Curriculum Vitae

Dr. S. Graham Kelly

Department of Mechanical Engineering
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EDUCATION

Ph.D. in Engineering Mechanics from Virginia Polytechnic Institute and State University, August, 1979.
Dissertation Title: *Nonlinear Interaction of Acoustic Fields with Bodies Under Harmonic Excitation*
Advisor: Dr. A.H. Nayfeh

M.S. in Engineering Mechanics from Virginia Polytechnic Institute and State University, May, 1977.
Thesis Title*: A Systematic Investigation of the Parameters Affecting the Accuracy of the Vortex-Lattice Method*
Advisor: Dr. D.T. Mook

B.S. with distinction in Engineering Science and Mechanics from Virginia Polytechnic Institute and State University, December, 1975.

ADMINISTRATIVE POSITIONS

Interim Dean of Engineering The University of Akron	July 1998 to January 2003
Associate Provost for Curricular Issues and Student Affairs The University of Akron	September 1996 to February 2001
Assistant Provost The University of Akron	October 1994 to August 1996
Associate Dean for Undergraduate Studies for College of Engineering The University of Akron	September 1989 to October 1994

Assistant Dean of Engineering The University of Akron	January 1987 to September 1989

ACADEMIC POSITIONS

Professor of Mechanical Engineering The University of Akron	August 2017 to present
Associate Professor of Mechanical Engineering The University of Akron	August 1985 to August 2017
Assistant Professor of Mechanical Engineering The University of Akron	August 1982 to August 1985
Assistant Professor of Aerospace And Mechanical Engineering University of Notre Dame	September 1979 to August 1982

ACCOMPLISHMENTS

While serving as Interim Dean of Engineering I managed and led the College as the University of Akron went through a number of leadership changes as well as a major shift in agenda. During this time the University adopted a dual agenda of achieving what was then called Carnegie Research II status and of becoming a Carnegie Teaching Academy. My actions as Interim Dean of Engineering show that I maintained a strong commitment to this agenda. In order to help the university accomplish its goals I made faculty development my top priority. I focused on developing a faculty that could accomplish the university's agenda and providing the faculty with appropriate resources. My actions resulted in increase in research productivity while maintaining program quality without increasing the size of the faculty. Among my accomplishments from **July 1998 to January, 2003** are:

ADMINISTRATION

- **Hiring of strong faculty**: I approved the hiring of only candidates with great potential to contribute to the University's agenda. During my term twelve new tenure-track faculty members were hired. Each new faculty was provided with an attractive start up package including an equipment fund, summer salary, graduate assistant support, and a reduced teaching load. These faculty have generated significant external funding including two NSF CAREER Awards and one ONR

Young Investigator Award. All new faculty received support in developing teaching skills. In addition, I developed full-time non-tenure track faculty positions for teaching of design courses. Faculty members with significant industrial experience were hired to teach design in Mechanical Engineering and Civil Engineering.

- **ABET accreditation**: I led the College of Engineering through successful ABET accreditation visits. In Fall 2001 the College presented six programs for accreditation. Four programs, Chemical Engineering, Civil Engineering, Electrical Engineering, and Mechanical Engineering were evaluated for reaccreditation. Two programs, Computer Engineering and Mechanical Polymer Engineering were evaluated for initial accreditation. All programs, including the new programs, were accredited. The College's newest undergraduate program, the Bachelor of Science in Biomedical Engineering was went through a successful ABET review in Fall, 2002.
- **Commitment to diversity**: I maintained a strong commitment to diversity. I developed the position of Assistant to the Dean and Director of Engineering Diversity Programs. I secured permanent funding for and hired a new Director of the Women in Engineering Program. I authored and served as Co-PI on the original proposal to fund the College of Engineering's Minority Engineering Program. I sponsored and participated in the annual Mayor's Award Banquet which honors minority high school students with strong aptitude in mathematics and science. I fully funded the IDEAs (Increasing Diversity in Engineering Academics) and Women in Engineering programs from a tight operating budget.
- **Increase in College's research productivity**: In 1998-99 the College of Engineering received research grants totaling $1.9 million with less than $1 million in federal funding. The College's research grants increased each succeeding year with College faculty securing research grants in excess of $5 million with over $3.8 million in federal funding during 2001-2002.
- **Whitby Hall renovation**: Planning for thorough renovation of Whitby Hall, the Chemical Engineering building, began in summer 1998. I guided the project through the University's process for development of capital projects. I participated in the interviewing and hiring of architects and led the University's team in working with the architects to develop final drawings. The building was reoccupied in March 2004. The budget for the project was $3.75 million including $750,000 in private funds. The renovated building provides faculty suites with space for laboratories and graduate student offices, a distance learning classroom, undergraduate and graduate computer labs, and an undergraduate study area.
- **Development of a post-doctoral fellowship program**: I developed a post-doctoral fellowship program for which proposals were solicited for University sponsored post-doctoral fellows. An external panel was used to judge the proposals and awards of post-doctoral support for two years were made to those who showed the most promise of using the post-doctoral fellow to increase federally funded research.
- **Budget preparation**: In conjunction with the annual budgeting process I developed one and five year strategic plans for the College of Engineering. The five-year plan called for the conversion of current resources to increases in faculty salaries once certain benchmarks have been achieved. The plan was presented to the College faculty in November 1998. The plan met with faculty approval and was forwarded to

the University administration. Partial implementation of the plan was achieved. I prepared the collegiate budget each year.

- **Strategic planning**: During the summer of 1998, I was a member of a small group of university administrators that developed a blueprint for a strategic plan. This plan was used to set the agenda for the university in preparation for the Board of Trustees to launch a search for a new president. I participated in more formal strategic planning launched by the new administration using the Balanced Scorecard methodology. I participated in discussions at the Dean's level which established goals, objectives, and metrics for the academic part of the university. I led the College of Engineering in its formulation of its goals, objectives, and metrics.
- **Resource allocation and budget management:** All departmental operating budgets increased from 1998 to 2002 even though the College's total operating budget remained the same. After carryover allocations were swept by the central administration in 1998, I was able to favorably state the College's case to the administration such that the College received back more than was lost in the sweep. I personally monitored all collegiate accounts. Due to a decrease in state funding I had to apportion a permanent budget reduction of $250,000 in December 2001. During 2002 the College faced a reduction of $106,000 from its operating budget and a 20 percent tax on all carryovers.
- **Advancement Council:** I met with the College of Engineering Advancement Council twice a year, providing them with collegiate updates. I worked with individual members on special projects. The Advancement Council led the fundraising for the renovation for Whitby Hall, with one member providing preliminary architectural services. I worked with several members to identify and cultivate possible off campus sites for an Engineering Research Center. I identified and recruited new members to the council.
- **Development of Advisory Boards**: I led in the development of individual advisory boards for Mechanical Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, and Women in Engineering. My strategy in developing the advisory boards was to recruit a strong chair or co-chairs with strong interest in the program. The advisory board chair then worked with the department chair or program coordinator to recruit additional council members. I participated in meetings of all advisory boards, providing updates on the college.
- **Alumni Relations:** I strengthened relations between the College and the Alumni Association. I sponsored alumni events in conjunction with collegiate activities. I involved alumni in recruitment activities, including writing personal letters to prospective students.
- **Fundraising and development projects:** I led fundraising projects for the College of Engineering. Development efforts initiated during my administration include the establishment of endowed graduate fellowships named in honor of distinguished emeritus faculty, the establishment of a center for student projects including a dedicated facility and dedicated equipment, fundraising for the renovation of Whitby Hall, the establishment of the Margaret Donovan Chair for Women in Engineering, and the establishment of the Committee for the Future of Civil Engineering to raise scholarship funds for Civil Engineering students.

- **Representation of college to outside constituencies:** I made a number of presentations representing the College of Engineering to outside constituencies. These include a presentation at Ohio Aerospace Institute in May, 2000 explaining the College's research programs, a presentation on nanotechnology initiatives in the College of Engineering to the Technical Committee of CAMP in December 2000, and a presentation on Akron's College of Engineering to other engineering deans at Texas A&M University in January 2001. I regularly made presentations on the state of the College to the College's Advancement Council, the Chemical Engineering Advisory Committee, and the Mechanical Engineering Advisory Committee.
- **Industrial relations:** I led efforts to develop partnerships with companies such as Lockheed-Martin, Aircraft Braking Systems, CISCO, VISTEON, Kimberly Clark., and General Electric.
- **Student organization support:** I increased support for the College's award winning organizations. The SAE Formula One team was sent in 1998 and 1999 to competitions in Birmingham, England. Akron's team was only one of five U.S. teams invited to the inaugural competition in 1998. I sent the team again in 1999 after they won the national competition in Pontiac, MI. A congratulatory banquet for all SAE teams was held in October 1999 at which a representative from SAE headquarters spoke of Akron's success from their perspective. The College of Engineering hosted alumni receptions at the SAE Formula One race in May 2000 and May 2001 and the Midwest Mini-Baja competition in June 2001. We hosted the 2001 Region G Student Conference for the Society of Women Engineers and the 2002 Region V Regional ASME Student Conference. I served as a judge at the 2001 finals of the American Institute of Steel Construction Steel bridge competition.
- **Student Success:** Akron's students continue to be successful in national competitions. Akron's AIChE students won the national AIChE ChemE Car Competition in November 2000. SAE teams took first place in the 2001 and 2002 Midwest Mini-Baja Competitions and the 2001 and 2002 West Aero-Design Competitions. SAE teams have amassed 20 championships since 1996. Civil Engineering students finished in eighth place in the national finals of the AISC Steel Bridge Competition. Akron's students are continually sought by employers for cooperative education jobs as well as permanent employment. Our students consistently perform well on the Fundamentals of Engineering Examination.
- **Student recruitment:** I developed and funded the concept of College of Engineering student ambassadors, senior engineering students who have completed the cooperative education program. They visit high schools to inform qualified prospects about engineering and The University of Akron. I personally participated in as many recruitment events as possible including Scholarship Saturday, visitation days, spotlight days, and yield receptions.
- **Stability**: I brought stability to a college that experienced much turmoil within the preceding decade. The College has accepted the University's agenda and is a leader in developing research programs, innovative teaching, and dedicated service.

- **Personnel evaluation**: Each reappointment, tenure and promotion case was carefully scrutinized. I met with all RTP candidates to explain my decisions. I reviewed progress toward tenure with all reappointment candidates. I revised the process through which merit salary increases are awarded. High productivity and quality in teaching and/or and research is rewarded. I proved to skeptical faculty that those who choose to emphasize teaching over research can receive good merit increases with a sufficient workload of high quality teaching.
- **Shared leadership**: I met with College of Engineering department chairs on a regular basis. Department chairs were encouraged to aggressively pursue departmental agendas with guidance from the College of Engineering. Input from department chairs was sought before making important college-wide decisions. Faculty input was constantly encouraged.
- **Faculty relations:** I held monthly college-wide faculty meetings at which, in addition to conducting routine business, I clearly articulated the college's agenda. I was available to meet with individual faculty at their convenience. However I respected the Department Chairs role in the line of authority. I am confident I maintained the respect of collegiate faculty.
- **Team building:** I built a strong leadership team within the College of Engineering. I had the opportunity to appoint four department chairs and an Associate Dean for Research and Graduate Studies. The current dean has retained each member of this team.
- **Representation of college to university administration**: Through cogent arguments to the university administration articulating collegiate needs I was able to secure necessary resources. I worked with all vice presidents to further the College and University agendas. I represented the college's interests in bi-weekly Council of Deans meetings and bi-weekly Vice Presidents and Deans meetings.
- **Ohio Engineering Deans Council**: I participated in the activities of the Ohio Engineering Deans Council. I helped develop a report on engineering doctoral programs at Ohio's public universities. I participated in visits by Ohio engineering deans to Ohio's legislative delegation held in conjunction with the ASEE Engineering Deans Public Policy Forum. In 1999, we stressed the need to increase funding for basic research by NSF and DOD. In 2000, we shared a message of the synergy between engineering education and research. In 2001 we presented a message for the need to increase funding for K-12 mathematics and science education in order to prepare students for engineering study and of the national shortage of degreed engineers.
- **Engineering Management Consortium:** I led collegiate efforts to participate in a statewide consortium of engineering colleges to develop a web based Master of Science in Engineering Management. The consortium received a $250,000 grant from the Ohio Learning Network from which Akron received $31,500 for course development. This is a joint effort between the College of Engineering and the College of Business Administration.
- **Ohio Board of Regents Doctoral Program Report**: I completed the College of Engineering Doctoral Self-Study which was appended to the statewide report on engineering doctoral programs developed by deans of Ohio's public engineering schools with Ph.D. programs.

- **International Programs:** I was invited to visit the University of Leoben in Austria in October, 2001 and presented a seminar on our accreditation experiences. We are establishing an exchange program with Leoben for Mechanical Polymer Engineering students.
- **Graduate admission requirements**: I proposed changes in the requirements for admission to graduate programs for students without undergraduate engineering degrees. Such an effort is aimed to attract higher quality graduate students. The College's Graduate Curriculum Committee modified and adopted the proposed changes.
- ***Jim Lovell's Executive Forum****:* In November, 1998 I taped a segment of the nationally syndicated program, *Jim Lovell's Executive Forum*, which featured a round table discussion of issues in engineering education. Apollo astronaut Jim Lovell moderated the discussion. Engineering deans from Wayne State University, Howard University, and Louisiana Tech University also participated in the discussion. The program was aired nationally in December 1998 and June 1999 as well as locally in March 1999.

ACADEMICS

- **Teaching**: I continued to teach one course per semester
  Fall 1998: 4600:310 Fluid Mechanics
  Spring 1999: 4600:431 Fundamentals of Mechanical Vibrations
  Fall 1999: 4600:660 Engineering Analysis
  Spring 2000: 4600:431 Fundamentals of Mechanical Vibrations
  Fall 2000: 4600:203 Dynamics
  Spring 2001:4600:431/531 Fundamentals of Mechanical Vibrations
  Fall 2001: 4600:660 Engineering Analysis
  Spring 2002:4600:431/531 Fundamentals of Mechanical Vibrations
  Fall 2002: 4600:321 Kinematics of Machines
- **Book**: The second edition of my book *Fundamentals of Mechanical Vibrations* was published by McGraw-Hill in January 2000. I developed a software package *VIBESII* to accompany the book on a CD-ROM. *VIBESII* contains 60 *MATLAB* programs which can be used to aid in the solution of vibrations problems. The *Solutions Manual for Fundamentals of Mechanical Vibrations* was published in March 2001. I wrote every program in *VIBESII* and prepared the solution for every problem in the *Solutions Manual. Fundamentals of Mechanical Vibrations* was been published in an international edition.

SERVICE

- **Campus leadership**: I served on the following University-wide committees
  Council of Deans
  Distance Learning Steering Committee
  University Research Council
  Evening Division Steering Committee
  Workforce Development Committee
  Joint Council on Teacher Education
  Barry Goldwater Scholarship Committee, Chair
  Akron Area Tech Prep Consortium Executive Committee, Chair
- **CAMP**: I served on the Governing Council as well as the Technical Development and Training Advisory Committee for the Cleveland Advanced Manufacturing Programs (CAMP).
- **Review Projects**: I reviewed book projects for McGraw-Hill and Schaum's Outline. I participated in a focus group sponsored by McGraw-Hill on the development of materials for a new project in Statics and Dynamics. I reviewed papers for *SIAM Journal of Applied Mathematics, AIAA Journal*, and *Iranian Journal of Science and Technology*.
- **Fundamentals of Engineering Review:** I continued to teach the Dynamics session of the Akron District Society of Professional Engineers Fundamentals of Engineering Review course.
- **AISC Steel Bridge Competition:** I served as a judge at the national finals of the AISC Steel Bridge Competition held at Clemson University in May, 2001.
- **Search Committees:** I served on search committees for the Vice President for Campus Facilities and the University Construction Manager.

Highlights of my responsibilities and accomplishments while serving in the Provost's Office from **October 1994 to June 1998** include

ADMINISTRATION

- **Curriculum review process**: I chaired a committee whose charge was to streamline the curriculum review process at The University of Akron. The proposal developed by the committee and adopted by Faculty Senate significantly shortened the time required for approval of curriculum proposals for which Board of Trustees' approval is not required.
- **Web based curriculum review**: In 1996, I developed a vision for a curriculum review process using the World Wide Web. I guided the development and implementation of the Web based curriculum review system. The system was fully developed and in place for Fall semester 1996. I continued to manage the curriculum review process until June 1998.
- **Curriculum review committee**: As chair of the Curriculum Review Committee I was responsible for moderating discussions regarding curriculum proposals for which

objections were received. During my time as chair I moderated over discussions regarding many controversial proposals such as a proposal for the development of the Bachelor of General Studies degree. I was responsible for approval of curriculum proposals through the Provost's Office. I helped devise the process through which proposals for courses to be delivered using distance learning are approved.

- **Tech Prep**: The Director of the Akron Area Tech Prep Consortium reported to me from July 1995 through December 2002. In 1995, the Provost's Office gained oversight of the Tech Prep program in order to correct problems within the University regarding Tech Prep. The University problems were solved, but other problems within the Tech Prep community surfaced. The resignation of the Tech Prep director in 1998 provided an opportunity to restructure the program. I oversaw and participated in the restructuring of the Tech Prep program, including the hiring of a new Director, development of a Mission Statement, and development of a Strategic Plan. I continued to serve as Chair of the executive Committee of the Akron Area Tech Prep Consortium until January 2003. The Tech Prep program now effectively serves Summit, Wayne and Medina Counties.
- **Institutional research**: From July 1995 through June 1996, I served as an Interim Co-director of Institutional Research. Another Co-Director oversaw the day to day operation of the office while I provided administrative support and resources. University needs from Institutional Research were adequately met during this interim period. We developed a white paper on the necessary restructuring of Institutional Research to meet the University's needs.
- **Academic space allocation**: I worked with academic deans, vice presidents, and the Office of Facilities Planning to provide adequate facilities for all academic functions. One large reallocation of space that I negotiated and coordinated involved the Graduate School, Department of Sociology, Community and Technical College, Continuing Education, Registrar's Office, Academic Advising, Controller's Office, and the Auditor's Office.
- **Budget and resource analysis**: I was responsible for all accounts for which the Provost's Office had direct control. I also monitored accounts of all academic units to provide advice to the Provost on budgetary questions. I was responsible for allocating budgets to non-academic units such as Student Affairs and Information Services who reported to the Provost's Office.
- **Honors Program**: I provided oversight for the University's Honors Program. This included monitoring budgets and responding to budget requests, monitoring use of faculty to teach Honors courses, participating in Honors events, interviewing prospective Honors students, and supervising the Master of the Honors Program.
- **Army ROTC and Aerospace Studies**: I provided academic oversight to these programs. When I first assumed this responsibility the University had just been notified that we had lost host status for the Army ROTC program. With a goal of regaining host status I worked with the Professor of Military Science to develop programs which would increase enrollment and demonstrate institutional support. Programs developed include Partnership for Nursing Excellence, National Guard scholarships, and Residence Hall scholarships.
- **Oversight of Associate Vice Presidents**: From 1996 until 2000 the administrative structure of the University was such that the divisions of Student Affairs, Information

Technology, and Research Services, each headed by an Associate Vice President (AVP), reported directly to the Provost. I provided an initial point of contact for the AVPs and provided general oversight of their activities. I monitored their budgets and allocated their resources. I was the architect of a reshuffling of personnel in student affairs to better fit the needs of the division.

- **Funding for Allied Health programs**: I led negotiations with Summa Health Care regarding employment of instructors to teach and supervise clinical experience for Respiratory Care Technology. The negotiations led to a successful resolution as to how such instructors are employed and paid as well as the effect on the Community and Technical College budget.
- **Faculty Senate committees**: I served as Provost Office liaison with most Faculty Senate committees including Campus Facilities Planning Committee, Academic Policy and Calendar Committee, and General Education Advisory Committee
- **Undergraduate Bulletin**: I provided academic oversight for the Undergraduate Bulletin. In particular, I made sure the curriculum was accurately presented in the Bulletin.
- **Student complaints**: I handled all academically related student complaints that were forwarded to the Provost's Office. I held academic freedom paramount in making my recommendations.
- **Graduate student grievance committees**: I set up and oversaw the first graduate student grievance hearing committees in accordance with policy and procedure passed by Graduate Council and Faculty Senate. The original procedures proved to be unworkable. Upon my suggestion, Graduate Council approved modifications to the procedure.
- **Ad Hoc Committee on Sponsored Programs**: The Ad Hoc Committee on Sponsored Programs, which I chaired, was composed of faculty, staff, administrators, and a member of the Board of Trustees. The committee discussed problems faculty and administrators face when applying for sponsored programs and in carrying out the work for sponsored programs. A committee report suggested numerous methods the University could employ to provide incentives for faculty to develop sponsored programs as well as to facilitate their implementation. The report contained a suggestion of providing administrative stipends to faculty who obtain a sponsored program.
- **Representation of Provost**: I represented the Provost at many meetings in his absence including meetings with the staff of the Ohio Board of Regents and meetings of Ohio's Inter University Council (IUC).

ACADEMICS

- **Teaching**: I taught at least one class every semester during this period. Courses taught were 4600:431 Fundamentals of Mechanical Vibrations, 4600:630 Vibrations of Discrete Systems, and 4600:660 Engineering Analysis
- **Books**: During this time I published two books: *Schaum's Outline of Theory and Problems in Mechanical Vibrations* and *Schaum's Electronic Tutor in Mechanical Vibrations.* The latter is an electronic book, available on CD, which includes MATHCAD programs written to solve a variety of vibrations problems. The programs are written in general such that the user can change values of parameters. The program files contain hyperlinks to text explaining concepts. *Schaum's Outline of Theory and Problems in Mechanical Vibrations* has been translated into Chinese.
- **Graduate students**: Two Mechanical Engineering graduate students completed M.S. theses under my direction during this time.
- **Manuscript review**: I reviewed papers submitted for publication to the *Journal of Sound and Vibration* and *Weather Monthly*. I also reviewed manuscripts from McGraw-Hill for *Schaum's Outline in Engineering Physics* and *Schaum's Outline in Statics and Strength of Materials*

SERVICE

- **Economic development delegation**: I represented The University of Akron as part of a delegation from Northeast Ohio to discuss economic development partnership opportunities with government, education, industry, and labor leaders in the Saxony region of Germany. The delegation included government, education, and industry leaders from Northeast Ohio. Facilities visited included SIEMENS, AMD, ZMD, and the University of Chemnitz.
- **Trans-Atlantic partnerships**: I was invited by the United States Information Agency to participate in a conference on Trans-Atlantic partnerships in May 1998. During the conference I was selected to briefly meet with and speak to President Clinton and British Prime Minister Tony Blair regarding these partnerships.

Highlights of my activities and accomplishments while I served as Assistant/Associate Dean from **January 1987 to October 1994** include

ADMINISTRATION

- **Teacher Evaluation Task Force**: As chair of this task force I moderated discussions as to how evaluation of instruction should be conducted. I surveyed all engineering schools regarding their practices and procedures. The task force developed the evaluation instrument currently used by the College of Engineering, an instrument unique in that it requires student signature for processing (The signatures remain confidential and are accessible only to the Dean). The task force also recommended

peer review of faculty and exit interviews of seniors to provide additional information. College of Engineering faculty ratified the task force report.

- **TEAMS competition**: I hosted the first TEAMS (Test of Engineering Aptitude Mathematics and Science) in 1988 and continued to host through 1994. High school teams of up to eight students from up to 40 schools come to Akron to participate in the competition. The competition provides students and their coaches an opportunity to learn about engineering at Akron. Scholarships are available to any member of the winning teams. The program has grown such that Akron now hosts the second largest competition nationwide.
- **Chair of 1989 CMEF Annual Symposium**: I served on the board of the Cleveland Minorities in Engineering Forum (CMEF) from 1988 through 1990. CMEF is a consortium of the Cleveland Public Schools, local universities, and industry to promote engineering study for minorities. I served as chair of CMEF's 1989 symposium for which the keynote speaker was Robert Mercer, Chief Executive Officer of Goodyear Tire and Rubber Company.
- **Development of Minority Engineering Program**: Before the development of the Minority Engineering Program, I managed student diversity issues for the College of Engineering. I participated in the development of the Minority Engineering Program. I helped write a grant to NASA which provided the initial funding for the Minority Engineering Program.
- **Tools for Engineering**: I served as chair of the oversight committee for Tools for Engineering, which decided on curriculum for the College-wide introductory course for freshmen. I handled the common lecture attended by all students as well as coordinated the laboratory sections. I was responsible for staffing the laboratory sections and insuring that adequate resources were provided. I also taught one section of the lab each semester.
- **Scholarships**: I was responsible for the awarding of all College based scholarships. I chaired the College of Engineering Scholarship Committee.
- **Ohio Aerospace Institute**: I represented The University of Akron at discussions regarding the formation of the Ohio Aerospace Institute. I served on several OAI committees.
- **Year-end reports**: I collected data for and authored the College of Engineering's year-end reports from 1987 through 1993.
- **Ad Hoc Committee for RTP Appeals Procedures**: In 1989, I chaired a committee charged with developing an appeals procedure for appeals of reappointment, tenure, and promotion decisions.
- **Polymer Engineering Specialization**: I worked with faculty from Mechanical Engineering, Chemical Engineering, and Polymer Engineering to develop the Polymer Engineering Specialization for Mechanical and Chemical Engineering students.
- **Undergraduate student matters**: I was responsible for handling a variety of undergraduate student matters including
    - Probation, suspension, and dismissal
    - Intercollegiate transfer applications
    - Degree clearance forms
    - Student complaints

Schedule maintenance forms
Transient permission forms

ACADEMICS

- **Teaching**: I continued to teach at least one course per semester. Many semesters I taught six credits and in Fall 1993, I taught 9 credits when I filled in for a faculty member who suddenly became ill. Courses taught during this period include
  4100: 101 Tools for Engineering (Lecture and Lab)
  4600: 336 Analysis of Mechanical Components
  4600: 431 Fundamentals of Mechanical Vibrations
  4600: 461 Design of Mechanical Systems
  4600: 630 Vibrations of Discrete Systems
  4600: 660 Engineering Analysis
  4600: 730 Vibrations of Continuous Systems
- **Chemstress Outstanding Teaching Award**: I received the Chemstress Outstanding Teaching Award in 1994. Student members of Tau Beta Pi, the Engineering honorary selected me as the award recipient.
- **Book and software**: The first edition of *Fundamentals of Mechanical Vibrations* was published in 1993. The book was accompanied by a software package *VIBES* which contains 15 programs, all written in BASIC. I also authored a 1324 page Solutions Manual.
- **Graduate students**: One Ph.D. student completed his dissertation under my direction during this period. Two M.S. students completed their theses under my direction.
- **Honors students**: Three honors students completed senior honors projects under my direction during this period.
- **Proposal and manuscript review**: I reviewed several proposals for the NSF SBIR program as well as manuscripts submitted to the *Journal of Sound and Vibration*.

ACTIVITIES SINCE JNAUARY 2003

In January 2003 I returned to a full-time faculty position in the Department of Mechanical Engineering. Since this time I have engaged in the following activities.

- **Teaching:** I have taught the following courses (I was on professional improvement leave in Fall 2008)

Semester	Classes taught
Spring 2003	4600:336 Analysis of Mechanical Components 4600:431/531 Fundamentals of Mechanical Vibrations
Summer 2003	4600:331 System Dynamics and Response

Fall 2003	4600:360 Engineering Analysis (2 sections) 4600:660 Engineering Analysis
Spring 2004	4600:431/531 Fundamentals of Mechanical Vibrations (2 sections)
Summer 2004	4600:331 System Dynamics and Response (2 sections)
Fall 2004	4600:360 Engineering Analysis (2 sections) 4600:630 Vibrations of Discrete Systems
Spring 2005	4600:331 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations
Summer 2005	4600:331 System Dynamics and Response (2 sections)
Fall 2005	4600:360Engineering Analysis (2 sections) 4600:660 Engineering Analysis 4600:730Vibrations of Continuous Systems
Spring 2006	4600:331 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations
Summer 2006	4600:331 System Dynamics and Response (2 sections)
Fall 2006	4600:360Engineering Analysis (2 sections) 4600:630 Vibrations of Discrete Systems
Spring 2007	4600:331 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations 4600:760Advanced Method of Engineering Analysis
Summer 2007	4600:331 System Dynamics and Response (3 sections)
Fall 2007	4600:361 Engineering Analysis II (2 sections) 4600:660 Engineering Analysis
Spring 2008	4600:331 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical

	Vibrations (2 sections) 4600:760 Advanced Methods in Engineering Analysis
Summer 2008	4600:331 System Dynamics and Response (2 sections) 4600:431 Fundamentals of Mechanical Vibrations
Spring 2009	4600:331 System Dynamics and Response 4600:431/531Fundamentals of Mechanical Vibrations (2 sections) 4600:760 Advanced Methods of Engineering Analysis
Summer 2009	4600:331 System Dynamics and Response (2 sections)
Fall 2009	4600:660 Engineering Analysis 4600:730 Vibrations of Continuous Systems
Spring 2010	4600:331 System Dynamics and Response 4600:431 Fundamentals of Mechanical Vibrations 4600:760 Advanced Methods of Engineering Analysis
Summer 2010	4600:331 System Dynamics and Response (2 sections)
Fall 2010	4600:630 Vibrations of Discrete Systems 4600:730 Vibrations of Continuous Systems
Spring 2011	4600:331 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations 4600:760 Advanced Methods of Engineering Analysis
Summer 2011	4600:331 System Dynamics and Response (2 sections)
Fall 2011	4600:660 Engineering Analysis 4600:730 Vibrations of Continuous Systems

Spring 2012	4600:331 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations
Summer 2012	4600:340 System Dynamics and Response (2 sections)
Fall 2012	4600:336 Analysis of Mechanical Components 4600:630 Vibrations of Discrete Systems
Spring 2013	4600:331 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations
Summer 2013	4600:340 System Dynamics and Response (2 sections)
Fall 2013	4600:336 Analysis of Mechanical Components 4600:622 Continuum Mechanics 4600:660 Engineering Analysis
Spring 2014	4600:340 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations
Summer 2014	4600:203 Dynamics 4600:340 System Dynamics and Response (2 sections)
Fall 2014	4600:165 Tools for Mechanical Engineering 4600:440/540 Control Systems Design 4600:630 Vibrations of Discrete Systems
Spring 2015	4600:336 Analysis of Mechanical Components 4600:340 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical Vibrations (traditional) 4600:431/531 Fundamentals of Mechanical Vibrations (mixture of traditional amnd online)
Summer 2015	4600:340 System Dynamics and Response (2 sections) 4600:431/531 Fundamentals of Mechanical Vibrations
Fall 2015	4600:165 Tools for Mechanical Engineering 4600:660 Engineering Analysis 4600:730 Vibrations of Continuous Systems
Spring 2016	4600:340 System Dynamics and Response 4600:431/531 Fundamentals of Mechanical

	Vibrations (2 sections)
Summer 2016	4600:340 System Dynamics and Response (2 sections) 4600:431/531 Fundamentals of Mechanical Vibrations
Fall 2016	4600:165 Tools for Mechanical Engineering 4600:622 Continuum Mechanics 4600:630 Vibrations of Discrete Systems
Spring 2017	4600:431/531 Fundamentals of Mechanical Vibrations (2 sections) 4600:660 Engineering Analysis
Summer 2017	4600:340 System Dynamics and Response (2 sections) 4600:431/531 Fundamentals of Mechanical Vibrations
Fall 2017	4600:165 Tools for Mechanical Engineering 4600:336 Analysis of Mechanical Components (2 sections) 4600:630 Vibrations of Discrete Systems
Spring 2018	4600:340 System Dynamics and Response (2 sections) 4600:431/531 Fundamentals of Mechanical Vibrations

- **Research:** I have established a research program in vibrations at the nanoscale. To date the work has resulted in six conference papers, four refereed journal papers, and two papers in publication. Eight students completed M.S. theses, one has completed a Ph.D., four students have completed Honors Projects.
- **Dissertation and Theses since 2003:**
    1. Hari Partasatari, "Nonlinear Vibrations of a Series of Elastically Connected Beams with Applications to Multi-Walled Carbon Nanotubes", M.S. granted August 2005.
    2. Sathish Martin, "Non-coaxial Vibrations of Multi-Walled Carbon Nanotubes Using a Timoshenko Beam Model", M.S. granted August 2005
    3. Jeff Slisik, "Stability of Fluid-Filled Carbon Nanotubes", M.S. granted August, 2006
    4. Jhansi Ariktala, "Nonlinear Vibrations of Beams Connected by Flexible Layers with Quadratic Nonlinearities with Applications to Multi-Walled Carbon Nanotubes", M.S. granted December 2006.

5. Michael Roblin, "Design Process for Restoring Stock Ride and Roll Characteristics to a Modified Vehicle", M.S. granted May, 2007.
6. J.B. Suh, "Large Deformation Analysis of Axisymmetric and Three-Dimensional Rubber Blocks with Friction". Ph.D. granted August 2007.
7. Shirish Srinivas, "Vibrations of a Series of Stretched Elastically Coupled Beams", M.S. granted December 2008
8. Clint Nicely, "Damped Response of Elastically Connected Structures with Applications to Carbon Nanotubes", M.S. granted December 2008
9. Michael Avon, (co-advisor with Dr. Alper Buldum) "A Molecular Dynamics Study of the Effect of Parameters on the Flow of Argon Atoms Through a Carbon Nanotube." M.S. granted August 2009.

- **Books:** I have completed four books and have a contract for one.
    1. S. Graham. Kelly, *System Dynamics and Response,* Cengage, 2007.
    2. S. Graham Kelly, *Advanced Vibration Analysis,* CRC, 2007.
    3. S. Graham Kelly, *Advanced Engineering Mathematics with Modeling Applications*, CRC 2009.
    4. S. Graham Kelly, *Mechanical Vibrations: Theory and Applications*. Cengage 2011.
    5. I am working on a manuscript for CRC Press titled *Dynamics: A Unified Theory.* (95% completed)

- **Conference Presentations:**
    1. S.G. Kelly, H. Parthasarathi, S. Martin, and E. Pan (2004), "Free Response of a Series of Beams Connected by Nonlinear Layers", presented at 10th Conference on Nonlinear Vibrations, Stability, and Dynamics of Structures, July 26, 2004, Blacksburg, VA.
    2. S.G. Kelly, E. Pan, H. Parthasarathi, and S. Martin (2004), "Timoshenko Beam Model for Free and Forced Vibrations of Multi-Walled Carbon Nanotubes", presented at41st meeting of Society of Engineering Science, October 11, 2004, Lincoln, NE.
    3. Slisik, J. and Kelly, S.G., "Stability of Fluid-Filled Carbon Nanotubes", presented at 43rd meeting of Society of Engineering Science, August 21, 2006, University Park, PA.
    4. Suh, J.B., Kelly, S.G., and Pottinger, M.E., "Compression of Bonded Rubber Blocks Under Frictional Contact", presented at 43rd meeting of Society of Engineering Science, August 22, 2006, University Park, PA.
    5. Gent, A, Suh. J.B., and Kelly, S.G., "Mechanics of Rubber Shear Spring", presented at 30th Annual Meeting of Adhesion Society, February, 2007, Tampa, FL.
    6. Gent, A, Suh. J.B., and Kelly, S.G., "Mechanics of Rubber Shear Spring", to be presented at 79th Meeting of the Society of Rheology, Salt Lake City, UT October 11, 2007.

- **Papers:**
    1. Gent, A., Suh, J.B., and Kelly, S.G., (2007), "Mechanics of Rubber Shear Springs", International Journal of Nonlinear Mechanics, V. 42 (2), pp. 241-249.
    2. Suh, J.B., Gent, A., and Kelly, S.G., (2007),"Shear of Rubber Tube Springs", International Journal of Nonlinear Mechanics, V. 42 (9), pp. 1116-1126.
    3. Kelly, S.G. and Srinivas, S., (2009), "Free Vibrations of Elastically Connected Stretched Beams", Journal of Sound and Vibration, V. 326, pp. 883-893.
    4. Kelly, S.G., (2010), "Free vibrations of lightly stretched or lightly connected Euler-Bernoulli Beams", Contemporary Engineering Sciences Vol 3. Pp. 25-40.
    5. Kelly, S.G., (2010), "Free and Forced Vibrations of Elastically Connected Structures", Advances in Acoustics and Vibrations, Article ID 984361.
    6. Suh, J.B. and Kelly, S.G., (2012), "Stress Analysis of a Rubber Block Under Vertical Loading", Journal of Engineering Mechanics, V. 138, pp. 770-783.
    7. Suh, J.B. and Kelly, S.G. (2014), "Stress Response of Rubber Block with Frictional Contact Under Axial Loading", International Journal of Nonlinear Mechanics, V. 68, pp. 41-51
    8. Kelly, S.G. and Nicely, C., (2015)"Free Vibrations of a Series of Beams Connected by Viscoelastic Layers", Advances in Acoustics and Vibrations, Article ID 976841
    9. Hayman, E, and Kelly, S.G. (2014), "A Rayleigh-Ritz Method for the Minimization of Even -Order Hamiltonians That Uses the Gamma Function", International Journal of Science and Applied Technology, V4, pp 35-38.

- **Reviewer**: I have served as a referee for, *AIAA Journal, Journal of Vibration and Control*, *Metallurgical Transactions, Iranian Journal of Science and Engineering, Aerospace Science and Technology, Journal of Sound and Vibration, International Journal of Nonlinear Mechanics, Journal of Mechanics and Material of Structures, Scientia Irancia, Mechanics of Advanced Materials and Structures, Journal of Computational Physics, European Journal of Physics, Earthquake Engineering and Engineering Vibration, European Journal of Physics, Science Domain International, Journal of Materials: Design and Applications* and the American Society of Engineering Education annual meeting.
- **Award**: Recipient of 2005 Louis A Hill, Jr. Award
- **Advisor to Dean**: I have advised the current Dean of Engineering on a variety of matters including budgeting and resource allocation.

- **College of Engineering Space Allocation Committee**: I served as chair of the College of Engineering Space Allocation Committee. I was responsible for leading the development of a plan to renovate and occupy space that was be available to the College of Engineering when the Department of Biology relocated to a new facility. I wrote a white paper for the development of a Student Design Center.
- **Mechanical Engineering RTP Committee**: I served as chair of the Department of Mechanical Engineering Reappointment, Promotion, and Tenure Committee for 2004-2005 and in 2011-2012
- **Faculty Senate**: I was elected and served on the faculty senate from 2008-2011.
- **University Judicial Affairs Committee:** I am a member of a pool of university faculty who serve to hear and adjudicate cases involving students charged with violations of the Student Code of Conduct. I serve on numerous hearing boards and appeal committees, chairing many.
- **United Way Committee**: I served as the College of Engineering's representative to the University of Akron United Way Committee in 2006
- **Mechanical Engineering Department Head Search Committee Chair:** I served as the chair of the search committee which resulted in the hiring of a new external chair of the department in 2013.
- **Academic Policy Committee:** I served as a member of the Academic Policy Committee of the University of Akron from Fall 2013 through Spring 2015. The committee is charged with reviewing and suggesting changes to academic policies. During the Spring semester of 2014 the committee was also charged with making recommendations to faculty senate regarding 55 programs that were slated for disinvestment.
- **Budget and Finance Committee:** I serve on the Budget and Finance Committee of the University Council. The committee is charged with reviewing the university's budget and make recommendations on changes.
- **Online Evaluation Committee:** I served on and chaired the Online Evaluation Committee, a subcommittee of the Communications and Computing Technologies Committee of Faculty Senate. The subcommittee was charged with evaluating and recommending online evaluation tools to be used across campus.

ACADEMIC WORK

Teaching

I have taught at least one class each semester since Fall 1979. Student evaluation of instruction has consistently rated my teaching as very good to excellent.

Courses taught at Notre Dame

Undergraduate

ENG 121	Engineering Probability: Introduction to probability, decision theory, random variables, distribution theory.

ENG 126/226 Mechanics I/II: Statics and dynamics of particles, dynamics of rigid bodies, centroids, moments of inertia.

ENG 321 Applied Linear Analysis: Ordinary differential equations, Laplace transforms, Sturm-Liouville problems, Fourier series, separation of variables.

ENG 334 Fluid Mechanics: Fluid kinematics, fluid statics, Reynolds Transport Theorem, pipe flows, dimensional analysis, boundary layers.

Graduate

ME 561 Modern Methods of Engineering I: Vector spaces, Sturm-Liouville theory, partial differential equations, special functions, complex analysis.

ME 562 Modern Methods of Engineering II: Perturbation methods, multiple scales, boundary layer problems, solvability conditions.

Courses taught at The University of Akron

Undergraduate

4100:101 Tools for Engineering Lecture: Freshman orientation, engineering ethics, principles of engineering graphics.

4100:101 Tools for Engineering Lab: Personal computers, WordPerfect, Lotus 1-2-3, CADKEY

4600:165 Tools for Mechanical Engineering: Introduction to mechanical engineering, ethics, principles of engineering graphics, SOLIDWORKS, MATLAB

4600:203 Dynamics: Kinematics and kinetics of particles and rigid bodies under planar motion, inertia properties of rigid bodies

4600:301 Thermodynamics II: Compressible fluid mechanics, normal shocks, isentropic flow, Fanno flow, Rayleigh flow, oblique shocks.

4600:310 Fluid Mechanics: Fluid kinematics, fluid statics, control volume analysis, dimensional analysis, pipe flows.

4600:321 Kinematics of Machines: Analytical, numerical methods for kinematic analysis; cams; gears.

4600:340 System Dynamics and Response: Modeling of mechanical and electrical systems; Laplace transforms; transient response; frequency response; control system analysis.

4600:336 Analysis of Mechanical Components: Stress, strain, constitutive equations, principal stress, torsion, flexure, plastic analysis, deflections, fatigue, failure theories, buckling.

4600:360 Engineering Analysis: Numerical methods, finite differences, approximations, interpolations, numerical integration, differential equations. Taught using FORTRAN and taught using MATLAB as the basic programming language.

4600:431/531 Fundamentals of Mechanical Vibrations (Vibrations I): Free and forced vibrations of one and multi-degree-of-freedom systems.

4600:440/540 Control Systems Design: Automatic control systems, PID controller, analysis and design by the root-locus method and frequency response method, Ziegler-Nichols tuning rules, state space analysis.

4600:461 Design of Mechanical Systems: Senior design projects.

4600:484 Mechanical engineering Laboratory: Rotor balancing experiment, vibration absorber experiment.

Graduate

4600:622 Continuum Mechanics: Index notation, stress, deformations, physical laws, constitutive equations, application to solids and fluids.

4600:630 Vibrations of Discrete Systems (Vibrations II): Calculus of variations, Lagrange's equations, normal mode theory, eigenvalue problems.

4600:660 Engineering Analysis: Linear algebra, variational methods, spectral theory, partial differential equations, special functions, Green's functions, integral equations.

4600:715 Hydrodynamic Stability: Navier-Stokes equations, basic state, thermal instabilities, centrifugal instabilities, stability of parallel flow, Orr-Sommerfeld equations, Tollmein-Schlicting waves.

4600:730 Vibrations of Continuous Systems: Free and forced vibrations of continuous systems. Analysis methods include separation of variables, Laplace transforms, Rayleigh-Ritz, finite differences, and finite elements.

4600:760 Advanced Methods in Engineering Analysis: Asymptotic Analysis, Boundary Layer Problems, Orr-Sommerfeld Equation, Degenerate Eigenvalue Problems.

CURRICULUM DEVELOPMENT

Courses introduced by Dr. S.G. Kelly

1. 4600:660 Engineering Analysis
2. 4600:715 Hydrodynamic Stability

STUDENTS

Dr. S.G. Kelly has advised the following students on their research:

A. Ph.D. Dissertations

1. Dr. Asghar Rahimi (1987), "An Investigation of Compressible, Viscous Flows Over Open Cavities Including Shear Layer Thickness Effects and its Multiple Deck Structure on Interaction With the Trailing Edge."
2. Dr. J.B. Suh, (2007), "Large Deformation Analysis of Axisymmetric and Three Dimensional Rubber Blocks"
3. Dr. Ali Anuljaie (2019) "Vibrations of Double Walled Nanotubes Conveying Fluid"

B. Master's Theses

1. Mohamed Selmi, (1987), "An Approximate Analytical Solution to Steady Flow between Rotating Eccentric Cylinders at Large Reynolds Numbers."
2. James Tarter, (1991), "Quantification of Aircraft Brake Wear using Regression Analysis, Periodic Waveforms, and Fractal Dimension."
4. Brian Casenhiser, (1995) , "Comparison of Methods for Determination of Natural Frequencies for Highly Stretched Uniform and Non-uniform Beams."
5. Timothy Rhode, (1997), "An Analysis of Combination Resonance Effects in Nonlinear Vibration Absorbers."
6. Hari Partasatari, "Nonlinear Vibrations of a Series of Elastically Connected Beams with Applications to Multi-Walled Carbon Nanotubes", M.S. granted August 2005.
7. Sathish Martin, "Non-coaxial Vibrations of Multi-Walled Carbon Nanotubes Using a Timoshenko Beam Model", M.S. granted August 2005
8. Jeff Slisik, "Stability of Fluid-Filled Carbon Nanotubes", M.S. granted August, 2006
9. Jhansi Ariktala, "Nonlinear Vibrations of Beams Connected by Flexible Layers with Quadratic Nonlinearities with Applications to Multi-Walled Carbon Nanotubes", M.S. granted December 2006.
10. Michael Roblin, "Design Process for Restoring Stock Ride and Roll Characteristics to a Modified Vehicle", M.S. granted May, 2007.
11. Shirish Srinivas, "Vibrations of a Series of Stretched Elastically Coupled Beams", M.S. granted December 2008
12. Clint Nicely, "Damped Response of Elastically Connected Structures with Applications to Carbon Nanotubes", M.S. granted December 2008
13. Michael Avon, "A Molecular Dynamics Study of the Effect of Parameters on the Flow of Argon Atoms Through a Carbon Nanotube." M.S. granted August 2009.

C. Master's Projects

1. Mahmoud El-Kablan, (1985) , "Calculation of the Deflection of a Shear Layer at the Trailing Edge of a Cavity Due to Wave Excitation."

2. Panicos Panayioutou, (1985), "Higher Order Theory for the Stability of Inviscid Flows between Concentric Rotating Cylinders."

3. Charis Papadakis, (1985), "Stability of Flow Between Rotating Eccentric Cylinders."

4. Jeff LaRose, (1986), "Numerical Solution for a Variable Thickness Shear Layer Over a Rectangular Cavity."

5. Robert T. Webb, (1987), "Determination of Real Eigenvalues of a Luge Runner."

6. George Kahawji, (1988), "Unsteady Fluid Effects in Viscous Dampers."

7. Frank Quinn, (1991), "Heat Pipe Analysis."

D. Senior Honor's Projects

1. Vincent Belovich, (1984), "Propagation of Acoustic Waves Produced by the Interaction of an Inviscid Fluid with a Viscoelastic Cylindrical Shell."

2. Kevin Houser, (1985), "Finite Element Analysis of a Spur Gear."

3. Kevin Hane, (1990), "Buckling of a Heavy Slender Column."

4. Shaun McCaslin, (1991), "Transverse Vibrations of a Highly Stretched Beam."

5. Ken Kuhlmann, (1991), "Chaotic Motion of a Column of Liquid in a Rotating Manometer.'

6. Hans Aichlmayr, (1996), "Vibrations of an Elastic Cylinder Traveling at Supersonic Speed in a Nonlinear Acoustic Medium."

7. Brad Shindle, (2008)"Fluid Flow Through Carbon Nanotubes"

8. Michael Avon (2008), "Fluid Flow Through Carbon Nanotubes"

9. David Preuter, (2009), "Instabilities in Carbon Nanotubes with Fluid Flow"

10. Philip Preuter, (2009), "Instabilities in Carbon Nanotubes with Fluid Flow"

11. Osama Elbuluk (2010), "Flow in Carbon Nanotubes"

BOOKS

A. Authored by Dr. S.G. Kelly

1. S.G. Kelly, (1993), **Fundamentals of Mechanical Vibrations** McGraw Hill, New York, 643 pages.

2. S.G. Kelly, (1993), **Solutions Manual for Fundamentals of Mechanical Vibrations** McGraw Hill, New York, 1324 pages.

3. S.G. Kelly, (1996), **Schaum's Theory and Problems in Mechanical Vibrations,** McGraw Hill, New York, 352 pages.

4. S.G. Kelly, (1996), **Schaum's Electronic Tutor in Mechanical Vibrations** , McGraw-Hill and Mathsoft, New York and Cambridge, Ma., 352 pages with CD containing 86 Mathcad programs containing material not contained in the text.

5. S.G. Kelly, (2000), **Fundamentals of Mechanical Vibrations**, 2nd Edition, McGraw-Hill, New York., 629 pages.

6. S.G. Kelly, (2001), **Solutions Manual for Fundamentals of Mechanical Vibrations**, 2nd Edition, McGraw-Hill, New York.

7. S.G. Kelly, (2007), **System Dynamics and Response**, Thomson-Nelson, Toronto, 719 pages

8. S.G. Kelly, (2007), **Advanced Vibration Analysis**, Taylor and Francis, London, 637 pages

9. S.G. Kelly, (2007), **Solutions Manual for System Dynamics and Response,** Thomson-Nelson, Toronto.

10. S.G. Kelly, (2008) **Advanced Engineering Mathematics with Modeling Applications**, CRC- Taylor and Francis, Dec. 2008, 524 pages

10. S.G. Kelly(2009) **Solutions Manual for Advanced Engineering Mathematics with Modeling Applications,** January 2009,

11. S. G. Kelly (2011) **Mechanical Vibrations: Theory and Applications**, Cengage, 876 pages

12. S.G. Kelly (2011) **Instructor Solutions Manual for Vibrations: Theory and Applications,** Cengage, May 2011, 1039 pages

C. Contributions made by Dr. S.G. Kelly to

1. **Statics Exam File,** Engineering Press, San Jose, CA, 1985.

2. **Dynamics Exam File,** Engineering Press, San Jose, CA, 1985.

3. **Fluid Mechanics Exam File,** Engineering Press, San Jose, CA, 1985.

SOFTWARE

1. S.G. Kelly, (1993), **VIBES,** McGraw Hill, New York, 15 programs.(BASIC)

2. S.G Kelly,(2000), **VIBES II,** McGraw-Hill, New York, 60 programs (MATLAB)

REFEREED JOURNAL PUBLICATIONS

1. A.H. Nayfeh and S.G. Kelly, (1978) , "Nonlinear Interactions of Acoustic Fields With Plates Under Harmonic Excitations", Journal of Sound and Vibration, 60, 371-377.

2. A.H. Nayfeh and S.G. Kelly, (1979) , "Nonlinear Propagation of Waves Induced by an Infinite Vibrating Cylinder", Journal de Physique, 40, 8-13.

3. S.G. Kelly and A.H. Nayfeh, (1980) , "Nonlinear Propagation of Directional Spherical Waves" , Journal of Sound and Vibrations, 72, 25-37.

4. S.G. Kelly and A.H. Nayfeh, (1981), "Nonlinear Propagation of General Directional Spherical Waves" , Journal of Sound and Vibration, 78, 145-156.

5. S.G. Kelly and A.H. Nayfeh, (1981) , "Nonlinear Propagation of Directional Cylindrical Waves" , Journal of Sound and Vibration", 79, 415-428.

6. S.G. Kelly, (1988), Development of Normal Mode Theory for Multi-Degree-of-Freedom Systems Using an Energy Inner Product", SIAM Review, Vol.30 , No.2

7. S.G. Kelly, (1988), "Natural Frequency and Mode Shape Perturbations for Linear Multi-Degree-of-Freedom Systems", SIAM Review, Vol. 30, No.4, 634-638.

8. S.G. Kelly, (1990), "Nonlinear Phenomena in a Column of Liquid in a Rotating U Tube Manometer", SIAM Review, Vol. 32, No.4, 652-659.

9. Gent, A., Suh, J.B., and Kelly, S.G., (2007), “Mechanics of Rubber Shear Springs”, International Journal of Nonlinear Mechanics, Vol.42, No.2, 241-249.

10. Suh, J.B., Gent, A., and Kelly, S.G., (2007), “Shear of Rubber Tube Springs”, International Journal of Nonlinear Mechanics, Vol.42, No.9, 1116-1126.

11. Kelly, SG and Srinivas, S., (2009) “Free Vibrations of Elastically Connected Stretched Beams”, Journal of Sound and Vibration Vol. 326, pp 883-893,

12. Kelly, SG, (2010) “Free Vibrations of Lightly Stretched and Lightly Coupled Elastically Connected Euler-Bernoulli Beams”, Contemporary Engineering Sciences, Vol. 3, No.4, pp 25-40.

13. Kelly, S.G., (2010), “Free and Forced Vibrations of Elastically Connected Structures”, Advances in Acoustics and Vibrations, Article ID 984361.

14. Suh, J.B. and Kelly, S.G., (2012), "Stress Analysis of a Rubber Block Under Vertical Loading", Journal of Engineering Mechanics, V. 138, pp. 770-783.

15. Suh, J.B. and Kelly, S.G. (2015), “Stress Response of Rubber Block with Frictional Contact Under Axial Loading”, International Journal of Nonlinear Mechanics, V. 68, pp. 41-51.

16. Kelly, S.G and Nicely, C. (2015), “Free Vibrations of a Series of Beams Connected by Viscoelastic Layers”, Advances in Acoustics and Vibrations, Article ID 976841

17. Hayman, E, and Kelly, S.G. (2014), “A Rayleigh-Ritz Method for the Minimization of Even -Order Hamiltonians That Uses the Gamma Function”, International Journal of Science and Applied Technology, V4, pp 35-38.

OTHER PUBLICATIONS

1. S.G. Kelly, (1982) , “Comments on a Uniformly Valid Asymptotic

Expansion" , Journal of Sound and Vibration, 80, 155-156.

2. S.G. Kelly, (1982) , "Mathematical Formulation of the Shear Layer Over an Open Cavity" , SCEEE Report.

3. S.G. Kelly, (1984) , "An Investigation of Compressible Flows Over Open Cavities Including Shear Layer Thickness Effects" , AFOSR Report.

4. S.G. Kelly, (1985) , "Free Vibrations of a Highly Stretched Variable Area Beam" , Developments in Mechanics, Vol. 13.

5. S.G. Kelly, F.K. Choy, A.B. Rahimi, and W.H. Li, (1985) , Determination of Nonlinear Bearing Characteristics Using Perturbation Methods", Developments in Mechanics, Vol. 13.

6. S.G. Kelly, F.K. Choy, W.H. Li, and A.B. Rahimi, (1986) , "Effects of Nonlinearities on the Design of a Finite Journal Bearing" , Spring National Design Conference, Chicago, IL.

7. S.G. Kelly, (1987), "High Frequency Transverse Vibrations of a Stretched Variable Area Beam", Developments in Mechanics, Vol., 14.

8. Husain, I., Anwar, M., and Kelly, S.G. (2001), "Effects of End Shields on the Stator Mode Frequencies of Electric Machines", Proceedings of the IEEE-IAS Conference, September, 2001.

PRESENTATIONS

1. S.G. Kelly and A.H. Nayfeh, (1979), "Nonlinear Propagation of Waves Induced by a Finite Vibrating Cylinder", Canadian Conference of Applied Mechanics, Sherbrooke, Canada, July 1979.

2. A.B. Rahimi and S.G. Kelly, (1986), "Formulation of Multiple Deck Structure for the Shear Layer Interaction with the Trailing Edge of an Open Cavity, Division of Fluid Dynamics of the American Physical Society, Columbus , OH, November, 1986.

3. S.G. Kelly and A.B. Rahimi, (1987), "Numerical Results for Multiple Deck Analysis of the Shear Layer Over an Open Rectangular Cavity", Division of Fluid Dynamics of American Physical Society, Eugene, OR.

4. S.G. Kelly and A. Rahimi, (1985), "A Non-Parallel Stability Theory for Compressible Inviscid Flows Over Open Cavities", Division of Fluid Dynamics of American Physical Society, Tucson, AZ.

5. S.G. Kelly and M. Selmi, (1987), "An Approximate analytical Solution to the Steady Flow Between Rotating Eccentric Cylinders at High Reynolds Numbers", Division of Fluid Dynamics of American Physical Society, Eugene, OR.

6. S.G. Kelly and T. Rohde, (1998), The Effects of Combination Resonance on the Performance of a Nonlinear Vibration Absorber, Seventh Conference on Nonlinear Vibrations, Stability, and Dynamics of Structures, July 26-30, 1998, Blacksburg, VA.

7. *Jim Lovell's Executive Forum,* Nationally syndicated television show taped Nov, 1998. Aired in Dec., 1998 and June, 1999. Moderated discussion of issues in Engineering Education with Deans from Howard University, Wayne State University, and Louisiana Tech University.

8. S.G. Kelly, H. Parthasarathi, S. Martin, and E. Pan (2004), "Free Response of a Series of Beams Connected by Nonlinear Layers", presented at 10th Conference on Nonlinear Vibrations, Stability, and Dynamics of Structures, July 26, 2004, Blacksburg, VA.

9. S.G. Kelly, E. Pan, H. Parthasarathi, and S. Martin (2004), "Timoshenko Beam Model for Free and Forced Vibrations of Multi-Walled Carbon Nanotubes", presented at 41st meeting of Society of Engineering Science, October 11, 2004, Lincoln, NE.

10. Slisik, J. and Kelly, S.G., "Stability of Fluid-Filled Carbon Nanotubes", presented at 43rd meeting of Society of Engineering Science, August 21, 2006, University Park, PA.

11. Suh, J.B., Kelly, S.G., and Pottinger, M.E., "Compression of Bonded Rubber Blocks Under Frictional Contact", presented at 43rd meeting of Society of Engineering Science, August 22, 2006, University Park, PA.

12. Gent, A.N., Suh, J.B., and Kelly, S.G., "Mechanics of Rubber Shear Springs", presented at 30th Annual Meeting of the Adhesion Society, February, Tampa, FL., February, 2007.

13. Gent, A.N., Suh, J.B., and Kelly, S.G., "Mechanics of Rubber Shear Springs", presented at 79h Annual Meeting of the Society of Rheology, Salt Lake City, UT, October 2007

AWARDS

1. Louis A. Hill, Jr. Award, The University of Akron, 2005.
2. Chemstress Outstanding Teaching Award, 1994.
3. University of Akron Faculty Appreciation Award, 1994.
4. ASME Outstanding Professor Award, 1986.
5. Elected to Theta Circle of Omicron Delta Kappa, 1989.

PROFESSIONAL ORGANIZATIONS

1. Tau Beta Pi, National Engineering Honorary Society
2. Phi Kappa Phi, National Honor Society
3. Sigma Xi, Scientific Research Society
4. American Institute of Aeronautics and Astronautics
   Vice chairman of St. Joseph valley Section, 1981-82
5. American Society of Mechanical Engineers
   Akron Section: Board of Directors 1984-86
   Newsletter Editor 1984-88
   Treasurer 1985-86
   Secretary 1986-87
   Vice chairman 1987-88
   Chairman 1988-89
6. Society for Industrial and Applied Mathematics
7. American Physical Society
8. National Association of Minority Engineering Program Administrators
9. American Society for Engineering Education.
10. Omicron Delta Kappa

FUNDED PROJECTS

1. "An Investigation of Compressible Flows Over Open Cavities

Including Shear Layer Thickness Effects", Air Force Office of Scientific Research, May 1983-August, 1984.

2. "Perturbation Methods for the Inverse Problem of Multi-Degree-of-Freedom Nonlinear Systems", with F.K. Choy, University of Akron Faculty Research Grant, 1985.

3. "Ohio Department of Transportation Seminar", Ohio Department of Transportation, 1988.

4. "Minority Pre-Engineering and Engineering Programs at The University of Akron", with A.B. McLain and P.C.K. Lam, NASA Lewis Research Center, 1990-1993.

5. "Contact Analysis of Spiral Bevel Gears", subcontract from University of North Dakota, 1993.

STUDENT ADVISING

1. Advisor to B.S.M.E. graduates in 1985 and 1986.

2. Preceptor to all Mechanical Engineering honors students enrolling in 1984, 1986, 1987, 1988, 1989, 1990, 1991, 1992, and 1993.

3. Preceptor for all undecided Engineering honors students enrolling in 1987, 1988, 1989, 1990, 1991, 1992, and 1993.

4. Advisor to post baccalaureate students admitted to the Mechanical Engineering Department from 1984-1987.

5. Member of Student Advisory Committee for numerous Ph.D. students and M.S. students.

6. Co-advisor to the Engineering Student Council,

7. Advisor to B.S.M.E. students since 2005.