Biomechanics


Hashemi J, Chandrashekar N, and Slaughterbeck JR, “Sex- Based Quantitative Analysis of Collagen Fibrils In Human Anterior Cruciate Ligament” Biomedical Engineering Society Annual Fall meeting, 2005, Baltimore, Maryland.


Other Conference Papers (Based on review of full paper)


T. Souther, J. Hashemi and D. L. James, “Study of Shear Bands Using a Novel Test Specimen Loaded in a Split-Hopkinson Compression Bar,” Regional Proceedings of Southeastern Region XI Technical Conference (graduate student conference) April 4-5, 2003, Miami, FL.

Conference Papers, Abstracts, and Presentations (Based on review of abstract)


Educational Publications (Instructional Software)


IX. Grant and Contract Activity for the last six years


J. Slauterbeck and J. Hashemi, “Gender Based Differences in Geometry & Mechanical Properties of the Human ACL,” $18,000., School of Medicine Dean’s Research Sources, 2003.


X. Indicate other professional activities during the last six years that contribute to graduate education

Graduate Courses Developed: Mechanics of Composite Materials, ME 5340: This course is a comprehensive graduate level course in analytical analysis of anisotropic structures.
I. Academic Background (begin with last degree; include post-doctoral work)
   Degree: post-doctoral fellow
   Field: Cardiovascular Fluid Mechanics
   Institution: Georgia Institute of Technology
   Year Awarded: 2003
   Degree: PhD
   Field: Fluid Mechanics
   Institution: Tsinghua University (P.R.China)
   Year Awarded: 2000
   Degree: MS
   Field: Fluid Engineering
   Institution: Jiangsu University (P.R.China)
   Year Awarded: 1990
   Degree: BS
   Field: Fluid Machinery
   Institution: Jiangsu University (P.R.China)
   Year Awarded: 1987

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Title: Assistant Professor
   Institution/Agency: Texas Tech University
   Year(s): 2005-present
   Title: Research Engineer II
   Institution/Agency: Georgia Institute of Technology
   Year(s): 2003-2005
   Title: Instructor
   Institution/Agency: Jiangsu University. Undertaken
   Year(s): 1990-1996

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   Student's Name: Christopher Jowers
   Degree: MS
   Institution: Texas Tech University
   Year Completed: 2007
IV. Other Service on Graduate Committees in the last six years (excluding III)

No. Students : 1
Department : Civil Engineering
Institution : Texas Tech University

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

Institution : Texas Tech University
Course Numbers : ME 6331 (Biofluid Mechanics)
Years(s) : 2005, 2007

VI. Published Research and Creative Activity in the last six years (do not include in-house reports).

**Book Chapter**

**Invention**

**Peer Reviewed Journal Papers**
He ZM, Bhattacharya S. Papillary muscle and annulus size effect on anterior and posterior annulus tension of the mitral valve, Journal of Biomechanics, 2008; 41(11): 2524-2532
Ma Y, Cui Q, Shen L, He ZM, X-ray diffraction study of nanocrystalline tungsten nitride and tungsten to 31 GPa, Journal of Applied Physics (online). 2007;102, 013525


Konduri S, Xing Y, Warnock JN, He ZM, Yoganathan AP. Normal physiological conditions maintain the biological characteristics of porcine aortic heart valves: an ex vivo organ culture study, Annals of Biomedical Engineering, 2005; 33(9): 1158-1166


Xing Y, Warnock J, He ZM, Hilbert SL, Yoganathan AP. Cyclic pressure affects the biological properties of porcine aortic valve leaflets in a magnitude and frequency dependent manner, Annals of Biomedical Engineering, 2004; 32:1461-1470


Mechanical Engineering
Leo-Hwa Liang, He ZM, Ellis J, Yoganathan A. Micro flow fields in the hinge region of Carbomedics bileaflet mechanical valve design. Journal of Thoracic Cardiovascular Surgery, 2002; 124:561-574


VII. Current Participation in Professional Associations

Memberships:
1. Member of the Biomedical Engineering Society
2. Member of the American Heart Association
3. Member of the Society of Heart Valve Disease
4. Member of the World Association for Chinese Biomedical Engineers

Reviewers
1. Reviewer of Journal of Heart Valve Disease in 2008
2. Reviewer of Book “Encyclopedia of Biomaterials and Biomedical Engineering” by Marcel Dekker Taylor & Francis Group in 2005
3. Co-chair of Cardiovascular Engineering Session at BMES annual meeting in 2004

VIII. Professional Papers and Abstracts for the last six years
6. He ZM, Jowers C, A novel method to quantify mitral valve chordae tension, WACBE (World Association for Chinese Biomedical Engineers ) World Congress on Biomedical Engineering, Bangkok, Thailand, July 9-11th, 2007
8. He ZM, Sacks MS, Yoganathan AP, Mitral Valve Mechanics, 5th World Congress of Biomechanics, Munich, Germany, July 29-Aug.5, 2006 and Journal of Biomechanics, 2006, v39, supplement 1: s306
11. He ZM, Sacks M, Liou W, Jimenez J, Yoganathan AP, Mitral valve strut chordae insertion strain analysis, 2005 Summer Bioengineering Conference, Vail Cascade Resort & Spa, Vail, CO, June 22 - 26, 2005
21. Yoganathan AP, He ZM, Jimensz JH, Anterior leaflet and chordae tendineae mechanics of the mitral valve: in vitro study, World Congress on Medical Physics and Biomedical Engineering Sydney Convention and Exhibition Centre, Aug 24-29, 2003, Sydney, Australia

22. He ZM, Sacks MS, Jorge Jimenez, He S, Yoganathan AP. Effects of papillary muscle position on the in vitro dynamic strain on the porcine mitral valve, Second Biennial Meeting of The Society for Heart Valve Disease, June 28-July 1, 2003, Paris, France


26. Xing Y., He ZM, Conway D.E, and Yoganathan, A.P. Changes in the structure & biosynthetic activity of porcine heart valve leaflets under elevated pressure. Second Joint EMBS-BMES Conference, Houston, TX, October 2002


IX. Grant and Contract Activity for the last six years.

Grant

July 1, 2006 to June 30, 2008: Edge to edge repair effect on the mitral valve function and improvement of the mitral valve repair procedure, American Heart Association, Texas Affiliate, Beginning-Grant-In-Aid as sole PI, funding amount $130,000

Jan 1, 2007 to Dec. 31, 2009: Exploration of novel nanomaterials: synthesis, characterization, and engineering nano-materials, Texas Tech University, Vice President Research Grant, as Co-PI, funding amount $506,138

Proposals

Submitted a preproposal as PI for 2006 ARP program, titled by “Mitral valve mechanics and its effect on mitral valve function”, which was unfortunately not selected. The amount of the grant is $99,800.

Submitted a proposal as Co-PI in Feb, 2006 to Vice President Research titled as Texas Tech University Nanobiotechnology Inititive ($400,000)

Submitted a proposal in Feb, 2006 to Vice President Research titled as Center for Engineering Treatments of Ischemic Reperfusion Injury as Co-PI ($994,439)
Submitted a proposal to NSF-IGERT as co-PI with department faculty on 3/24/2006. The amount of grant is $278,665.

Submitted a proposal to American Heart Association as only PI, titled by “edge-to-edge repair effect on the mitral valve function and improvement of the repair procedure”. The amount of the grant is $130,000. I am only PI. It is funded from 7/1/2006 to 6/30/2007.

Submitted a proposal to American Heart Association. The amount of grant is $260,000. I am sole PI. It was withdrawn on 7/10/2006 according to American Heart Association (AHA) policy: one grant only from AHA because I got one grant from “AHA

Submitted a proposal as a sole PI to NSF on 9/7/2006. Its title is Mitral Valve Fluid Mechanics. The amount of request is $278,157

Submitted a proposal as PI for Vice President Research on 9/28/2006 titled by Mitral Valve Mechanics: In Vivo Study. The amount of proposal is $314,713


Submitted proposal as PI, titled by Mitral Valve Mechanics: In Vivo Study, to TTU-VPR in 2007. The amount is $500,000

Submitted proposal as Co-PI, titled by Optimization of High-Frequency Ventilation for Oxygen and Aerosol Transport in Respiratory System to TTU-VPR in 2007. Total amount is $347,962

Submitted proposal as sole PI, titled by Left Ventricle Fluid Mechanics, to NSF-CBET in 2007. Total amount is $400,000

Submitted proposal as PI, titled by Biomechanics of Percutaneous Transvenous Mitral Annuloplasty to NSF-CBET in 2007. Total amount is $83,020

Submitted proposal as sole PI, titled by Mitral Valve Biomechanics to TTU-VPR in 2007. Total amount is $35,000

Submitted proposal as sole PI, titled by Mitral Valve Biomechanics and Mechanobiology to Texas High Education – ARP in 2007. Total amount is $140,880

X. Indicate other professional activities during the last six years that contribute to graduate education

None
Name: Hui, Qing  
Rank: Assistant Professor

I. Academic Background (begin with last degree; include post-doctoral work)
Ph.D. in Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA, 08/2008  
M.S. in Applied Mathematics, Georgia Institute of Technology, Atlanta, GA, 12/2005  
M.Eng. in Automotive Engineering, Tsinghua University, Beijing, China, 07/2002  
B.Eng. in Aerospace Engineering, National University of Defense Technology, Changsha, China, 07/1999

II. Professional Experience, Academic and Nonacademic (begin with present position)
Assistant Professor, August 2008–present, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX.
Graduate Research Assistant, August 2002–August 2008, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA
Graduate Research and Teaching Assistant, September 1999–June 2002, State Key Lab for Automotive Safety and Energy, Department of Automotive Engineering, Tsinghua University, Beijing, China

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
Not applicable

IV. Other Service on Graduate Committees in the last six years (excluding III)
Not applicable

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
None

VI. Published Research and Creative Activity in the last six years.


VII. Current Participation in Professional Associations

Reviewer For
Automatica
IEEE Transactions on Automatic Control
IEEE Transactions on Control Systems Technology
IEEE Transactions on Neural Networks
European Journal of Control
International Journal of Adaptive Control and Signal Processing
ASME Journal of Dynamic Systems, Measurement, and Control
Circuits, Systems and Signal Processing
IEEE Conference on Decision and Control
American Control Conference
European Control Conference

VIII. Professional Papers and Abstracts for the last six years


Wassim M. Haddad, Qing Hui, Sergey G. Nersesov, and Vijay Sekhar Chellaboina,
“Thermodynamic Modeling, Energy Equipartition, and Nonconservation of Entropy for
Discrete-Time Dynamical Systems,” Proceedings of the 2005 American Control Conference,
Wassim M. Haddad, Qing Hui, Vijay Sekhar Chellaboina, and Sergey G. Nersesov, “Vector
Dissipativity Theory for Discrete-Time Large-Scale Nonlinear Dynamical Systems,”
Proceedings of the 2004 American Control Conference, pp. 3699-3704, Boston, MA, July
2004.
Wassim M. Haddad, Vijay Sekhar Chellaboina, Qing Hui, and Tomohisa Hayakawa, “Neural
Network Adaptive Control for Discrete-Time Nonlinear Nonnegative Dynamical Systems,”
Proceedings of the 42nd IEEE Conference on Decision and Control, pp. 5691-5696, Maui, HI,
December 2003.
Qing Hui and Minggao Yang, “Neural-Network-Based Adaptive Control Using Sliding Modes for
Qing Hui and Minggao Yang, “Dynamic Neuro-Adaptive Control for a Class of Nonlinear
Discrete-Time Systems via Sliding Mode,” Proceedings of the 10th Mediterranean Conference
on Control and Automation, Lisbon, Portugal, July 2002.

IX. Grant and Contract Activity for the last six years

X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Idesman, Alexander  
Rank: Associate Professor  

I. Academic Background (begin with last degree; include post-doctoral work)  
Degree Ph.D.  
Field Continuum Mechanics  
Institution Institute of Problems of Strength, Kiev, USSR  
Year Awarded 1989

II. Professional Experience, Academic and Nonacademic (begin with present position)  
Title Associate Professor  
Institution/Agency Texas Tech University  
Year(s) 2008-present  
Title Assistant Professor  
Institution/Agency Texas Tech University  
Year(s) 2000-2008

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)  
Cho J.-Y, MS, Texas Tech University, 2003  
Raghunath K. K., MS, Texas Tech University, 2005  
Lee R. (together with Dr. Error! Hyperlink reference not valid. J.), MS, Texas Tech University, 2007  
Palakala A. (together with Dr. V. Levitas ), MS, Texas Tech University, 2007

IV. Other Service on Graduate Committees in the last six years (excluding III)  
10, Mechanical Engineering, Texas Tech University

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)  
Institution Texas Tech University  
Year(s) 2002-2008

VI. Published Research and Creative Activity in the last six years,

Mechanical Engineering


[14] Analysis of isotropic elastoplastic models at finite strains used in numerical modeling, Idesman


VII. Current Participation in Professional Associations

Member:
USACM (U.S. Association for Computational Mechanics)
ASME (American Society of Mechanical Engineers)
GAMM (Society of Applied Mathematics & Mechanics)

Reviewer for:
International Journal of Plasticity
Computational Mechanics
Computer Methods in Applied Mechanics and Engineering
International Journal of Solids and Structures
Journal of the Mechanics and Physics of Solids
International Journal for Numerical Methods in Engineering
Journal of Applied Physics
John Wiley & Sons, Inc. (Textbook on Mechanics of Materials)

VIII. Professional Papers and Abstracts for the last six years

Presentations on conferences and symposiums
07.07.03 - 07.11.03 PLASTICITY 2003, Quebec City, Canada Coauthor
07.28.03 - 07.30.03 7th National Congress on Computational Mechanics, Albuquerque, New Mexico, U.S.A. Speaker
06.13.04 - 06.17.04 8th International Conference on Numerical Methods in Industrial Forming Processes Columbus, Ohio, U.S.A Speaker
07.24.05 - 07.28.05 8th U.S. National Congress on Computational Mechanics (USNCCM8), Austin, Texas, U.S.A. Speaker

Mechanical Engineering
IX.  Grant and Contract Activity for the last six years.

  Grants: 2006-2008
  Texas Higher Education Coordinating Board, 2006 ADVANCED RESEARCH PROGRAM
  COMPETITION (2 years, $79,000 without overhead and fringe benefits): “Multidisciplinary
  Research Program in Computation and Control of Biological Systems”. PI: W.P. Dayawansa
  and Co-PI: P. Seshaiyer from Department of Mathematics & Statistics, TTU and Co-PI: A.
  Idesman from ME Department, TTU (funded).
  Office of Naval Research: "Fundamental Understanding and Improvement of Energetic Reactions
  of Aluminum Particles with Oxidizers and Metals" (funded).
  Department of Energy: “High-pressure and high-temperature exploration of transition metal
  molecules: Research and education” (funded).

X.  Indicate other professional activities during the last six years that contribute to graduate education
  I have developed 5 new graduate courses
I was an organizer (together with Prof. Stein) of a mini-symposium on the modeling of phase transitions at the ninth U.S. National Congress on Computational Mechanics (USNCCM IX) in San Francisco California (07.22-26. 2007).

I have been selected as a Faculty Fellow for the 2006, 2007 and 2008 Air Force Summer Faculty Fellowship Program (SFFP) at AFRL/RW EGLIN AF BASE, FLORIDA in the program "Continuum Mechanics" for 10 weeks (May-July 2006, 2007, 2008).
Name: James, Darryl
Rank: Associate Professor

I. Academic Background (begin with last degree; include post-doctoral work)

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Associate Professor
   Texas Tech University
   1993-2008
   Consultant:
   Sandia National Laboratories, (2001-present)
   Halliburton (2006-2007)
   Ripple Resort Media Inc. (2007)

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   Anika Aheimer (MS, Summer 2008), An investigation into microwave and ultrasound enhanced biodiesel production.
   Brice Hughes (co-advised) (MS Fall 2007), An investigation of enhanced ion transport in nanochannels.
   Joe Grieco – (MS Spring 2007), Development of a biofluids reactor for microgravity applications.
   Luis Carlos Delgado – (MS Fall 2006), Changed to course-work only option in September 06.
   Amit Mishra - MS 2005, Wind Loading Comparison of a Cube Model in an Atmospheric Boundary Layer and a Tornado Simulator.
   AeRook Kim (co-advised) - MS 2004, Redesign of the NASA Controlled Ecological Life Support System Engineering Development Unit (CELSS) Nutrient Reservoir and Air Inlet Systems
   Matt Mason (co-advised) - MSCE 2003, Pulsed Jet Simulation of Thunderstorm Downbursts

IV. Other Service on Graduate Committees in the last six years (excluding III)
Estimate 8 students (2 PhD, 6 MS) from Civil, Chemical, and Mechanical Engineering.

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

TTU
ME 5325 - 2002
ME 5327 - 2007, 2008
ME 6331 - (Radiation) 2004

VI. Published Research and Creative Activity in the last six years.


VII. Current Participation in Professional Associations

American Society of Mechanical Engineers, American Association of Wind Engineers.

VIII. Professional Papers and Abstracts for the last six years


Mechanical Engineering
IMECE2007, 2007 ASME International Mechanical Engineering Congress and Exposition, Seattle, WA.


IX. Grant and Contract Activity for the last six years.

2002:
- PI, “CFD Investigation of Turbulent Mixed Convection in a Horizontal Concentric Annulus,” Sandia National Laboratories, $35,927. (funded)
- Co-PI “A Computational Model to Quantify Wind Tunnel Corrections,” DaimlerChrysler Corporation, $221,300. (funded)
- Co-PI “Tumbleweed Inspired Sensor Platforms for Martian Exploration,” NASA Mars Scout Program, $24,500,00. (not funded)
- Co-PI, NIST RTM - Model Scale Studies, $238,416. (funded)
- Co-PI, NASA EDU Plant Growth Chamber. (funded)

2003:
- Co-PI “Flying Debris Research.” THECB, $5,400. (funded).
Co-PI NASA EDU Plant Growth Chamber. $33,500, (funded).

2004:


D.L. James, S.W. Webb (Sandia Labs), T.J. O’hern (Sandia Labs), and S.P. Kearney (Sandia Labs), “Proposed Vapor Dispersion Test” White paper to the Yucca Mountain Project, DOE; under consideration.


Co-PI (Jim Smith, Alan Barhorst, Michael Parten Engineering portion) NASA EDU Plant Growth Chamber. $33,500 my portion, (funded).

2005:

PI, Fluid-Structure Interaction in Tornado-Like Vortices, NSF, submitted, $ 357,121


PI, Investigation of Transport Limiting Processes in a Solar Thermochemical Heat Engine, Pre-Proposal selected for ARP full proposal, $70,000

PI, Investigation into the Thermal Degradation and Increased Detonation Sensitivity of High Explosives, TTU Multidisciplinary Seed Grant, not funded

2006:

PI, Fluid-Structure Interaction in Tornado-Like Vortices, NSF, submitted, $ 357,121


PI, Investigation of Transport Limiting Processes in a Solar Thermochemical Heat Engine, Pre-Proposal selected for ARP, $70,000

PI, Investigation into the Thermal Degradation and Increased Detonation Sensitivity of High Explosives, TTU Multidisciplinary Seed Grant, not funded

PI, The Effect of Microwave Irradiation and Ultrasonic Irradiation on the Rate of Production of Biodiesel, white paper submitted to the Petroleum Research Fund

2007:

PI, Wind Loading on Structures Subjected to Tornado-Like Vortices, NSF, in review, $ 353,954

Co-PI, Finite-Element Simulation for Electrothermal Characterization of High-Power Diode Laser Bars, DARPA, funded, $199,981

Co-PI, Nanotechnology for NOx Reduction: Application to a Low Cost and High Performance Fuel Cell for Vehicular Auxiliary Power, submitted to the Texas Environmental Research
Consortium (TERC) and the Houston Advanced Research Center (HARC), not funded, $5,000,000

PI, Wind Loading on Low-Rise Structures Subjected to Tornado-Like Vortices, Preproposal to Texas ARP, $147,673, not funded

Co-PI, Energy Efficient Reverse Osmosis Processes for Water Reclamation, TTU Multidisciplinary Seed Grant, not funded

Co-PI, Modeling Fluid-Structure Interaction via Projection Based Variational Principles, Cutter Foundation, $167,218, not funded

X. Indicate other professional activities during the last six years that contribute to graduate education

Halliburton Teaching Excellence Award, 2006

Finalist for Tau Beta Pi Most Outstanding Professor Award, Spring 2006

Pi Tau Sigma Best Professor Award, Fall 2004, Fall 2006
Name: Jankowski, A.F.
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   PhD, Engineering, Rutgers University, 1984
   MPh, Engineering, Rutgers University, 1983
   MS, Engineering, Rutgers University, 1982
   BS, Engineering, Rutgers University, 1980

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Professor, Texas Tech University, 2007-2008
   Scientific Capability Leader; Metallurgist, Lawrence Livermore National Laboratory, 1987-2006
   Research Specialist, Rockwell International, 1984-86

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   Not applicable

IV. Other Service on Graduate Committees in the last six years (excluding III)
   Not applicable

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
   Institution – Texas Tech University
   Course Numbers – 6330 Mechanics of Nanomaterials
   Years(s) – 2007

VI. Published Research and Creative Activity in the last six years.
   Journal Articles

Mechanical Engineering


Patents

Mechanical Engineering


VII. Current Participation in Professional Associations

Association Editorial Positions – not applicable

Years Meetings Attended – (see below)

(1997-on) Electrochemical Society

(1989-on) American Vacuum Society

(1984-on) Materials Research Society

(1984-on) The Metallurgical Society (TMS) of AIME

(1983-on) American Society for Metals


Referee for Proposals – National Science Foundation, Office of Basic Energy Science – Dept. of Energy
Offices, Participation, Etc. Service on Award Panels, Juries, etc. – not applicable

VIII. Professional Papers and Abstracts for the last six years

Conference Presentations and Proceedings


Mechanical Engineering


IX. Grant and Contract Activity for the last six years.

Proposals submitted to NSF (now under review) as Principal Investigator

[2] NSF Mathemical and Physical Sciences, Division of Materials Research, Metals: “Plasticity of Nanocrystalline Nanolaminates”; Texas Tech University; Award period from June 1, 2009 to May 31, 2012; Amount of award request is $260,723

[1] NSF Engineering, Civil Mechanical and Manufacturing Innovation, Nano and Bio Mechanics: “Grain-boundary structure effects on the deformation of ultra-high strength, nanocrystalline alloys”; Principal investigator (PI) Alan Jankowski; co-PI Jharna Chaudhuri; Texas Tech University; Award period from June 1, 2009 to May 31, 2012; Amount of award request is $307,221

Selected Research Proposals are only listed in role of a Principal and Co-Principal Investigator as funded by the Department of Energy at Lawrence Livermore National Laboratory (my allocations are listed for each research program)
(2005-2007) Laboratory Directed Research and Development Strategic Initiative: Advanced High-Strength Materials (600k)
(2003) Laboratory Directed Research Feasibility Study: Sc/Si Multilayer Mirrors ($52k)

X. Indicate other professional activities during the last six years that contribute to graduate education
Not applicable
Name: Levitas, Valery
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   1995, Doctor-Engineer habil. in Continuum Mechanics, University of Hannover, Germany.
   1988, Dr. of Sciences in Continuum Mechanics, Institute of Electronic Machinebuilding, Moscow, USSR.
   1981, Ph.D. in Materials Science in Machinery, Institute for Superhard Materials, Kiev, USSR.
   1978, M.S. (Honors) in Mechanical Engineering, Kiev Polytechnic Institute, Kiev, USSR.

II. Professional Experience, Academic and Nonacademic (begin with present position)
   08.02 – 8/15/2008, Professor, Texas Tech University, Lubbock, Department of Mechanical Engineering;
   10.02 – 8/15/2008, Director, Center for Mechanochemistry and Synthesis of New Materials, Texas Tech University;
   08.99 – 08.02, Associate Professor, Texas Tech University, Lubbock, Department of Mechanical Engineering;
   04.92 – 08.99, Visiting Professor (92), Humboldt–Research Fellow (93-95), Visiting & Research Professor (95-99), University of Hannover, Institute of Structural and Computational Mechanics, Hannover, Germany;
   01.82 – 08.94, Associate Research Professor (84–88), Research Professor (89–94); Leader of research group (82–94), Ins. for Superhard Materials of the Ukrainian Academy of Sciences, Kiev, Ukraine;
   88 – 92, Director of firm "Strength", Kiev, Ukraine; Projects with diamond producing and steel industry;
   01.78 – 06.84, Engineer, Junior Researcher, Institute for Superhard Materials of the Ukrainian Academy of Sciences, Kiev, Ukraine;
   01.05-05.05, Visiting Scholar, Los Alamos National Labs, Los Alamos, NM

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   2000-2006, Supervision of 4 PhD students and 2 MS students. 1 PhD, 4 MS and 2 BS students were graduated. Co-adviser for 1 PhD.

IV. Other Service on Graduate Committees in the last six years (excluding III)
   Member of Doctoral Committee for 7 students and Master Thesis Committee for 6 students, Texas Tech University, Lubbock, TX
V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

Nonlinear Mechanics of Materials ME 5349 (new)
Phase Transformation II ME 5348 (new course)
Phase Transformation I ME 6331-013 (new course)

VI. Published Research and Creative Activity in the last six years.

Athermal resistance to an interface motion in phase field theory of microstructure evolution.


Plastic flow under compression and shear in rotational diamond anvil cell: Finite - element study.


VII. Current Participation in Professional Associations

Member: AIRAPT (International Association for the Advancement of High Pressure Science and Technology) since 87, Executive Committee 93-99; ASME (American Society of Mechanical Engineers) since 96; Society of Engineering Science since 95; APS (American Physical Society) since 2003; TMS (Minerals, Metals and Materials Society) since 2005; GAMM (Society of Applied Mathematics and Mechanics) since 92; Scientific GAMM Committee "Materials Theory", 94-99; Ukrainian National Committee of IUTAM, 93-97.

Conference and Session Organizer

Symposium on phase transformations at Plasticity'06 International Conference (Halifax, Canada), June 2006 (with D. Preston); Symposium "Phase Transformations: Across Scales and Disciplines", at Plasticity'05 Symposium, Hawaii, with T. Lookman; Symposium "Constitutive Modeling of Shape Memory Alloys" at US National Congress of Theoretical and Applied Mechanics, Blacksburg, USA, with D. Lagoudas (6.02) ; Symposium "Mechanics and Physics of Solid-Solid Phase Transformations" at SES'02 Meeting, Penn State, USA, with D. Lagoudas (10.02); Symposium "Phase transitions and plasticity" at Plasticity'02", Aruba, with F.D. Fischer (01.02); Symposium "Mechanics and physics of phase transitions" at Plasticity'00, Whistler, Canada, with D. Preston (07.00); Symposium "Phase transformations and shape memory alloys" at SES'99 Meeting, Austin, USA, with D. Lagoudas (10.99) ; Symposium "Phase transitions in plastic materials" at GAMM Annual Meeting, Metz, France, with F. D. Fischer and E. Stein (04.99); Symposium "Martensitic phase transitions in inelastic materials" at "Plasticity'99", Cancun, Mexico, with E. Stein (01.99); Seminar "Martensitic phase transitions: aspects of material science, continuum mechanics and applied mathematics", with E. Stein, E. Hornbogen and A. Mielke, Hannover (09.98); Conference "Continuum Thermomechanical Methods in the Theory of Phase Transitions", with N. Novikov, Kiev (04.90); "Contact Problems and Friction", with B. Efimow and N. Novikov, Kiev (10.89); Conference "Large Elastoplastic Deformations – Theory, Experiments, Numerical Methods & Technical Applications", with N. Novikov, Kiev (07.85)

International Scientific Committees


Editorial work

Guest-Editor of special issues of Int. J. Plasticity 2000, 16, No. 7-8 and 2002, 18; High Pressure Physics And Technology (Board of Editors, 1996-2005); J. Superhard Materials (International Advisory Board, 1990 - present);

Reviewer for:
Panelist to NSF panel ‘Mechanics and Materials’; U.S. Department of State; Hungarian Science Foundation; Natural Sciences and Engineering Research Council of Canada.
External reviewer for tenure and promotion of Prof. Sevastianov (New Mexico State).
External reviewer for promotion of Associate Professor D. Bardzokas (National Technical University of Athens, Greece) to rank of Professor.
External reviewer for PhD Thesis of Mr. Roman Novokchanov (Institute of Continuous Media Mechanics of Russian Academy of Sciences).

VIII. Professional Papers and Abstracts for the last six years


Mechanical Engineering


IX. Grant and Contract Activity for the last six years

2006 ONR, Grant N000140710318, $150,000. Fundamental Understanding and Improvement of Energetic Reactions of Aluminum Particles with Oxidizers and Metals. PI: Levitas V.I., Co-PI Pantoya M.L.

2006-2007 NSF Grant CMS-0555909 ($120,000) Stress-Induced Virtual Melting as a New Mechanism of Solid-Solid Phase Transformations and Stress Relaxation. PI: V. I. Levitas.

2005 Travel grant from A. von Humboldt Foundation ($2,100)

2004-2005 Western Michigan University ($16,000). In situ X-ray diffraction and Raman studies and modeling of silicon carbide under pressure, up to 40 GPa, and shear in a rotational diamond anvil cell. PI: Levitas V.I., Co-PI Ma Y.

2005 Student support from College of Engineering ($6,750).

2004-2005 Four travel grants from NATO, LANL and National Committee for Theoretical and Applied Mechanics ($6,500).


2002-2005 NSF Grant CMS-0201108 (3 years, $180,000) Continuum Mechanical and Micromechanical Fundamentals of Mechanochemistry of Energetic Materials. PI: Levitas V.I.

2001 Student support from College of Engineering ($15,000).

2001-2003 Excellence Funding in Mechanics and Materials (2 years, $250,000 without overhead). PIs: T. D. Burton and V.I. Levitas


X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Ma, Yanzhang
Rank: Associate Professor

I. Academic Background (begin with last degree; include post-doctoral work)
B.S. Physics Jilin University, China 1985
M.S. High-pressure Physics Jilin University, China 1990
Ph.D. Condensed Matter Physics Jilin University, China 1995

II. Professional Experience, Academic and Nonacademic (begin with present position)
2008-present Associate Professor, Texas Tech University
2002-2008 Assistant. Professor, Texas Tech University
1995-1996 Lecturer, National Laboratory of Super-hard Materials, Jilin University
1989-1992 Chief Engineer, Dalian Special Material Industrial Company

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
2 Doctoral committees chaired
2 Master’s committees chaired

IV. Other Service on Graduate Committees in the last six years (excluding III)
3 Doctoral committees
2 Master’s committees

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
ME 5344

VI. Published Research and Creative Activity in the last six years.
Chunyuan He, Chunxiao Gao, and Yanzhang Ma, Electrical Impedance spectrum study of CdS under high pressure, The Fourth Meeting of the Center for the Study of Matter at Extreme Conditions, April 15-20, 2007, Miami, Florida.
Dongmei Zhang, Chunxiao Gao, Yanzhang Ma, Chunyuan He, Xiaowei Huang, Aimin Hao, 
Cuiling Yu, Yanchun Li, Jing Liu, Gang Peng, Dongmei Li, Hongwu Liu, and Guangtian Zou, 
Electrical conductivity measurements of beta-boron under high pressure and temperature, J. 

Chunyuan He, C.X. Gao, B.G. Liu, M. Li, X.W. Huang, A.M. Hao, C.L. Yu, D.M. Zhang, Y. 
Wang, H.W. Liu, Y.Z. Ma, and G.T. Zou, Electrical properties and phase transition of CdTe 

Aimin Hao, Chunxiao Gao, Ming Li Chunyuan He, Xiaowei Huang, Dongmei Zhang, Cuiling Yu, 
Hongwu Liu, Yanzhang Ma, Yongjun Tian, and Guangtian Zou, A study of the electrical 

Cuiling Yu, Chunxiao Gao, Qingjiang Yu, Bao Liu, Aimin Hao, Chunyuan He, Xiaowei Huang, 
Dongmei Zhang, Xiaoyan Cui, Dongmei Li, Hongwu Liu, Yanzhang Ma, and Guangtian Zou, High 

Ming Li, Chun Xiao Gao, Yan Zhang Ma, AiMin Hao, Chun Yuan He, Xiao Wei Huang, Yan 
Chun Li, Jing Liu, Hong Wu Liu, and Guang Tian Zou, In situ HPHT resistance measurement 
of (Fe0.125, Mg0.875)SiO4 in a designed laser heated diamond anvil cell, J. Phys.: Condens. 

Chunyuan He, Chunxiao Gao, Yanzhang Ma, Ming Li, Aimin Hao, Xiaowei Huang, Bingguo Liu, 
Dongmei Zhang, Cuiling Yu, Guangtian Zou, Yanchun Li, Hui Li, Xiaodong Li, and Jing Liu, 
In situ electrical impedance spectroscopy under high pressure on diamond anvil cell, Appl. 

Ming Li, Chunxiao Gao, Gang Peng, Chunyuan He, Aimin Hao, Xiaowei Huang, Dongmei Zhang, 
Cuiling Yu, and Yanzhang Ma, Thickness measurement of sample in diamond anvil cell, Rev. 

Xiaowei Huang, Chunxiao Gao, Yonghao Han, Ming Li, Chunyuan He, Aimin Hao, Dongmei 
Zhang, Cuiling Yu, Guangtian Zou, and Yanzhang Ma, Finite element analysis of resistivity 

Xiaowei Huang, Chunxiao Gao, Dongmei Zhang, Ming Li, Chunyuan He, Aimin Hao, Cuiling Yu, 
Chong Sang, Cailong Liu, Yue Wang, Rui Guan, Dongmei Li, Guangtian Zou, and Yanzhang 
Ma, Finite element analysis of the effect of electrode resistivity on resistivity, Appl. Phys. 
Lett. 90, 204102 (2007).

Yanzhang Ma, Qiliang Cui, and Hailong Shen, X-ray diffraction study of nanocrystalline tungsten 
nitride and tungsten, J. Appl. Phys. 102, 013525 (2007).

Y. Ma, and R. Aksoy, Compression of CdCu3Ti4O12 perovskite to 55 GPa, Solid State 
Communications 142, 376-379 (2007).

Ming Li, Chunxiao Gao, Yanzhang Ma, He Chunyuan, Hao Aimin, Zhang Dongmei, Li Yanchun, 
Ming Li, Chun-Xiao Gao, Yanzhang Ma, Duojun Wang, Yan-Chun Li, Jin Liu, In situ electrical conductivity measurement of high-pressure molten (Mg0.875, Fe0.125)2SiO4, Appl. Phys. Lett. 90, 113507 (2007).

Aimin Hao, Chunxiao Gao, Ming Li, Chun He, Xiao Huang, Guangtian Zou, Yongjun Tian, Yanzhang Ma, Conductivity of AgI under high pressure, J. Appl. Phys. 101, 053701 (2007).


Resul Aksoy, Emre Selvi, and Yanzhang Ma, X-ray diffraction study of molybdenum diselenide to 35.9 GPa, The Fourth Meeting of the Center for the Study of Matter at Extreme Conditions, April 15-20, 2007, Miami, Florida.

Resul Aksoy, Emre Selvi, Russell Knudson, and Yanzhang Ma, High pressure X-ray diffraction studies of Titanium Disulfide, The Fourth Meeting of the Center for the Study of Matter at Extreme Conditions, April 15-20, 2007, Miami, Florida.

Chunxiao Gao, Yanzhang Ma, Yonghao Han, Ming Li, Guangtian Zou, In-Situ Conductivity Measurement of Matter under Extreme Conditions by Film Fabrication on Diamond Anvil Cell, The Fourth Meeting of the Center for the Study of Matter at Extreme Conditions, April 15-20, 2007, Miami, Florida.


Chunxiao Gao, Yanzhang Ma, Dongli Yu, Julong He, and Yongjun Tian, In-Situ X-Ray diffraction of BCN Compound under Pressure up to 30 GPa, The Fourth Meeting of the Center for the Study of Matter at Extreme Conditions, April 15-20, 2007, Miami, Florida.


Ming Li, Chunxiao Gao, Yanzhang Ma, Yanchun Li, Xiaodong Li, Hui Li, Jing Liu, Aimin Hao, Chunyuan He, Xiaowei Huang, Dongmei Zhang, and Culing Yu, New diamond anvil cell system for in situ resistance measurement under extreme conditions, Rev. Sci. Instrum. 77, 123902 (2006).


Yanzhang Ma, Jianjun Liu, Chunxiao Gao, Allen D. White, W. N. Mei, and Jahan Rasty, High-pressure X-ray diffraction study of the giant dielectric constant material CaCu3Ti4O12: evidence of stiff grain surface, American Physical Society Spring meeting, Baltimore Maryland (2006).


Yanzhang Ma, Recent approaches in application of a rotational diamond anvil cell, COMPRES workshop on rheology and elasticity studies at ultra-high pressures and temperatures, Argonne, IL (2005).


Allen White, Yanzhang Ma, Resul Aksoy, Emre Selvi and Jagdev-Singh Sandhu, High pressure x-ray diffraction study of chromite [(Fe0.44 Mg0.56 )(Cr0.89 Al0.11 )2 O4 ] to 41 GPa, 2005 Region X GSTC Proceedings, ASME Great International Southwest Region X Graduate Student Technical Conference, March 31 – April 2, 2005 – Lubbock, Texas.


Valery Levitas, Javad Hashemi, Yanzhang Ma, William Mathis, and Mark Holtz, Synthesis of superhard phases of boron nitride in a rotational diamonad anvil cell, American Physical Society Spring meeting, Austin Texas (2003).


VII. Current Participation in Professional Associations

American Physical Society, Materials Research Society.

VIII. Professional Papers and Abstracts for the last six years

IX. Grant and Contract Activity for the last six years

X. Indicate other professional activities during the last six years that contribute to graduate education

Established a high-pressure laboratory.

Develop a new course: Introduction to high-pressure science and technology (ME 5344).
Name: Maxwell, Tim  
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)  
   Ph.D., Mechanical Engineering, University of London (England), 1977  
   D.I.C., Imperial College of Science and Technology (England), 1977  
   M.S., Mechanical Engineering, Auburn, 1973  
   B.M.E., Auburn, 1972

II. Professional Experience, Academic and Nonacademic (begin with present position)  
   Professor, Texas Tech University, 2004-present  
   Associate Professor, Texas Tech University, 1984-2004  
   Associate Professor, Auburn University, 1983-1984  
   Assistant Professor, Auburn University, 1977-1983  
   Project Engineer, Sperry Flight Systems, 1973-1974  
   Second Lieutenant, USAF, Maxwell AFB, AL, Sep-Dec 1972

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)  
   5 Master’s committees chaired

IV. Other Service on Graduate Committees in the last six years (excluding III)  
   6 Master’s committees  
   4 Master’s committees

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

VI. Published Research and Creative Activity in the last six years.  
   State of the Art: Hydrogen Storage, Sunmitted to Transactions of the ASME: Journal of Pressure Vessel Technology, also submitted to the IDPT–2006 Conference (co–authored with I. Cumalioglu, Y. Ma, and A. Ertas)


VII. Current Participation in Professional Associations

VIII. Professional Papers and Abstracts for the last six years

IX. Grant and Contract Activity for the last six years

X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Oler, Walt  
Rank: Associate Professor

I. Academic Background (begin with last degree; include post-doctoral work)  
Ph.D., Mechanical Engineering, Purdue University, 1980  
M.S., Aerospace Engineering, University of Texas at Austin, 1976  
Education: B.S., Aerospace Engineering, University of Texas at Austin, 1974

II. Professional Experience, Academic and Nonacademic (begin with present position)  
Undergraduate Program Director, 2005-Present  
Consultant/Research Scientist, Ford Motor Co., Dearborn, MI, 1993-Present  
Assistant & Associate Professor of Mechanical Engineering, Texas Tech University, Lubbock, TX, 1980-Present  
Consultant/Research Scientist, Sandia Laboratories, Albuquerque, NM, 1980  
Teaching/Research Assistant, Department of Mechanical Engineering, Purdue University, Lafayette, IN, 1976-80  
Teaching/Research Assistant, Department of Aerospace Engineering, University of Texas, Austin, TX, 1974-76

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)  
1 Doctoral committee chaired  
5 Masters’ committees chaired

IV. Other Service on Graduate Committees in the last six years (excluding III)  
1 Doctoral committee  
4 Masters’ committees

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)  
5301, 5302, 5332, 5334, 5338, Viscous Flows, Advanced Aerodynamics

VI. Published Research and Creative Activity in the last six years.

VII. Current Participation in Professional Associations  

Mechanical Engineering
VIII. Professional Papers and Abstracts for the last six years

IX. Grant and Contract Activity for the last six years

X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Pantoya, Michelle  
Rank: Associate Professor

I. Academic Background (begin with last degree; include post-doctoral work)  
   Ph. D. Mechanical Engineering, University of California, Davis (1999).  
   M. S. Mechanical Engineering, University of California, Davis (1994).  
   B. S. Aeronautical Engineering, University of California, Davis (1992).

II. Professional Experience, Academic and Nonacademic (begin with present position)  
9/05 – Present  Associate Professor, Mechanical Engineering Department, Texas Tech University, Lubbock, Texas.  
9/00 – 9/05  Assistant Professor, Mechanical Engineering Department, Texas Tech University, Lubbock, Texas.  
6/01 – 9/01  Visiting Scholar, Los Alamos National Laboratory, Combustion and Energetic Materials Division  
1/99 - 8/00  Gas Turbine Research and Development Program Manager, California Energy Commission, Sacramento, California.  
9/98 - 7/00  Part-Time Faculty, California State University, Sacramento.  
6/94 - 1/99  Graduate Research Assistant, University of California, Davis and Lawrence Livermore National Laboratory, Livermore, California (Supervisor: Ben Shaw).  
1/92 - 6/94  Graduate Research Assistant, University of California, Davis and NASA Ames Research Center, Moffet Field, California (Supervisor: Bruce White).  
1/97 - 6/98  Graduate Teaching Assistant, University of California, Davis.  
5/92 - 10/92  Combustion Engineer Intern, Sandia National Laboratory, Combustion Research Facility, Livermore, California.

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)  
   M.S. Students (14 total): Mr. Bryan Bockman (May 03); Mr. John Granier (May 03);  
      Mr. Kenneth Shifflet (May 03); Ms. Emily McFather Hunt (December 03);  
      Mr. Keith Plantier (May 04), Mr. Mathew Jackson (May 05), Mr. Kevin Moore (May 05); Mr. Randy White (May 06);  
      Mr. Daniel Prentice (May 06), Mr. Dustin Osborne (May 06),  
      Mr. Kyle Watson (May 07), Mr. Andrew Francis (December 07), Mr. Jonathan Burkhard (December 07), Ms. Garima Chauhan (December 07), Mr. Shawn Stacy (May 08)  
   PhD Students (3 total):  
      Mr. John Granier (May 05), Ms. Emily Hunt (May 05), Mr. Matt Jackson (May 07)

IV. Other Service on Graduate Committees in the last six years (excluding III)
V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

VI. Published Research and Creative Activity in the last six years.

Books

Book Chapters

Journal Publications
“The Effect of Nanocomposite Synthesis on the Combustion Performance of a Ternary Thermite”

“Ferrihydrite Gels Derived in the Fe(NO3)3H2O-C2H5OH-CH3CHCH2OH Ternary System,” E.
F. Talantsev, M. L., Pantoya, C. Camagong, B. Lahlouh, S. M. Nicolich, and S.

“Ignition Dynamics and Activation Energies of Metallic Thermites: From Nano- to Micron-scale

“Combustion Wave Speeds of Nanocomposite Al/Fe2O3: The Effects of Fe2O3 Particle Synthesis
Technique,” K. B. Plantier, M. L. Pantoya and A. E. Gash, Combustion and Flame 140(4),

“Combustion Velocities and Propagation Mechanisms of Meta-stable Intermolecular Composites,”
98(6), 064903 (2005) [DOI: 10.1063/1.2058175].

“Combustion Behaviors of Highly Energetic Thermites: Nano versus Micron Composites,” M. L.
Pantoya and J. J. Granier, Propellants, Explosives, Pyrotechnics 30(1), 53-62 (2005) [DOI:
10.1002/200400085].

“Dependence of size and size distribution on reactivity of aluminum nanoparticles in reactions with

“Combustion Synthesis of Metallic Foams from Nanocomposite Reactants,” E. M. Hunt, M. L.

“The Effect of Slow Heating Rates on the Reaction Mechanisms of Nano and Micron Composite
Thermite Reactions,” J. J. Granier and M. L. Pantoya, Journal of Thermal Analysis and

“Combustion Effects of Environmentally Altered Molybdenum Trioxide Nanocomposites,” K.

“Combustion Behaviors Resulting from Bimodal Aluminum Size Distributions in Thermites,” K.
[DOI: 10.2514/1.20754]

“Melt Dispersion Mechanism for Fast Reaction of Nanothermites,” Levitas, V. I., Asay, B. W.,

“A New Mechanism for Formation of Spatial Oscillations in SHS of Ni/Al Bilayer Foils,” E. B. K.


VII. Current Participation in Professional Associations

DOE SERDP Proposal Reviewer 2002 and 2003


VIII. Professional Papers and Abstracts for the last six years

Conference Proceedings (Peer Reviewed)


Conference Proceedings (Non-Peer Reviewed)


IX. Grant and Contract Activity for the last six years

Current

1. “Impact Driven Reactions in Biocidal Reactive Materials for WMD Applications, Defense Threat Reduction Agency (DTRA), PI: Stephen Bless (UTexas), Co-PI: Michelle Pantoya (TTU), TTU Amount $265,000 (total award $900,000), Duration 03/08-02/11.


Mechanical Engineering
Successfully Completed


2. “Energetic and Thermal Behavior of Novel Nanostructured Composites,” PI: M. Pantoya, Co-PIs: L. Menon, S. Gangopadhyay, Department of the Army TACOM-ARDEC Picatinny Arsenal, Project Duration 1/03-12/05, $450,000.


4. “Improving the Performance Reliability of Metastable Intermolecular Composites,” M.L Pantoya, Department of Energy – Los Alamos National Laboratory, $62,500, Project Duration 10/1/02-9/30/03.

5. “Safety of Missile Components in High Temperature Combustion Environments,” PI: M. Pantoya, Department of Energy - Sandia National Laboratory, $80,000, Project Duration 10/1/02 – 9/30/04.


X. Indicate other professional activities during the last six years that contribute to graduate education
Invited Talks (Select)


22. “Bubbleology: The difference between math, science and engineering by exploring and exploding bubbles”, 45 minute seminar to pre-K (4-6 year olds) demonstrating the concepts associated with math, science and engineering using bubbles, Child Development Research Center, Texas Tech University, June 2006.
24. “Macro-scale Combustion Phenomena in Nanothermites,” University of Texas, Institute for Advanced Technology (IAT), Austin, TX July 2006.
Name: Parameswaran, Siva
Rank: Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   Ph.D., Imperial College, University of London, 1986
   M.S., Imperial College, University of London, 1978
   B.S., Peradeniya (Sri Lanka), 1975

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Professor, Texas Tech University, 2004 - present
   Associate Professor, Texas Tech University, 1994 - 2004
   Assistant Professor, Texas Tech University, 1988 - 1994
   Visiting Research Scientist, Ford Motor Company, June 88 - Aug. 88
   Visiting Scientist, ICASE, NASA Langley Research Center Hampton, 1993

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   4 Master’s committees chaired

IV. Other Service on Graduate Committees in the last six years (excluding III)
   4 Doctoral committees chaired
   11 Master’s committees chaired

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

VI. Published Research and Creative Activity in the last six years.


VII. Current Participation in Professional Associations

VIII. Professional Papers and Abstracts for the last six years

IX. Grant and Contract Activity for the last six years

X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Rasty, Jahan  
Rank: Associate Professor  

I. Academic Background (begin with last degree; include post-doctoral work) 
MBA, 1999, College of Business Administration, Texas Tech University.  
Ph.D., 1987, Department of Mechanical Engineering, Louisiana State University (LSU)  
B.S./M.S., 1981/1984, Department of Mechanical Engineering, Louisiana State University (LSU)  

II. Professional Experience, Academic and Nonacademic (begin with present position)  
1993-Present:  Associate Professor, Department of Mechanical Engineering, Texas Tech.  
1988-1993:  Assistant Professor, Department of Mechanical Engineering, Texas Tech  
1/85-7/85:  Project Engineer ETHYL Corp., Baton Rouge, Louisiana  

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)  
2 Doctoral committees chaired  
2 Masters’ committees chaired  

IV. Other Service on Graduate Committees in the last six years (excluding III)  
5 Doctoral committees  
7 Masters’ committees  

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)  
ME 5342, ME 5352, ME 5353, ME 5344, ME 5331, ME 5343  

VI. Published Research and Creative Activity in the last six years.  
BOOK/EDITORIAL PUBLICATIONS:  

JOURNAL PUBLICATIONS

VII. Current Participation in Professional Associations

PROFESSIONAL AFFILIATIONS:
The American Society of Mechanical Engineers (ASME) – member
Society for Experimental Mechanics (SEM) - member
American Society of Materials (ASM International) – member
The Society of Automotive Engineers (SAE International) – member
Electronic Device Failure Analysis Society (EDFAS) – member
National Association of Fire Investigators (NAFI) - member

PROFESSIONAL SERVICES:

2008-present ASME District E: Member of the Operating Board


Member of Program Committee, 2005, National Science Foundation Grant Review Panel

Served as a reviewer for NSF’s Division of Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs covering the topics of Manufacturing and Machine Design.

2001-Present: Secretary - ASME Great International Region X

Responsibilities included serving on ASME-Region X Operating Board and assisting the VP with the operation of region X activities.


Responsibilities included serving on ASME-Region X Operating Board covering more than 50 universities in 4 states and two countries, organization of the annual ASME Regional Student Conference (RSC), Graduate Student Technical Conference (GSTC), Design Contest, as well as organization of the annual Regional Student Leadership Seminar (RSLS) for training of incoming ASME student officers.

1991-Present: ASM/TMS Student Chapter Faculty Adviser, Department of Mechanical Engineering, Texas Tech University.

Founded the first joint student chapter of the American Society of Materials and The Metallurgical Society (ASM/TMS) at Texas Tech University.

1989-2002: ASME Student Chapter Faculty Adviser, Department of Mechanical Engineering, Texas Tech University.

Provided support and guidance to the local student chapter of the American Society of Engineers.

VIII. Professional Papers and Abstracts for the last six years


IX. Grant and Contract Activity for the last six years


X. Indicate other professional activities during the last six years that contribute to graduate education
Name: Smirnov, Sergey  
Rank: Assistant Professor

I. Academic Background (begin with last degree; include post-doctoral work)

*Ph.D. Mechanical Engineering, 2002 Department of Mechanical and Aerospace Engineering, Arizona State University, USA*

*Degree Candidate of Sciences (Physical/Math), 1998 Department of Theoretical Physics, Moscow Engineering Physics Institute, Moscow, Russia and Institute for Problems in Mechanics, Russian Academy of Science, Moscow, Russia*

*M.S. Physics, Diploma with honors, 1995 Department of Theoretical Physics, Moscow Engineering Physics Institute, Moscow, Russia*

II. Professional Experience, Academic and Nonacademic (begin with present position)

2005 – Present, *Assistant Professor*, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX, USA

2002 – 2005, *Faculty Research Associate and Instructor*, Department of Mechanical and Aerospace Engineering, Arizona State University, Tempe, AZ, USA

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)


IV. Other Service on Graduate Committees in the last six years (excluding III)

No. Students: two students

Department: ME

Institution: TTU

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

“Advanced Thermodynamics” (TTU, Fall 2007); “Environmental Fluid Mechanics” (TTU, Fall 2006);

VI. Published Research and Creative Activity in the last six years.


VII. Current Participation in Professional Associations

American Physical Society (Division of Fluid Dynamics), American Geophysical Union.

VIII. Professional Papers and Abstracts for the last six years

Smirnov S.A., Pacheco J.R. (2007) “Laboratory and numerical studies of geophysical flows stability,” The 60th Annual Meeting of the APS Division of Fluid Dynamics, November 18–20, 2007; Salt Lake City, Utah, USA.


IX. Grant and Contract Activity for the last six years.

X. Indicate other professional activities during the last six years that contribute to graduate education
I. Academic Background (begin with last degree; include post-doctoral work)
   Massachusetts Institute of Technology, Mechanical Engineering, Ph.D., 1999
   Massachusetts Institute of Technology, Mechanical Engineering, S.M., 1994
   Rice University, Mechanical Engineering, B.S.M.E. summa cum laude, 1992

II. Professional Experience, Academic and Nonacademic (begin with present position)
   2006-present, Assistant Professor, Mechanical Engineering Department, Texas Tech University.
   2005-2006, Visiting Assistant Professor, Mechanical Engineering Department, Texas Tech University.
   2004-present, Special Assistant to the Chairman, China Open Resources for Education, Beijing, China.
   2003-2005, Associate Professor, School of Mechanical, Electronic, and Control Engineering, Beijing Jiaotong University, Beijing, China.
   2001-2003, Special Academic Assistant to the President, Jingmei University & Leadership Development International, Evergreen, CO.

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)
   Aditya Agarwal, MS (report), TTU, 2008.
   Jayesh Shimpi, MS (report), TTU, 2008.

IV. Other Service on Graduate Committees in the last six years (excluding III)
   Currently supervising 6 graduate students, and serving on several thesis committees (Raytheon Ph.D. students, ME students, and IE students), TTU.

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)
   ME 6331 (Raytheon Ph.D on-campus) – 2006 (two courses), 2007.

VI. Published Research and Creative Activity in the last six years.

Name: Tate, Derrick
Rank: Assistant Professor
VII. Participation in Professional Associations


VIII. Professional Papers and Abstracts for the last six years


IX. Grant and Contract Activity for the last six years.

Funded awards:

X. Indicate other professional activities during the last six years that contribute to graduate education

New course approved ME 5355.
Invention disclosure with Jayesh Shimpi and Jamie Chapman.
Facilitating student projects and organizing workshop for Amarillo Inventor’s Association.
Name: Yang, Jingzhou
Rank: Assistant Professor

I. Academic Background (begin with last degree; include post-doctoral work)
   Ph.D. Mechanical Engineering, The University of Iowa, USA, 08/2003
   M.S. Automobile Engineering, Jilin University, China, 04/1992
   B.S. Vehicle Engineering, Jilin University, China, 07/1989

II. Professional Experience, Academic and Nonacademic (begin with present position)
   Assistant Professor, 08/2008-present, Department of Mechanical Engineering, Texas Tech University
   Research Engineer and Adjunct Assistant Professor, 03/2004-08/2008, Center for Computer Aided Design, University of Iowa
   Postdoctoral Research Scholar, 08/2003-02/2004, Center for Computer Aided Design, University of Iowa
   Research Assistant, 01/1999-08/2003, Center for Computer Aided Design, University of Iowa
   Research Engineer, Summer 2002, Technical Center, Hon Industries, Muscatine, Iowa, USA
   Visiting Scholar, 12/1997-12/1998, Department of Mechanical Engineering, National University of Singapore, Singapore
   Assistant Professor, 04/1992-10/1997, Department of Automobile Engineering, Tsinghua University, Beijing, China
   Research Assistant, 08/1989-04/1992, Department of Automobile Engineering, Jilin University, Jilin, China

III. Direction of Graduate Students (completed theses and dissertations directed in the last six years)

IV. Other Service on Graduate Committees in the last six years (excluding III)

V. Graduate Courses Taught in the last six years (list course numbers only once plus the years each was taught.)

VI. Published Research and Creative Activity in the last six years.

BOOK CHAPTERS

REFEREED JOURNALS

213

Mechanical Engineering


Mechanical Engineering

VII. Current Participation in Professional Associations

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Society of Automotive Engineers (SAE): Member
American Institute of Aeronautics and Astronautics (AIAA): Member
American Society of Mechanical Engineers (ASME): Member

PROFESSIONAL SERVICE

Journal and Conferences

Executive Editor for International Journal of Human Factors Modelling and Simulation (2004-)
Associate Editor for International Journal of Robotics and Automation (2004-)
Guest Editor: International Journal of Vehicle Design (IJVD), Special Issue: Research and Advances of Vehicle Body Engineering (2009)
Editorial Board Member: The Open Ergonomics Journal (2007-)
Editorial Advisory Board Member: Scientific Journals International (SJI) (2006-)
Reviewer for the following international journals and conferences:
ASME Journal of Biomechanical Engineering
ASME Journal of Mechanical Design
ASME Journal of Medical Devices
IEEE Transaction of Robotics Systems, Man, Cybernetics-Part B
International Journal of Robotics and Automation
Robotics and Computer-Integrated Manufacturing
International Journal of Human Factors Modelling and Simulation
Automatica
Computer Aided Design
Computers and Graphics: An International Journal
Journal of Sound and Vibration
Journal of Vibration and Control
International Journal of Advanced Manufacturing Technology
Mechanism and Machine Theory
SAE Digital Human Modeling for Design and Engineering Conference
ASME Design Engineering Technical Conferences
International Symposium of Robotics and Automation
Proceedings of IMech Part D, Journal of Automobile Engineering
The IASTED International Conference on Applied Simulation and Modelling (ASM)
Computer Aided Design and Applications
Applied Acoustics
Ergonomics
International CAD Conference
International Journal of Precision Engineering and Manufacturing
Conference Committee:

Mechanical Engineering
SAE World Congress, Cobo Center, Detroit, Michigan, April 20-23, 2009.
SAE Digital Human Modeling for Design and Engineering Conference and Exhibition, June 12-14, 2007, Seattle, University of Washington, WA, USA.
The IASTED International Conference on Applied Simulation and Modelling (ASM), Palma de Mallorco, Spain, August 29-31, 2007.

VIII. Professional Papers and Abstracts for the last six years

Kim, J., Yang, J., and Abdel-Malek, K., A New Method of Calculating Joint Constraint Forces and Moments during Optimal Motion of Redundant Systems, ASME International Design Engineering Technical Conferences, September 4-7, 2007, Las Vegas, NV.
Abdel-Malek, K., Yang, J., Kim, J., Marler, T., Beck, S., Swan, C., Frey-Law, L., Mathai, A., Murphy, C., Rahmatalla, S., and Arora, J., Development of the Virtual Human Santos, 12th
International Conference on Human-Computer Interaction (HCI), Beijing International Convention Center, Beijing, China, July 22-27, 2007.


Yang, J., and Abdel-Malek, K., Singularity Analysis of Open-Loop Manipulators Subject to Unilateral and Non-unilateral Constraints, The IASTED International Conference on Robotics and Applications, October 31-November 2, 2005, Cambridge, USA.

Pena Pitarch, E., Yang, J., and Abdel-Malek, K., Joystick Ergonomic Study in Material Handling Using Virtual Humans, 2005 ASME International Engineering Congress and Exposition, November 5-11, Orlando, Florida, USA.


Potratz, J., Yang, J., and Abdel-Malek, K., A Light Weight Compliant Hand Mechanism with High Degrees of Freedom, The 4th Design of Medical Devices Conference, April 13-15, 2005, University of Minnesota, Minneapolis, Minnesota, USA.

Kim, J., Abdel-Malek, K., Yang, J., and Nebel, K., Motion Prediction and Inverse Dynamics for Human Upper Extremities, SAE 2005 World Congress, April 11-14, 2005, Cobo Center, Detroit, Michigan, USA.

Yang, J., Marler, T., Farrel, K., Beck, S., Kim, H., Abdel-Malek, K., Arora, J., and Nebel, K., Santos: A New Generation of Virtual Humans, SAE World Congress, April 11-14, 2005, Cobo Center, Detroit, Michigan, USA.

Kim, J., Abdel-Malek, K., and Yang, J., An Efficient Method for Real-time Human Motion Prediction, SAE World Congress, April 11-14, 2005, Cobo Center, Detroit, Michigan, USA.


Farrell, K., Yang, J., and Abdel-Malek, K., Santos: A New Interactive Virtual Human, SIGGRAPH 2004 Real-Time 3DX: Demo or Die, August 8-12, 2004, Los Angeles, California, USA.


IX. Grant and Contract Activity for the last six years

Hand Simulation Model, supported by The University of Iowa-Caterpillar Inc., 08/01/2008-12/31/2008, PI: J. Yang. Amount, $41,784.


X. Indicate other professional activities during the last six years that contribute to graduate education
Graduate Program Reviews
2008-2009

FACULTY AND STUDENT SURVEY RESULTS

College: College of Engineering
Department: Mechanical Engineering
Conducted by: Institutional Research Services
### FACULTY SURVEY RESULTS – MECHANICAL ENGINEERING

#### Number of faculty participated in survey

<table>
<thead>
<tr>
<th>Role</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>2</td>
</tr>
<tr>
<td>Asso.Prof</td>
<td>5</td>
</tr>
<tr>
<td>Asst.Prof</td>
<td>1</td>
</tr>
<tr>
<td>Emeritus</td>
<td>0</td>
</tr>
<tr>
<td><strong>PARTICIPANT TOTAL</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

#### SCALE

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>N/A</th>
<th>Average</th>
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<tbody>
<tr>
<td>SA</td>
<td></td>
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<tr>
<td>A</td>
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<td></td>
</tr>
</tbody>
</table>

#### Q-1 The facilities and equipment available to teach graduate courses are adequate.

0 3 4 1 0 0 3.25

#### Q-2 I have adequate access to facilities and equipment needed for my graduate work

1 4 2 0 1 0 3.50

#### Q-3 The quality and availability of departmental graduate student office space is adequate for my needs

2 2 0 2 1 1 3.29

#### Q-4 Library resources available to me are adequate

3 2 0 1 1 1 3.71

#### Q-5 Teaching resources (faculty, teaching assistants) are adequate to my needs

1 3 1 1 1 1 3.29

#### Q-6 The program offers an adequate selection of graduate courses, sufficient for timely completion of a full graduate program

1 4 0 3 0 0 3.38

#### Q-7 The graduate courses available are taught at an appropriate level and are of sufficient rigor.

1 1 3 0 0 0 3.25

#### Q-8 The graduate teaching assistants available to faculty in the program are of appropriate quality

1 3 3 1 0 0 3.50

#### Q-9 Graduate courses in other fields, needed to support your program or minor, are sufficiently available

0 6 1 1 0 0 3.63

#### Q-10 There is adequate communication about policy and program changes in your department

0 5 1 0 2 0 3.13

#### Q-11 There is adequate communication from the upper administration regarding policy changes.

0 1 4 0 2 1 2.57

#### Q-12 I am satisfied with the professional interaction with faculty throughout TTU.

1 2 3 1 0 1 3.43
Q-13 Graduate courses in other fields, needed to support your program(s) or minors, are sufficiently accepted.

| 0 | 4 | 1 | 2 | 0 | 1 | 3.29 |

Q-14 Graduate courses in other fields, needed to support your program(s) or minors, are sufficiently recommended by your advisor(s).

| 0 | 4 | 2 | 1 | 0 | 1 | 3.43 |

Q-15 Graduate courses in other fields, needed to support your program(s) or minors, are sufficiently recommended by your advisor(s).

| 1 | 2 | 3 | 1 | 0 | 1 | 3.43 |

Q-16 I am satisfied with the professional interaction with the graduate program coordinator(s).

| 1 | 3 | 3 | 1 | 0 | 0 | 3.50 |

Q-17 I am satisfied with the professional interaction with other faculty within the program(s).

| 1 | 4 | 1 | 2 | 0 | 0 | 3.50 |

Q-18 I am treated as a respected contributor to the graduate program in which I am involved.

| 2 | 5 | 0 | 1 | 0 | 0 | 4.00 |

Q-19 I have been given an opportunity to be engaged in decisions regarding changes in the program(s).

| 1 | 2 | 1 | 2 | 1 | 1 | 3.00 |

Q-20 Course and program changes are evaluated by all faculty and voted upon by those faculty.

| 1 | 4 | 0 | 1 | 2 | 0 | 3.13 |

Q-21 Sufficient graduate teaching assistantship stipends are available.

| 0 | 2 | 1 | 2 | 2 | 1 | 2.43 |

Q-22 The program offers adequate opportunity for its faculty to gain teaching training.

| 2 | 1 | 2 | 1 | 1 | 1 | 3.29 |

Q-23 Graduate teaching assistantships assignments are made equitably, based on established criteria.

| 1 | 3 | 2 | 1 | 0 | 1 | 3.57 |

Q-24 Graduate program policies are clearly defined and readily available to me.

| 0 | 3 | 3 | 2 | 0 | 0 | 3.13 |

Q-25 Graduate program policies clearly identify petition and appeals procedures available.

| 0 | 2 | 4 | 2 | 0 | 0 | 3.00 |

**FACULTY COMMENTS:**

**What do you consider to be the strengths of your graduate program(s)?**

- My courses are partly based on my research.
- Retain excellent TTU undergraduates into the MS program.
- The graduate program has strength in its diversity -- in the course curriculum and the potential areas of research pursuit. The strength of new faculty to conduct successful research programs is improving.
- We have good enough number of students in the program.
**What changes, if any, could be made to improve the quality of your graduate program(s)?**

| **Reduction of Undergraduates** | Reduce the number of undergraduates so that the undergraduate teaching load could be reduced thus providing for more graduate course offerings. Have a well thought out course offering sequence with appropriate prerequisites. Need a real qualifying examination process that tests fundamental knowledge that is given before the end of the first year for all PhD students. Waiting for them to complete 60 hours simply puts too much investment into the student and is unfair to the faculty and student such that no PhD students fail despite how bad they are. This must be uniform across the college. |
| **Enhancement of Graduate Program** | The graduate program would be enhanced with additional trained technical staff to efficiently run and operate department facilities. An easement of classroom teaching requirements must accompany the desire and goal to execute expanded research activities. Additional faculty are required to achieve the critical balance for both teaching a growing graduate program and conduct research. |
| **Graduate Student Selection Criteria** | Graduate student selection criteria could be a little better. |
| **Emphasize More on Research** | Emphasize more on research. |

**Please feel free to add any additional comments or questions in the space below.**
# STUDENT SURVEY RESULTS - MECHANICAL ENGINEERING

## Number of students participating in survey

<table>
<thead>
<tr>
<th>STUDENT PARTICIPANT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral</td>
<td>12</td>
</tr>
<tr>
<td>Master's Thesis</td>
<td>16</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
<tr>
<td><strong>PARTICIPANT TOTAL</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

## Student participant: Years in program

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>12</td>
</tr>
<tr>
<td>2nd</td>
<td>16</td>
</tr>
<tr>
<td>3rd</td>
<td>3</td>
</tr>
<tr>
<td>4th</td>
<td>0</td>
</tr>
<tr>
<td>5th</td>
<td>1</td>
</tr>
<tr>
<td>6th</td>
<td>0</td>
</tr>
</tbody>
</table>

## Scale

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N/A</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Questions and Responses

**Q-1** The research facilities and equipment available for my graduate research meet my needs

| 7 | 9 | 4 | 2 | 1 | 0 | **3.61** |

**Q-2** I have adequate access to facilities and equipment needed for my graduate work

| 7 | 10 | 2 | 2 | 1 | 1 | **3.97** |

**Q-3** The quality and availability of departmental graduate student office space is adequate for my needs

| 8 | 5 | 5 | 3 | 1 | 1 | **3.58** |

**Q-4** Library resources available to me are adequate for my needs

| 9 | 8 | 3 | 2 | 1 | 0 | **4.09** |

**Q-5** Teaching resources (faculty, teaching assistants) are adequate to my needs

| 10 | 6 | 3 | 2 | 1 | 1 | **4.13** |

**Q-6** The program offers an adequate selection of graduate courses, sufficient for timely completion of a full graduate program

| 3 | 9 | 3 | 7 | 1 | 0 | **3.25** |

**Q-7** The graduate courses available are taught at an appropriate level and are of sufficient rigor.

| 5 | 12 | 3 | 2 | 1 | 0 | **3.88** |

**Q-8** The graduate teaching by faculty in the program is of appropriate quality

| 6 | 13 | 1 | 2 | 1 | 0 | **4.06** |

**Q-9** Graduate courses in other fields, needed to support my program or minor, are sufficiently available

| 4 | 10 | 4 | 3 | 1 | 1 | **3.61** |

**Q-10** Program seminars are adequate to keep me informed of developments in my field

| 3 | 9 | 4 | 5 | 1 | 1 | **3.39** |

**Q-11** The initial advising I received when I entered the program was an adequate orientation

| 5 | 10 | 4 | 1 | 3 | 0 | **3.66** |

**Q-12** I have a department mailbox or other form of communication with faculty & graduate students

| 11 | 8 | 1 | 2 | 1 | 0 | **4.16** |
Q-13 I have adequate access to my major professor

| 14 | 6 | 1 | 1 | 1 | 0 | 4.44 |

Q-14 I am receiving the research and professional development guidance I need

| 10 | 8 | 2 | 2 | 1 | 0 | 4.13 |

Q-15 I am satisfied with the professional interaction with my major professor

| 16 | 5 | 0 | 1 | 1 | 0 | 4.53 |

Q-16 I am satisfied with the professional interaction with faculty both within the program and at TTU

| 6 | 12 | 3 | 1 | 1 | 0 | 3.97 |

Q-17 I am treated as a respected contributor to the research program in which I am involved

| 8 | 10 | 3 | 1 | 1 | 0 | 4.00 |

Q-18 I have been given an opportunity to be engaged in significant research for my thesis or dissertation

| 9 | 8 | 3 | 2 | 1 | 0 | 4.03 |

Q-19 If I decide to change my major professor, the mechanism for doing so is suitable

| 5 | 5 | 6 | 2 | 1 | 4 | 3.73 |

Q-20 I am informed of opportunities for professional development and contacts outside TTU, such as attendance at professional meetings

| 5 | 8 | 6 | 2 | 2 | 0 | 3.56 |

Q-21 Graduate teaching or research assistantship stipends are adequate

| 3 | 2 | 7 | 4 | 5 | 2 | 2.59 |

Q-22 The program offers adequate opportunity for its graduate students to gain teaching experience

| 5 | 8 | 3 | 3 | 2 | 2 | 3.43 |

Q-23 Graduate teaching assistantships, assignments are made equitably, based on established criteria

| 4 | 7 | 3 | 6 | 1 | 2 | 3.38 |

Q-24 Program policies are clearly defined and readily available to me

| 4 | 13 | 3 | 2 | 1 | 0 | 3.84 |

Q-25 Graduate program policies clearly identify petition and appeals procedures available to me

| 4 | 10 | 5 | 2 | 1 | 1 | 3.73 |

Q-26 There is a well-established mechanism for regular graduate student participation in decisions affecting students, whenever this is appropriate

| 4 | 10 | 4 | 3 | 1 | 1 | 3.60 |

STUDENT COMMENTS:

What do you consider to be the strengths of this program?

- Ability to talk with faculty (open door policy).
- Academic meaningful.
- Courses are good and teaching is good. Advising is best.
- Good Professors.
- lot of potential for research or thesis work.
- My advisor and my department head.
Professors.
The addition of new faculty members aids in the reduction of class size and expansion of course options.
The faculty is amazing.
The faculty is very good and capable. There are many relevant subjects in my field of interest.
The professors as well as Dr. Ertas, who is running the program have been very helpful in getting this curriculum on track.
The program is flexible enough to accommodate diverse studies in interdisciplinary fields.
The strengths of this program are the teaching staff and the professors.
The strength of my program I think is the good facilities of my professor, and also several attracting course for me. The ease of downloading journal paper here is also very helpful, but still some database is not accessible which make some papers have to be ordered, this will make a little delay for our researches and this is very actually annoying. But, generally saying, the paper stuff is already good.

What do you consider to be the weaknesses of this program?

<table>
<thead>
<tr>
<th>Selection of courses is 'thin'. If you want to finish your degree in a timely manner, you basically just take what it currently offered. A 3 year course cycle program limits options.</th>
</tr>
</thead>
<tbody>
<tr>
<td>not enough courses regarding my major research topic are provided.</td>
</tr>
<tr>
<td>No softwares available which we need in research.</td>
</tr>
<tr>
<td>Some graduate courses are only offered once every two years.</td>
</tr>
<tr>
<td>number and quality of courses can be enhanced.</td>
</tr>
<tr>
<td>N/A</td>
</tr>
<tr>
<td>space for computer lab is very less. lab can hardly accomodate enough student. i can see more people standing and waiting in cue then people actually working on computers.</td>
</tr>
<tr>
<td>The courses offered are only marginally related to my research. Also, the number of credits required for continuing for a PhD is very high, especially since the courses would not be relevent.</td>
</tr>
<tr>
<td>the number of courses offered each semester is insufficient.</td>
</tr>
<tr>
<td>I'm so new to comment any weakness. But the stipend that is given in the department is not enough. And If the department can enhance research lab facilities more than this it might be really good.</td>
</tr>
<tr>
<td>Not spending more time in Lubbock concentraing on the dissertation, but this is not the fault of the school or the faculty. It is an artifact of the program.</td>
</tr>
<tr>
<td>Some of the faculty are horrible instructors, including the department chair. Beyond this, research facilities and equipment are not as readily available as they should be for most students to complete their work quickly. Beg, steal, and borrow is a common approach to getting necessary equipment. Stipends/tuition and fee waivers are insufficient. The stipends are significantly smaller than most other institutions and the tuition and fee waivers are roughly half that of most institutions. TOEFL requirements are far lower than they should be. Admissions requirements are not sufficiently high as to facilitate the recruitment of competent grad students.</td>
</tr>
<tr>
<td>The weakness of this program are the inadqucies in chooosing a thesis program and an advisor because even though many people become graduate every year there are only a few people who are graduated through thesis option.</td>
</tr>
</tbody>
</table>
## What changes, if any, could be made to improve the quality of this program?

<table>
<thead>
<tr>
<th>Suggestion</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide more core courses regarding my research topic.</td>
<td></td>
</tr>
<tr>
<td>Need more funding in department.</td>
<td></td>
</tr>
<tr>
<td>Offer graduate courses more often. Increase the stipends a bit</td>
<td></td>
</tr>
<tr>
<td>quality of the new students admitted into the program should be enhanced</td>
<td></td>
</tr>
<tr>
<td>and all the graduate students should be encouraged to do thesis work.</td>
<td></td>
</tr>
<tr>
<td>More and more real time or hands on experience with companies.</td>
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<tr>
<td>More design course.</td>
<td></td>
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<tr>
<td>Seminars should be scheduled at a set day and time so students will be</td>
<td></td>
</tr>
<tr>
<td>more likely able to attend. Multidisciplinary degrees should be more</td>
<td></td>
</tr>
<tr>
<td>readily available. Recruitment of domestic graduate students should</td>
<td></td>
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<tr>
<td>become a priority.</td>
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<tr>
<td>more classes offered and classes offered more often.</td>
<td></td>
</tr>
<tr>
<td>Enhance lab facilities.</td>
<td></td>
</tr>
<tr>
<td>Try to be a little more realistic about the students ability to get</td>
<td></td>
</tr>
<tr>
<td>research work accomplished knowing that we are full time employed outside</td>
<td></td>
</tr>
<tr>
<td>of school.</td>
<td></td>
</tr>
<tr>
<td>Money, Money, Money!!! This program needs a big shot of vitamin $.</td>
<td></td>
</tr>
</tbody>
</table>

## Please feel free to add any additional comments below

<table>
<thead>
<tr>
<th>Comment</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>na</td>
<td></td>
</tr>
<tr>
<td>I am not happy with the way people sitting in the International cultural</td>
<td></td>
</tr>
<tr>
<td>centre respond to international students. Today i was denied entry to</td>
<td></td>
</tr>
<tr>
<td>OPT orientation course in ICC because the advisor already started the</td>
<td></td>
</tr>
<tr>
<td>course before time. The timming was 10.30 and i was there at 10.01am</td>
<td></td>
</tr>
<tr>
<td>but was denied entry and he was very rude not to allow me. I missed</td>
<td></td>
</tr>
<tr>
<td>45 minutes of lecture just to make sure that i attend that orientation</td>
<td></td>
</tr>
<tr>
<td>but was very disappointed with the treatment of the advisor.</td>
<td></td>
</tr>
<tr>
<td>If the stipend can be increased that is much better.</td>
<td></td>
</tr>
<tr>
<td>not adequate funding available for students involved in research</td>
<td></td>
</tr>
<tr>
<td>activities. due to this students are forced to work out of department</td>
<td></td>
</tr>
<tr>
<td>giving less time and attention towards the research in which they are</td>
<td></td>
</tr>
<tr>
<td>involved. Atleast department should make some funds available for</td>
<td></td>
</tr>
<tr>
<td>students who are involved in thesis options.</td>
<td></td>
</tr>
<tr>
<td>Departmental merit bases scholarships aren't really 'merit based'.</td>
<td></td>
</tr>
<tr>
<td>Since there is a rule that if an international student gets a 'merit</td>
<td></td>
</tr>
<tr>
<td>based' scholarship above a certain amount, he or she gets in-state</td>
<td></td>
</tr>
<tr>
<td>tuition, all domestic students (regardless of academic performance) are</td>
<td></td>
</tr>
<tr>
<td>immediately put behind ANY international student who meets the bare</td>
<td></td>
</tr>
<tr>
<td>minimum qualifications. I find a lot of irony in the fact that as a</td>
<td></td>
</tr>
<tr>
<td>domestic student (actually a Texas resident all my life), I have to</td>
<td></td>
</tr>
<tr>
<td>deal with the fact that I am automatically put in the 'back of the line'</td>
<td></td>
</tr>
<tr>
<td>for a merit based scholarship while attending a state institution.</td>
<td></td>
</tr>
</tbody>
</table>