

Innovative Teaching Techniques:

1.- Extensive use of hypertext interlinked web pages and the internet for course development and support. Course content and student progress uploaded to and continuously updated in custom designed Internet class pages. I have pioneered the concept of class portfolios where class pages contain information not only about policy and syllabus as well as lecture notes, homework assignments, sample problems, computer programs, and exams but, most importantly, links to student-developed web pages documenting their own achievements in the learning process.

Students in my courses are required to develop and maintain learning portfolios in their own web pages. Portfolios are reviewed periodically over the course of the semester. Together with my class web page, the student pages become a class portfolio which is readily and widely available on the internet (see <http://ww.ewp.rpi.edu/~ernesto>).

2. Students in most of my courses are often required to perform research projects fulfilling the following requirements:

- a) Intellectually challenging
- b) Academically sound
- c) Directly related to a topic contained in the course syllabus
- d) Directly related to an ongoing activity at their place of employment
- e) Personally interesting

Students periodically present project updates to the class and a final written report is submitted and also defended in front of the class. Reports are graded and contribute significantly to the final class grade.

3. Computer simulation laboratories. Students in most of my courses are required to experiment in computer simulation laboratories. Laboratories typically contain collections of software programs. The programs are designed and sequenced to match the course outline. Software utilized in the labs includes home-made, research as well as commercial codes.

4. New course development. I have conceived, developed and taught many new courses. On average, I have developed and delivered about 1-2 new courses every year over the past 20 years. New course contents design criteria are: a) high academic standards and b) industrial/business relevance. Average class size for new courses has been around 15.

5. New program development. I conceived, developed and have taught consistently new course and programs over the past 20 years.

- Since my arrival in 1987 and until 1995 I was actively involved in the development of

new curriculum and courses for our Master of Science in Metallurgy.

- Between 1991 and 1996, I developed and organized our first Graduate Certificate in the Engineering Department (Pollution and Waste Prevention in Manufacturing). I developed and taught three of the four courses in the certificate. Courses were taught on campus and also at various corporate sites.
 - Between 1995 and 1998 I taught a number of new courses in the Lally School of M&T at the Hartford campus.
 - Since 1997 I have been involved in the development of curriculum and oversight of our Graduate Certificate program in High Temperature Materials .
 - Between 1998 and 2004 I was responsible for the oversight of two new Graduate Certificate Programs in Decision Sciences and Engineering Systems (Quality and Reliability Engineering and Systems Modeling and Analysis) and I have taught the course Simulation Modeling and Analysis (subsequently changed to Discrete Event Simulation) which was part of the latter certificate.
 - Between 2002-2005 I was actively involved in the development of new curricula for all of our new Master of Engineering degrees. I was directly responsible for developing specific content for the Mechanical Engineering degree. I coordinated the creating of the necessary documentation to request and obtain approval from the CT Board of Higher Education to offer the new degrees in addition to the old.
 - Between 2005-2006 I was actively engaged in the process of developing a new cohort program for United Technologies Corporation in the general area of Product Quality and Process Certification. The end result of that effort was our flagship IPM Cohort Program being offered since 2007. I have developed and presented a new course in Statistical Methods in Reliability Engineering multiple times as part of this program.
 - Since 2005 I have participated in the creation, recruitment, operation and advising of cohort groups pursuing the Master of Engineering in mechanical Engineering degree for General Dynamics-Electric Boat in the Groton campus. Cohort MESE05 will start their program on Spring 2009.
 - Since 2007 I have been offering MANE-6980 Engineering Project in a 15-week, 3-hr long, classroom meeting format where I lead, coach and advise groups of students working in their culminating experience for the degree. As a result of this new format, the proportion of students who are able to complete the requirement within one academic term has increased significantly.
6. I have worked closely with United Technologies Learning Center staff in the development of proposed curricula for several Graduate Certificate and Degree Programs.

7. Distance Teaching. I have taught and continue to teach courses using distance education technology.
8. On-Site Teaching. I have taught complete courses as well as portions of courses at industrial on-site locations as needed.
9. Team Teaching. I have participated as team member in teaching courses both in the School of Engineering and in the School of Management.
10. Summer Teaching. I have taught several of our regular courses during the summer term as required. I was invited by Mexican institutions to give short summer courses in 1998, 1999, 2000, 2003, 2004 and 2005.
11. Summer Research. I have spent time each year in Saltillo/Monterrey, Mexico doing joint research with coworkers at CINVESTAV on the modeling of continuous thin strip casting of steel in the period 2000-2008.
12. I have been working closely with the Marketing team over the past 4-5 years to increase enrollment in our advanced Studies Program. The number of students in the Mechanical Engineering Program now is around 200 (almost 30% of the total number of students in the Hartford Campus).
13. I am listed by the Registrar's Office as the official Faculty Advisor to almost 200 students in the Mechanical Engineering Program. I am available to all these students around the clock to answer their questions and provide academic and curricular guidance, over the phone, e-mail or in person at my office in Room 746.

Educational Preparation

- (1) Baccalaureate and graduate degree(s), institution, date

Doctor of Philosophy in Metallurgy, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge MA, 1985.

Chemical Metallurgical Engineer, Department of Metallurgy, National University of Mexico, Mexico, 1978.

Non-degree preparation

I have made a personal commitment to attend and participate in professional and intellectual development activities on an on going basis and often at my own expense. Following is a list of activities.

International Summer School on Solidification and Casting of Metals, Sanga Saby, Sweden, 29 August - 2 September, 1988.

Kaizen and Quality Function Deployment, Hartford Graduate Center, Hartford, CT., October 30 - November 1, 1989.

NATO Advanced Study Institute and Seminars de Matematiques Superieures on Shape Optimization and Free Boundaries, University de Montreal Montreal, Canada, June 25 -July 13, 1990.

IMA Workshop on Free Boundaries in Viscous Flows, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, Minnesota, March 11-15 , 1991.
ASEE Faculty Professional Development Program: Introduction to Manufacturing, Massachusetts Institute of Technology, Cambridge, MA, June 17-28, 1991.

Course Heat Transfer Analysis by Finite Elements Methods Using Analysis 5.0, Computer Aided Engineering Associates, Woodbury, CT, April 13-15, 1992.

Ecole Polytechnique Workshop on Fractals In Engineering, Universite de Montreal, Montreal, Canada, June 3-5, 1992.

IMM Workshop on Computational Modeling of Materials with Evolving Microstructures, Institute for Mechanics and Materials, University of California, San Diego, CA, April 19-22, 1993.

IMA Summer Program on Modeling, Mesh Generation and Adaptive Numerical Methods for Partial Differential Equations, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, MN, July 1-31, 1993.

IMM Summer School: The Mechanics-Materials Linkage, Institute for Mechanics and Materials, University of Maryland, College Park, MD, August 9-20, 1993.

SFM Workshop on Materials Recycling: Technical Possibilities And Potential, Swedish Society for Materials Technology Royal Swedish Academy of Engineering Sciences, Stockholm, Sweden, April 19-20, 1994.

SIA Workshop on Casting and Solidification of Metals: From Research Results to Practical Applications, Swedish Ironmaster's Association, Bro, Sweden, May 25, 1994.

Workshop on Development Of High Integrity Powder Metallurgy Products Through Computer Modeling, Concurrent Technologies Corporation, Johnstown, PA., April 25-27, 1995.

IMM Workshop on Micromechanics In Materials Processing And Manufacturing, Institute for Mechanics and Materials, Brown University, Providence, RI., June 22-23, 1995.

Advances In Computational Fluid Dynamics: A Short Course, Louisiana Tech University, Ruston, LA, June 24-29, 1996.

Workshop on Introduction to Systems Thinking and the Stella Software, Durham, NH, August 5-8, 1996.

Mathematical Aspects Of Materials Science: Second Society Of Industrial And Applied Mathematics Conference, Philadelphia, PA, May 12-14, 1997.

International Symposium On Current And Future Challenges In Applied Mathematics, Brown University, Providence, RI, May 29-31, 1997.

Winter Simulation Conference, Washington D.C., December 13-16, 1989.

Mathematical Aspects of Materials Science, Third Conference of the Society for Industrial and Applied Mathematics, Philadelphia, PA , May 22-24, 2000.

Processing for Control of Microstructure Evolution and Performance, Gordon Research Conference in Physical Metallurgy, Holderness, NH, July 23-28, 2000.

Annual Colloquium on Teaching and Learning, RPI, Troy, May 7-8, 2001

Annual Colloquium on Teaching and Learning, RPI, Troy, May 13-14, 2002

Annual Colloquium on Teaching and Learning, RPI, Troy, May 12-13, 2003

National Science Foundation Summer School on Free Boundary Problems, Detroit, May 18-22, 2003

IMA Summer School on Probability and Partial Differential Equations, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, MN, July 21-25, 2003.

ADAPT03-The Joe Flaherty Conference, RPI, Troy, October 11-12, 2003

Gordon Research Conference in Tribology, Roger Williams University, Rode Island, June 27-July 2, 2004.

Gordon Research Conference in Physical Metallurgy, Holderness, New Hampshire, July 25-30, 2004.

Third Wave Systems-AdvantEdge Machining Modeling Software User's Conference, Dearborn, MI, May 3-5, 2005.

Annual Colloquium on Teaching and Learning, RPI, Troy, May 16-17, 2005

Eastec 2005 Exhibition, West Springfield, MA, May 24-25, 2005.

Modeling Materials Processing Conference, WPI, Worcester, MA, May 26, 2005.

The Third MIT Conference on Computational Fluid and Solid Mechanics, Cambridge, MA, June 14-17, 2005.

System Dynamics Society Conference, Boston, MA, July 17-21, 2005.

Laser Hole Drilling Conference, Hartford, CT, November 7-8, 2005.

COMSOL Workshop, Windsor, CT, May 3, 2006.

Introduction and Advanced Workshops on Simulation Modeling with Crystal Ball, May 9-10, New York City, NY, 2006.

Eastec 2006 Exhibition, West Springfield, MA, May 24-25, 2006.

International Conference of the CIRP on High Speed Machining, Vancouver, Canada, June 11-13, 2006.

Machining Modeling using CUTPRO, Vancouver, Canada, June 14-15, 2006.

Gordon Research Conference in Tribology, Waterville, ME, June 18-23, 2006.

Gordon Research Conference in Physical Metallurgy, Holderness, NH, July 25-30, 2004.

Third Wave Systems – User’s Conference – Modeling of Machining, Dearborn, MI, May 3-5, 2005.

Society of Manufacturing Engineers – EASTEC Advanced Productivity Exposition, West Springfield, MA, May 24-25, 2005.

Materials Modeling to Improve Processes and Products, Metal Processing Institute, Worcester Polytechnic Institute, Worcester, MA, May 26, 2005.

Third MIT Conference on Computational Fluid and Solid Mechanics, MIT, Cambridge, MA, June 14-17, 2005.

System Dynamics Society 2005 Conference, Boston, MA, July 17-21, 2005.

Laser Hole Drilling Workshop, Connecticut Center for Advanced Technologies, Hartford, CT, November 7-8, 2005

Introduction and Advanced Monte Carlo Modeling with Crystal Ball, Decisioneering, NYC, May 9-10, 2006.

Society of Manufacturing Engineers – EASTEC Advanced Productivity Exposition, West Springfield, MA, May, 2006.

Second International Conference in High Performance Cutting, CIRP, UBC Vancouver, Canada, June 12-13, 2006.

Introduction and Advanced CutPro, Manufacturing Automation Laboratories, UBC, Vancouver, Canada, June 14-16, 2006.

Gordon Research Conference in Tribology, Colby College, Waterville, ME , June 18-23, 2006.

Gordon Research Conference in Physical Metallurgy, Holderness School, Plymouth, NH, July 23-28, 2006.

Laser Hole Drilling Workshop, Connecticut Center for Advanced Technologies, Hartford, CT, October 26-27, 2006.

Third Wave Systems User's Conference, Seattle, WA, May 15-17, 2007 (Presenter).

Eastec Manufacturing Show and Exhibition, West Springfield, MA, May 22-23, 2007.

ESI-Short Intensive Course on Resin Transfer Molding Modeling, CCAT, East Hartford, CT, June 26-28, 2007.

International Conference in Industrial and Applied Mathematics, Zurich, Switzerland, July 16-20, 2007.

COMSOL User's Conference, October 4-6, 2007, Newton, MA (Presenter – 3 talks).

Siemens Aerospace Workshop, Middletown, CT, Feb 20, 2008

VisualMesh Training Workshop, ESI Group-CCAT, East Hartford, Feb 29, 2008

DEFORM Training Workshop, Scientific Forming Technologies-CCAT, East Hartford, Mar 25-27, 2008

Symposium for Aerospace Laser Applications, CCAT, East Hartford, April 2-3, 2008

SysWeld Training Workshop, ESI Group-CCAT, East Hartford, April 7-9, 2008

Eastec Manufacturing Show and Exhibition, West Springfield, MA, May 20-22, 2008.

Gordon Research Conference on Tribology, Colby College, Waterville, ME, June 6-11, 2008

Trumpf Laser Welding and Laser Metal Deposition Seminar, CCAT, East Hartford, CT August 14, 2008

International STEP-NC Meeting and Demonstration, UTRC/CCAT, East Hartford, October 1-2, 2008

COMSOL User's Conference, Boston, MA (Presenter, 3 papers – 3 talks)
October 9-11, 2008

Eastec Manufacturing Show and Exhibition, West Springfield, MA, May 19-21, 2009.

Workshop on Finite Element Modeling of Casting Processes using ProCast, Presented by ESI at the Connecticut Center for Advanced Technology, East Hartford, June 23-26, 2009

Gordon Research Conference on Physical Metallurgy, Proctor Academy, New Hampshire, August 2-7, 2009.

Laser Drilling Workshop CCAT,
East Hartford, CT, September 30, 2009

Material Day Workshop: Materials for Energy
Materials Processing Center, MIT, Cambridge, MA, October 9, 2009

II. Professional Experience

(Give postdoctoral, teaching, industrial, governmental, and private practice experience prior to joining Rensselaer, giving position, employer, and dates.)

Visiting Researcher, CINVESTAV-Salttillo, Mexico, summers 2001-2009.

Visiting Professor, CINVESTAV-Salttillo, Mexico, summers 2003, 2004, 2005, 2007, 2009

Visiting Professor, Trinity College, Hartford, CT, Spring 1995, 1996, 1997, 2001.

Visiting Lecturer, Mexican Iron and Steel Society, Monterrey, Mexico, July 2000.

Visiting Lecturer, Mexican Iron and Steel Society, Monterrey, Mexico, July 1999.

Visiting Lecturer, School of Engineering, Universidad Iberoamericana, Mexico, June 1998,
June 2003

Visiting Researcher, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, Summer 1995

Visiting Researcher, Swedish Institute for Metals Research, Stockholm, Sweden, January – August 1994

Technical Consultant, private practice, 1/79 to date.

Expert Translator, private practice, 1/78 to date.

Postdoctoral Associate, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, 9/85-6/87.

Visiting Scientist, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, Summer 1995

Lecturer in Materials Science, Department of Metallurgy, National University of Mexico, Mexico, 1/78-12/79.

III. Teaching

A. Courses

(List the number and title of each course taught and approximate number of students in each course; Include undergraduate project supervision and courses that you have supervised with the number of instructors and students involved.)

For detailed information about the courses below please refer to the webpage http://www.ewp.rpi.edu/hartford/~ernesto/ernesto/egm_courses.html

Course	Course Title	Term	Students	Location
36446	Metall. Transf.	Fall 1987	11	Hartford
36606	Kin. of Matl's Reacns	Spring 1988	15	Hartford
36496	Topics: Materials Applicns	Spring 1988	26	Hartford (1/3)
36611	Diffusion in Solids	Summer 1988	5	Hartford
36645	Melting and Solidif.	Fall 1988	5	Hartford
36421	Mech. Prop. of Matl's	Fall 1988	13	Hartford (1/2)
37696 Topics:	Manuf. Matls & Proc.	Spring 1989	28	Hartford
36851	Srength. Mech. Solids	Spring 1989	7	Hartford(1/3)
36431	Corrosion	Spring 1989	8	Hartford(1/3)
37696 Topics:	Manuf. Matls & Proc.	Summer 1989	25	Groton
36601	Defects in Solids	Summer 1989	4	Hartford(1/2)
36683	Def. Matls & Rheology	Fall 1989	3	Hartford (1/2)
36606	Kin. of Matl's Reaction	Spring 1990	8	Hartford
36696 Topics:	Machining	Summer 1990	11	Hartford
36496 Topics:	Statis. Qual. Con.	Summer 1990	12	Hartford
36625	Powders & Sintering	Summer 1990	5	Hartford (1/2)
36421	Mech. Prop. of Matl's	Fall 1990	14	Hartford
36696	Microelectronics Matl's	Fall 1990	10	Hartford
37663	Conduction Heat Transfer	Fall 1990	24	Hartford
36807	Engineering Materials	Spring 1991	12	Hartford
36410	Thermodyn. of Solids	Fall 1991	13	Hartford
36696 Topics :	Pollution & Waste Mfg	Fall 1991	21	Hartford
37663	Conduction Heat Transfer	Fall 1991	15	Groton

IV. Teaching(Cont)

Course	Course Title	Term	Students	Location
36606	Kin. of Matl's Reactions	Spring 1992	10	Hartford(2/3)
36696 Topics:	Clean Tech. Metals Proc.	Spring 1992	26	Hartford
266	Mechanics II	Spring 1992	6	Trinity Coll. (Xchg)
36611	Diffusion in Solids	Summer 1992	6	Hartford
36696 Topics:	Clean Tech. Metals Proc.	Summer 1992	14	UTC (OL)
36470	Comp. Exp. in Matl's Eng	Fall 1992	5	Hartford
36696 Topics:	Poll. Free Plastics Proc.	Fall 1992	9	Hartford
37663	Conduction Heat Transfer	Fall 1992	16	Hartford
36696 Topics:	Poll. Free Plastics Proc.	Fall 1992	17	UTC (OL)
36696 Topics:	Pollution & Waste Prev.	Spring 1993	37	Hartford (1/3) DL Trinity Coll.
266	Mechanics II	Spring 1993	10	(XChg)
36496 Topics:	Pollution & Waste Mfg	Fall 1993	14	Hartford (1/3)
<i>Note: Sabbatical Leave at the Swedish Institute for Metals Research,</i>		<i>January - August 1994.</i>		
37663	Conduction Heat Transfer	Fall 1994	8	Hartford
37663	Conduction Heat Transfer	Fall 1994	28	Groton
36696 Topics:	Poll. Free Plastics Proc.	Fall 1994	13	Hartford
36696 Topics:	Advanced Machining	Spring 1995	18	Hartford (OL)
36496 Topics:	Pollution & Waste Prev.	Spring 1995	11	Hartford
36496 Topics:	Light Metal Alloys	Spring 1995	7	Hartford(1/3) Trinity Coll.
325	Strength of Materials	Spring 1995	7	(XChg)
36421	Mech. Props of Matl's	Fall 1995	15	Hartford
36496 Topics:	Pollution & Waste Mfg	Fall 1995	11	Hartford
265830	Math. of Eng. & Sci. II	Spring 1996	5	Groton
36431	Corrosion	Spring 1996	5	Hartford
36661	Deformation Processing	Spring 1996	14	Hartford
20696	Ind. Air Pollut. Prev.	Spring 1996	9	Hartford (1/3) Trinity Coll.
232L	Engineering Matls.	Spring 1996	30	(XChg)

Teaching (Cont.)

Course	Course Title	Term	Students	Location
36606	Kin. of Matls. Reacts.	Fall 1996	5	Hartford
36696 Topics:	Frict. & Wear Mtls	Fall 1996	19	Hartford
265441	Numerical Computing	Spring 1997	14	Groton
20696003	Ind. Water Pollut. Prev.	Spring 1997	13	Hartford (1/2)
36645	Melting and Solidif.	Spring 1997	10	Hartford
80696726	Mgt. Tech. & Soc. (MOT)	Spring 1997	17	Hartford
232L	Engineering Matls	Spring 1997	9	Trinity Coll.(XChg)
80696726	Mgt. Tech. & Soc. (MOT)	Spring 1997	17	UTC (OL)
36696	Math. Model. Matls Proc	Summer 1997	6	Hartford
80687	Intro to Env. Techn.	Summer 1997	9	Hartford (OL)
37696022 and 80696322	Model. & Analys. Mfg Sys	Fall 1997	17	Hartford
37663	Conduction Heat Transfer	Fall 1997	10	Hartford
80715090	Techn. Trends (MOT)	Fall 1997	15	Hartford
20696002	Ind. Air Poll. Prev. Contr.	Fall 1997	21	Hartford (1/3) /(OL/DL)
265830	Math. of Eng. and Sci	Spring 1998	14	Groton
180680	Ethical, Pol. and Leg. Cont of Bus	Spring 1998	16	Hartford(OL)
280688	Mgmt of Environmental Techn.	Spring 1998	19	Groton
	Computational Corrosion	Summer 1998	8	U. Ibero (Mex)
MANE-6980	Graduate Project	Fall 1998	1	Hartford
MATH-7020	Math. of Eng. and Sci.	Fall 1998	16	Hartford
MGMT-696	Clean Techn. Analysis	Fall 1998	17	Hartford
MANE-6980	Graduate Project	Spring 1999	2	Hartford
MGMT-7150	Tech. Trends	Spring 1999	18	Hartford
MATH-4960	Numerical Computing	Spring 1999	18	Groton
MATH-4960	Numerical Computing	Spring 1999	23	Hartford
MEAE-696 and MGMT-6960	Model. Analys. Manuf. Systems	Spring 1999	28	Hartford
MANE-6900	Graduate Seminar	Summer 1999	1	Hartford
	Phys. Met. & Therm. Proc. Steel	Summer 1999	40	ISS, Monterrey, Mexico
MANE-6900	Graduate Seminar	Fall 1999	2	Hartford

DSES-6620	Simulation Modeling & Analysis	Fall 1999	8	Hartford
MEAE-4960	Numerical Analysis for Eng.	Fall 1999	21	Hartford
MANE-6900	Graduate Seminar	Spring 2000	2	Hartford
MEAE-6630	Conduct. Heat Transf.	Spring 2000	22	Hartford/Groton
MEAE-7010	Math of Eng. & Sci.	Spring 2000	10	Groton
MANE-6900	Graduate Seminar	Summer 2000	1	Hartford
	Phys. Met. & Therm. Proc. Steel	Summer 2000	35	ISS, Monterrey, Mexico
MANE-6900	Graduate Seminar	Fall 2000	3	Hartford
DSES-6620	Simulation Modeling and Analysis	Fall 2000	17	Hartford
MEAE-7010	Math of Eng. & Sci.	Fall 2000	26	Hartford
MANE-6900	Graduate Seminar	Spring 2001	2	Hartford
MANE-6980	Graduate Project	Spring 2001	2	Hartford
MEAE-4960	Numerical Analysis for Eng.	Spring 2001	26	Hartford
MEAE-6960	Model. Analys. Manuf. Systems	Spring 2001	9	Hartford
MANE-6900	Graduate Seminar	Summer 2001	2	Hartford
MANE-6900	Graduate Seminar	Fall 2001	7	Hartford
MEAE-4960	Numerical Analysis for Eng.	Fall 2001	27	Hartford
DSES-6620	Simulation Modeling and Analysis	Fall 2001	10	Hartford
MANE-6900	Graduate Seminar	Spring 2002	3	Hartford
MEAE-6630	Conduct. Heat Transfer.	Spring 2002	6	Groton
DSES-6620	Simulation Modeling and Analysis	Spring 2002	12	Sikorksy
MEAE-6630	Conduction Heat Transfer.	Spring 2002	18	Hartford
MANE-6900	Graduate Seminar	Summer 2002	1	Hartford
MANE-6980	Graduate Project	Summer 2002	1	Hartford
MANE-6900	Graduate Seminar	Fall 2002	1	Hartford
DESE-6620	Discrete Event Simulation	Fall 2002	12	Hartford
MANE-7010	Math of Engineering and Science	Fall 2002	25	Hartford/Groton
MANE-6900	Graduate Seminar	Spring 2003	4	Hartford
MANE-6980	Graduate Project	Spring 2003	2	Hartford
MANE-4960	Numerical Analysis for Eng.	Spring 2003	16	Hartford Hartford
MANE-6960	Model & Analysis of Mfg. Processes	Spring 2003	18	Hartford
MANE-6900	Graduate Seminar	Summer 2003	3	Hartford

MANE-6980	Graduate Project	Summer 2003	1	Hartford
MANE-6900	Graduate Seminar	Fall 2003	3	Hartford
MANE-7010	Math of Engineering & Science II	Fall 2003	32	Hartford
MANE-6900	Seminar in Mec.	Fall 2003	3	Hartford
MANE-6900	Graduate Seminar	Spring 2004	5	Hartford
MANE-6630	Conduction Heat Transfer	Spring 2004	5	Hartford
MANE-6960	Friction & Wear of Materials	Spring 2004	17	Hartford
MANE-6900	Graduate Seminar	Summer 2004	4	Hartford
MANE-6980	Graduate Project	Summer 2004	1	Hartford
MANE-6900	Graduate Seminar	Fall 2004	7	Hartford
MANE-6980	Graduate Project	Fall 2004	1	Hartford
MANE-7000	Advanced Eng. Mathematics II	Fall 2004	6	Hartford
MANE-4240	Intr to Finite Element Methods	Fall 2004	5	Hartford
MANE-6900	Graduate Seminar	Spring 2005	5	Hartford
MANE-7000	Advanced Eng. Mathematics II	Spring 2005	18	Hartford
MANE-7100	Mechanical Eng Foundations II	Spring 2005	20	Hartford
MANE-6900	Graduate Seminar	Fall 2005	5	Hartford
MANE-6980	Graduate Project	Fall 2005	4	Hartford
MANE-6960	Modeling & Analy. Machining Syst.	Fall 2005	5	Hartford
MANE-7100	Mechanical Eng Foundations II	Fall 2005	27	Hartford/Groton
MANE-7000	Advanced Eng. Mathematics II	Spring 2006	39	Hartford/Groton
MANE-6630	Conduction Heat Transfer	Spring 2006	8	Hartford
MANE-6900	Graduate Seminar	Summer 2006	10	Hartford
MANE-6980	Engineering Project	Summer 2006	2	Hartford
MANE-7100	Mechanical Eng Foundations II Engineering Project (weekly class mode)	Fall 2006	18	Groton
MANE-6980	Engineering Project (weekly class mode)	Fall 2006	10	Hartford
MANE-6900	Graduate Seminar	Fall 2006	10	Hartford
DSES-6070HV1	Statist. Meth. Reliability Eng	Spring 2007	5	Hartford
DSES-6070HV2	Statist. Meth. Reliability Eng	Spring 2007	12	Hartford
MANE-7000	Adv. Eng. Math II Engineering Project (weekly class mode)	Spring 2007	31	Hartford
MANE-6980	Engineering Project (weekly class mode)	Spring 2007	8	Hartford
MANE-6990	Engineering Thesis	Spring 2007	1	Hartford
MANE-6900	Graduate Seminar	Spring 2007	3	Hartford

MANE-6980	Engineering Project	Summer 2007	3	Hartford
MANE-6900	Graduate Seminar	Summer 2007	1	Hartford
DSES-6070HV3	Statist. Meth. Reliability Eng	Fall 2007	19	Hartford
DSES-6070HV2	Statist. Meth. Reliability Eng	Fall 2007	13	Hartford
MANE-6960	Topics: Friction and Wear	Fall 2007	10	Hartford
MANE-6980	Engineering Project	Fall 2007	1	Hartford
MANE-6990	Engineering Thesis	Fall 2007	1	Hartford
MANE-6900	Graduate Seminar	Fall 2007	4	Hartford
MANE-6940	Studies in Conduct. Heat Transf.	Fall 2007	1	Hartford
MANE-7000	Advanced Eng. Mathematics 2	Spring 2008	14	Groton
MANE-6980	Mechanical Engineering Project	Spring 2008	12	Hartford
DSES-6070	Statistical Methods Reliability Eng	Spring 2008	22	Stratford
MANE-6980	Mechanical Engineering Project	Summer 2008	6	Hartford
DSES-6070 (Overload)	Statistical Methods Reliability Eng	Summer 2008	21	Hartford/Maine
MANE-7100	Mechanical Engineering Found 2	Fall 2008	21	Groton
MANE-6980 Hartford	Mechanical Engineering Project	Fall 2008	12	Groton and
DSES-6070 Maine	Statistical Methods Reliability Eng	Fall 2008	15	Hartford & DE
MANE-7000	Advanced Eng. Mathematics 2	Spring 2009	34	Hartford
MANE-6980	Mechanical Engineering Project	Spring 2009	10	Hartford
MANE-6980	Mechanical Engineering Project	Summer 2009	9	Hartford
MANE-6960	Topics: Friction and Wear of Mtls	Fall 2009	9	Hartford
MANE-6630	Conduction Heat Transfer	Fall 2009	8	Hartford
MANE-6980	Mechanical Engineering Project	Fall 2009	10	Hartford

B. Student Thesis Supervision

1. Thesis Completed

(List student's name, title of thesis and year completed.)

a. Bachelors

NONE

b.1 Master's Thesis, Master's Projects, Master's Seminars

Analysis Of Corrosion Reactions In A Monel/70cu-30ni Joint In A Seawater Environment, C.J. Colombo, Master's Completion Seminar, Metallurgy, 1987.

Coal Characteristics and Boiler Design, L.D. Thomas, Master's Completion Seminar, Metallurgy, 1988.

Modeling The Thermal Behavior of The Weld Zone during Gas Tungsten Arc Welding of Tubing Using a Two-Dimensional Computer Simulation, K.J. Zacharias, Master's Completion Seminar, Metallurgy, 1988.

Applications And Processing of Superconductors, M. Ehrlich, Master's Completion Seminar, Metallurgy, 1988.

Method for Phase Diagram Computation, J.B. Connolly, Master's Completion Seminar, Metallurgy, 1988.

Segregation of a Binary Alloy During Solidification, R.M. Zimmerman, Master's Completion Seminar, Metallurgy, 1988.

Carburization Modeling and Experiment, J.H. Mutchler, Master's Completion Seminar, Metallurgy, 1988 (Subsequent publication).

Mathematical Model of Isothermal Solidification During Repair of a Crack in a Cobalt Based Superalloy High Pressure Turbine Vane, N. Pietruska, Master's Completion Seminar, Metallurgy, 1988.

Evaluation Of Airfoil Recrystallized Grains On A Single Crystal Turbine Stator Vane, M.Z.A. Razzaq, Master's Completion Seminar, Metallurgy, 1988.

Basic Stress Limits in the ASME Boiler And Pressure Vessel Codes And Their Relationship To Limit Analysis, W.L. Allan, Master's Completion Seminar, Metallurgy, 1988.

Computer Modeling Of Glass Flow During Hot Pressing Using The Discrete Particle Technique, G. Linsey, Master's Completion Seminar, Metallurgy, 1988. (Subsequent publication).

Equilibrium Compositions Using Solgasmix-PV, T.G. Godward, Master's Completion Seminar, Metallurgy, 1989.

Investigation of Internal Transverse Cracking Of Large Diameter Monel K-500 Bar, J.J. Rowan, Master's Completion Seminar, Metallurgy, 1989.

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Using Computer Simulation to Predict The Optimal Parameters For Brazing Of A Carbide Wear Disk To An Air Hardening Steel Piston, K. Freeburger, Master's Completion Seminar, Metallurgy, 1989.

An Evaluation of Brazing of Stainless Steel, D.S. Brzezowski, Master's Completion Seminar, Metallurgy, 1989.

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The Microstructural Characterization of Hastelloy X And C101 When Laser Machined at Various Power Levels Using Three Assist Gases, T.F. Smith, Master's Completion Seminar, Mechanical Engineering, 1992.

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Property Investigation and Characterization of a Selectively Laser Sintered Aluminum Alloys, Angelina Cheung, Master's Completion Project, Mechanical Engineering, 2006. (3 credits)

A Study of Steady and Time-Dependent Thermo-Mechanical Stresses in Isotropic and Functionally Graded Simply Supported Plates, Stephen Cicalone, Master's Completion Project, Mechanical Engineering, 2006. (3 credits)

Spall Progression Test for Gas Turbine Main Bearings, Frances M. Figueroa-Rodriguez, Master's Completion Project, Mechanical Engineering, 2006. (3 credits).

A Study of Processing and Characteristics of Titanium-Aluminum Laminates for Advanced Heat Exchanger Applications, Carmen L. Gonzalez Camacho, Master's Completion Project, Mechanical Engineering, 2006. (3 credits).

Numerical Analysis of Heat Conduction and Phase Transformation in a Steel Slab Irradiated by a High Energy Density Laser, Eric Rogers, Master's Completion Project, Mechanical Engineering, 2006. (3 credits).

A Study of the Dynamic Response of a Planetary Gearbox in a Turbofan Engine, Eric F. Stamper, Master's Completion Project, Mechanical Engineering, 2006. (3 credits).

Analysis of Waterhammer in a Piping System, Kristen Niforos, Master's Completion Project, Mechanical Engineering, 2006. (3 credits).

Studies of Fully Developed Laminar Flow and Convective Heat Transfer between Plates and Through a Tube, Barbara R. Baron, Master's Completion Project, Mechanical Engineering, 2006. (3 credits).

Design Considerations for Cavitation in Aircraft Gas Turbine Engine Fuel Pumps, Jennifer X. Elder, Master's Completion Seminar, Mechanical Engineering, 2006.

A Study of The Bolt Hole Resistance Weld Repair Process, Philip Scala, Master's Completion Seminar, Mechanical Engineering, 2006.

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A Study of the Evolution of Delta Phase in Inconel 718 Alloy caused by Post-Repair Heat Treatment Cycles, Allan S. Dygon, 2007. (3 credits).

Stress Analysis of Carbon Fibre Reinforced Polymer Matrix Composite Plates and Laminates containing Circular Holes, Yafet Girma, 2007. (3 credits).

Analysis of Machined Belows for High temperatures and Pressures Applications, Jorge E. Hidalgo, Master's Completion Project, Mechanical Engineering, 2007. (3 credits).

Numerical Modeling of the Mitral Valve to Show Mitral Stenosis and Mitral Regurgitation, Kendra Stafford, Master's Completion Project, Mechanical Engineering, 2007. (3 credits).

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A Study of Constrained Pressure Vessels: A Look at the Oxygen Bottle of the US Space Suit, Michael J. Santos, Master's Completion Project, Mechanical Engineering, 2007. (3 credits).

A Study of Solidification Heat Transfer of Copper using a CSP Mold, Steven Gautschi, Master's Completion Seminar, Mechanical Engineering, 2007.

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Performance Analysis of the Warren-Brayton Engine and comparison with Contemporary Spark-Ignition, Diesel and Wankel Rotary Engines, Henry, E. Voegeli, Master's Completion Seminar, Mechanical Engineering, 2007.

The Effect of Secondary Crystalline Orientation on Local Stress Fields in a Directionally Solidified Nickel Superalloy, Jeffrey M. Jacques, Master's Completion Seminar, Mechanical Engineering, 2007.

J. Albernaz, Bending Analysis of Laminated Composite Sandwich Plates reinforced with Carbon Nanotube Forests, Master's Thesis, Mechanical Engineering, 2007 (Co-advisor) (6 credits).

Stress Analysis of a Functionally Graded Hollow Cylinder subject to Axis-symmetric Steady-State Loads, B. A. Nelson, Master's Completion Seminar, Mechanical Engineering, May 2008.

Analytical Modeling of Edge-of-Contact Stresses due to Sliding Contact as it Varies with Friction, Fidelity of Model and Stress Relievers, M. Forcier, Master's Completion Project, Mechanical Engineering, May 2008. (3 credits).

A Comparison of the Predicted Mechanical Behavior of Lug Joints using Strength of Materials Models and Finite Element Analysis C.A. Stenman, Master's Completion Project, Mechanical Engineering, May 2008. (3 credits).

High Speed Tapered Roller Bearing Stress Optimization, B. Walker, Master's Completion Project, Mechanical Engineering, May 2008. (3 credits).

Uncertainty in Plasma Sprayed Thermal Barrier Coating Life, K. Mentz, Master's Completion Seminar, Mechanical Engineering, May 2008.

Optimization of Reinforcement Methods for Non-Round Pressure Vessels, S. McMahon, Master's Thesis, May 2008. (6 credits).

A Study of a Combined 2D Axis-symmetric and 3D Cyclically Symmetric Finite Element Model of a Turbine Disk, E.A. Davis, Master's Completion Project, Mechanical Engineering, May 2008. (3 credits).

Velocities, pressures and Temperature Distributions near a Stagnation Point in Planar Incompressible Laminar Flow, E.D. Kaufman, Master's Completion Seminar, Mechanical Engineering, May 2008.

Stress Analysis of Cylinders with Transitioning Diameters, K.L. Corcoran, Master's Completion Seminar, Mechanical Engineering, May 2008.

Helicopter Stub Wing - Finite Element Modeling, B. Chukrallah, Master's Completion Project, Mechanical Engineering, May 2008. (3 credits).

Steady State Heat Transfer of a Flat Plate with Cooling Hole in a High Temperature Environment K. Vu, Master's Completion Project, Mechanical Engineering, May 2008. (3 credits)

Dependence of Fracture Toughness of Ceramic Thermal Barrier Coatings on Microstructure, D.T. Tran, Master's Completion Project, Mechanical Engineering, June 2008. (3 credits)

Prediction of Reed Switch Operation with a Finite Element Magnetic Field Model, B. M. La Barge, Master's Completion Project, Mechanical Engineering, August 2008. (3 credits).

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A Study in Spur Gear Scoring, A. Amador, Master's Completion Project, Mechanical Engineering, August 2008. (3 credits).

Pressure Drop Comparison Study, A.H. Towne, Master's Completion Project, Mechanical Engineering, August 2008. (3 credits).

Fluid Velocity Application about Horizontal Axis Wind Mills, D.J. Aloï, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Analysis of Planing Hydrodynamics using Computational Fluid Dynamics, N.D. Barnett, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Estimation of Crack Opening Displacement and Leak Rates through a Through-Flaw in Aerospace Pressure Vessels, C. Bonn, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

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Vibratory Analysis of Turbomachinery Blades, M. Hassan, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Energy Approach to Damage Mechanics for Ti-6Al-4V, D.J. Hawes, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Numerical Study using FLUENT of the Separation and Reattachment Points for Backward-Facing Step Flow, L. Jongbloed, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Modeling Contact of Two Parallel Cylinders, P.J. Loïselle, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Optimum Performance of Cutting Edges in Hacksaws, J. T. Novak, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Frequency Response Cyclic Stress Prediction in Bolted Joints, B. Petrarca, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Elastic-Plastic Behavior of a Cylinder subject to Mechanical and Thermal Loads, P.P. Poworoznek, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Stress Concentration Factor Convergence Study of a Flat Plate with an Elliptical Hole Under Elastic Loading Conditions, D. Snowberger, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

Contact Stress Concentration due to Surface Irregularity in Cylindrical Rolling Element Bearings
J.A. Scarcella, Master's Completion Project, Mechanical Engineering, December 2008. (3 credits).

A Feasibility Study of "Cold Metal Transfer" - Gas Metal Arc Welding (CMT-GMAW) Nickel Base Superalloy Inconel718, Timothy P. Hasselberg, Master's Thesis, Mechanical Engineering, April 2009. (6 credits).

A Study in the Prediction of Residual Stresses in Shot Peening Robert Howard, Master's Thesis, Mechanical Engineering, April 2009. (6 credits).

Stress Analysis of a Fiber Reinforced Polymer Matrix Orthotropic Plate with an Elliptical Hole
Matthew J. Tauris, Master's Completion Project, Mechanical Engineering, April 2009. (3 credits).

Stress Analysis and Optimization of a Composite T-section, James Glaspey, Master's Completion Project, Mechanical Engineering, April 2009. (3 credits).

A Comparative Modeling Study of Turbofan Ice Panel Materials, James J. McPhail, Master's Completion Project, Mechanical Engineering, April 2009. (3 credits).

Numerical Benchmarking of Tip Vortex Breakdown in Axial Turbines, Eunice Allen-Bradley, Master's Completion Project, Mechanical Engineering, April 2009 (Co-advisor; Main advisor: Dr. Tew – 3 credits)

Thermo-elastic Stresses in High Temperature Coatings, Steven Ly, Master's Completion Project, Mechanical Engineering, April 2009. (3 credits).

A Comparison of Deterministic Design v. Probabilistic Design Practices and the Corresponding Effects on Analysis of an Elliptical Hole in Plate Model, John Battye, Master's Completion Project, Mechanical Engineering, April 2009. (3 credits).

Analysis of Bolting in Flanged Connections, Jordan C. Baker, Master's Completion Project, Mechanical Engineering, April 2009. (3 credits).

Radiative Heat Transfer Analysis of a Simple Parabolic Trough Solar Collector using the Monte Carlo Method, Jeffrey Chang, Master's Completion Project, Mechanical Engineering, April 2009. (3 credits).

Cooling Flow through an Annulus Pipe in a Non-Intrusive Stress Monitoring System (NSMS) Probe
Jeffrey A. Douglas, Master's Completion Project, Mechanical Engineering, August 2009. (3 credits).

An Analysis of Heat Conduction with Phase Change during the Solidification of Copper, Jessica L. Michalski, Master's Completion Project, Mechanical Engineering, August 2009. (3 credits).

Structural Optimization of a Thermally Loaded Functionally Graded Pressure Vessel
Jeffrey C. Youngs, Master's Completion Project, Mechanical Engineering, August 2009. (3 credits).

A Study of the Effect of Aluminide Coating Formation on the Deformation of an Inconel 600 Coating
Boat Lid, Sergio L. Moren, Master's Completion Project, Mechanical Engineering, August 2009. (3
credits).

Design and Analysis of a Spiral Bevel Gear, Matthew D. Brown, Master's Completion Project,
Mechanical Engineering, August 2009. (3 credits).

Deformation of Functionally Graded Pressure Vessels, Matthew Nealon, Master's Completion Project,
Mechanical Engineering, August 2009. (3 credits).

Beams with Flat Stiffened Webs in Incomplete Diagonal Tension, Cezar I. Moisiade, Master's
Completion Project, Mechanical Engineering, August 2009. (3 credits).

A Study of Tin Wisker Growth in Electronics, Patrick L. Clavette, Master's Completion Project,
Mechanical Engineering, August 2009. (3 credits).

A Designer's Approach for Optimizing an End-Loaded Cantilever Beam while Achieving Structural
Requirements, Timothy Demers, Master's Completion Project, Mechanical Engineering, December
2009. (3 credits).

A Study of the Effects of Design Features on the Flow Forces of Pressure Regulating Spool Valves,
Frank Henderson, Master's Completion Project, Mechanical Engineering, December 2009. (3 credits).

A Study of the Effect of Imperfections on Buckling Capability of Thin Cylindrical Shells Under Axial
Loading, Lauren Kougias, Master's Completion Project, Mechanical Engineering, December 2009. (3
credits).

3D Imaging of Turbine Blade for Comparative Stress Analysis between Ideal Part Design to As Built
Part, Nasir Mannan, Master's Completion Project, Mechanical Engineering, December 2009. (3
credits).

Analysis of a Turbocharged Diesel Engine, Jenelle Pope, Master's Completion Project, Mechanical
Engineering, December 2009. (3 credits).

Reduction of Friction in a Plastic Reciprocating Arm, Swamy Ranga, Master's Completion Project,
Mechanical Engineering, December 2009. (3 credits).

Parametric Study of an Ejector-Cooled Turbine Engine Compartment using CFD, Mike Kazlauskas,
Master's Completion Project, Mechanical Engineering, December 2009. (3 credits).

Replacement of Hard Chrome Electroplating by Tungsten Carbide based High Velocity Oxygen Fueled
Thermal Spray, Matthew Leahey, Master's Completion Project, Mechanical Engineering, December
2009. (3 credits).

An Analysis of Axial Load Distribution in a Spline Coupling, Justin McGrath, Master's Completion Project, Mechanical Engineering, December 2009. (3 credits).

Investigation and Application of a Multi-Physics Modeling Methodology for Component Noise Reduction, Stephen Nichols, Master's Completion Project, Mechanical Engineering, December 2009. (3 credits).

Numerical Study of the Vibration of a Periodically Supported Beam, Brandon Rush, Master's Completion Project, Mechanical Engineering, December 2009. (3 credits).

An Analysis of Stress Concentration in Compound Fillets Produced during Dimensional Restoration Repair, Steven Townes, Master's Completion Project, Mechanical Engineering, December 2009. (3 credits).

Optimal Fixture Schemes for Titanium Ti-6Al-4V Disk in a Vertical Turning Numerically Controlled Lathe Machine, Maureen Fang, Master's Completion Thesis, Mechanical Engineering, December 2009. (6 credits).

Application of the Monte Carlo Method to the Simulation of Thermal Radiation Heat Transfer in a Simple Gas Turbine Combustor, Johnathan Williams, Master's Completion Thesis, Mechanical Engineering, December 2009. (6 credits).

c. **Doctoral**

- 1) Thesis Supervisor
(After listing these, ad number of theses in which you participated as a committee member).

None. No PhD program or students at Rensselaer-Hartford.

1a) Thesis Examination Committee

Heat Transfer Modeling in Thin Slab Casting of Steel, Julian Montes, PhD, Metallurgical Engineering, CINVESTAV-Salttillo, Mexico, October 2008

Fluid Flow and Mixing in Pachuca Tank Reactors, Esperanza Rodriguez, PhD, Metallurgical Engineering, CINVESTAV-Salttillo, Mexico, October 2008

Fluid Dynamics of Secondary Cooling Air-Mist Jets, Irma Hernandez, PhD, Metallurgical Engineering, CINVESTAV-Salttillo, Mexico, October 2008

C. Course and Curriculum Development

Between 1987 and today I:

taught more than 80 courses

conceived, developed and delivered more than 30 distinct new courses

taught about 10 course overloads;

taught 5 courses in an academic exchange with Trinity College

taught courses on site and via distance education

taught intensive short courses abroad.

In 1991 I was assigned primary responsibility for curriculum developing and course teaching of the new “Graduate Certificate in Pollution and Waste Prevention in Manufacturing” . During the first 3 years of the program over 40 students completed the four required courses and almost 200 students took at least one course. Many of these students later used the credits to pursue their degrees at Rensselaer

In 1996 I was assigned to carry out an exploratory investigation of the potential market for a new Graduate Certificate in Manufacturing Engineering Management. A proposed curriculum was developed and refined with feedback obtained from CT manufacturing companies. Preliminary results were encouraging but not definitive so the decision to start the program was put on hold.

From 1996 to 1998 half of my course load was assigned to the Lally School of Management.

In late 1998 I was assigned to explore the potential of expanding the presence of the DSES department in Hartford. A proposal to offer two new Graduate Certificates (Quality and Reliability Engineering and Systems Modeling and Analysis) was developed by the head of DSES at Troy and I have been investigating the possibility of breaking into the untapped market represented by the Insurance, Financial, Banking and other service industries.

I was actively involved in the development of new curricula for all of our new Master of Engineering degrees. I was directly responsible for developing specific content for the Mechanical Engineering degree. The new curriculum has been offered since Fall 2004. Students seeking this degree constitute the largest proportion of students within the Department of Engineering and Science.

I was involved in the process of developing a new cohort program for United Technologies Corporation in the general area of Product Quality and Process Certification (Industrial Process Management). The end result of that effort was our flagship IPM Cohort Program being offered since 2007. I have developed and presented a new course in Statistical Methods in Reliability Engineering as part of this program.

I have participated in the creation and operation of cohort groups pursuing the Master of Engineering in mechanical Engineering degree for General Dynamics-Electric Boat in the Groton campus.

I have been offering MANE-6980 Engineering Project in a 15-week, 3-hr long, classroom meeting format where I lead, coach and advise groups of students working in their culminating experience for the degree.

IV. **Publications**

A. **Books, Monographs**

(Give title, co-authors if any, publisher, date. State if a contributing author to an edited compilation)

Mathematical Modeling of Rapid Solidification, Chapter 1 in Rapid Solidification Technology: An Engineering Guide, T.S. Srivatsan and T.S. Sudarshan (eds), Technomic Publishing Co., Lancaster, 1993, pp. 3-70. ISBN 0-87762-926-9.
(Contributing invited author).

Articles

(Give title, co-authors if any, journal, volume, issue, date, paging. List spin-offs (i.e., publications essentially on same piece of work) from a major work under the major item. Provide copies for at least the past six years of all journal articles, abstracts, and book reviews if they are not already with the department file. This list should also contain articles accepted but not yet in print and those submitted and not yet reviewed.

In refereed journals (articles which are reviewed by peers in the field prior to publication.)

“A Mathematical Model of the Planar Flow Melt Spinning Process,” Metallurgical Transactions B, Vol. 17B, 1986, pp. 695-703. Coauthored with J. Szekely.

“A Mathematical Model of the Liquid Dynamic Compaction Process, Part I: Heat Flow in Gas Atomization,” International Journal of Rapid Solidification, Vol. 4, No. ½, 1988, pp. 89-124. Coauthored with E. Lavernia, J. Szekely and N. Grant.

“A Mathematical Model of the Liquid Dynamic Compaction Process, Part II: Formation of the Deposit,” International Journal of Rapid Solidification Vol. 4, No. ½, 1988, pp. 125-150. Coauthored with E. Lavernia, G. Trapaga, J. Szekely, and N. Grant.

“A Mathematical Model of Laser Surface Hardening of Steel”, Journal of Heat Treating, Vol. 7, 1989, pp. 19-25.

“A Mathematical Model of the Spray Deposition Process,” Metallurgical Transactions A, Vol. 20A, January 1989, pp. 71-85. Coauthored with E. Lavernia, G. Trapaga, J. Szekely, and N. Grant.

“Precipitation and Excess Solid Solubility in Mg-Al-Zr and Mg-Zn-Zr Processed by Spray Atomization and Deposition,” Materials Science and Engineering, Vol. A132, 1991, pp. 119-133. Coauthored with E.J. Lavernia and J. Baram.

“Integration of Symbolic Computation in Core Engineering Courses,” The Journal of Computing in Small Colleges, Vol. 9, No. 2, 1993, pp. 186-193. Coauthored with D.J. Ahlgren.

“Analysis of the Thin Slab Continuous Casting Process, Part I Heat Extraction and Solidification”, Metallurgical and Materials Transactions B, 35B, June 2004, 541-560. Coauthor

“Analysis of the Thin Slab Continuous Casting Process, Part II: Effect of Operating and Design Parameters on Solidification and Bulging” , Metallurgical and Materials Transactions B, 35B, June 2004, 561-573. Coauthor.

“Effect of Operating Conditions of Air Mist Nozzles on the Thermal Evolution of Continuously Cast Thin Slabs”, Canadian Metallurgical Quarterly, Vol. 47, No. 2, 2008, pp. 187-204. Coauthor.

In refereed conference proceedings

“Heat Flow Behavior During Spray Deposition of Ni-base Superalloys by Liquid Dynamic Compaction,” Progress in Powder Metallurgy, Vol. 43, Metal Powder Industries Federation, Princeton N.J., pp. 683-710. ISBN 0-9184004-73-8. Coauthored with E. Lavernia, J. Szekely, and N. Grant.

“Heat Transfer and Solidification Behavior During Spray Atomization and Deposition of Low Carbon Steels,” Modern Developments in Power Metallurgy, Vol. 19, Metal Powder Industries Federation, 1988. Coauthored with E. Lavernia and G. Trapaga.

“A Mathematical Model of the Strip Casting Process,” in Proceedings of an International Symposium on Casting of Near Net Shape Products, Y. Sahai et al. (eds); The Metallurgical Society, Warrendale, PA, 1988, pp. 31-38. ISBN 0-87339-079-2.

“Mathematical Modeling of the Spray Forming Process,” in Proceedings of an International Symposium on Casting of Near Net Shape Products, Y. Sahai et. al. (eds); The Metallurgical Society, Warrendale, PA, 1988, pp. 133-151. ISBN 0-87339-079-2. Coauthored with G. Trapaga and J. Szekely.

“Near Net Shape Processing by Spray Atomization,” in Proceedings of an International Symposium on Casting of Near Net Shape Products, Y. Sahai et al. (eds); The Metallurgical Society, Warrendale, PA, 1988, pp. 275-295. ISBN 0-87339-079-2. Coauthored with E. Lavernia.

“A Study of the Selective Carburization Process,” in Proceedings of An International Conference on Carburizing: Processing and Performance, Lakewood, CO; G. Krauss (ed), ASM International, Metals Park, OH, 1989, pp. 121-131. ISBN 0-871170-360-2. Coauthored with J. H. Muthler.

“Thermal Conditions and Microstructure in Ultrasonically atomized Aluminum Alloy,” in Proceedings of an International Symposium on Physical Chemistry of Powder Metals Production and Processing, St. Marys, PA; w. Murray Small (ed), The Minerals, Metals and Materials Society, Warrendale, PA, 1989, pp. 175-200. ISBN 0-87339-108-X. Coauthored with E. Lavernia..

“A Mathematical Model of High Energy Density Induced Surface Modification of Metallic Materials,” in Proceedings of the Third International Conference on Surface Modification Technologies, Neuchatel, Switzerland; T.S. Sudarshan and D.G. Bhat (eds), The Minerals, Metals and Materials Society, Warrendale, PA 1990, pp. 461-470. ISBN 0-87339-113-6.

“Computer Simulation of Glass Flow During Hot Pressing,” in Proceedings of the EPD Congress `90, Anaheim, CA; D.R. Gaskell (ed), The Minerals, Metal and Materials Society, Warrendale, PA, 1990, pp. 465-471. ISBN 0-87339-113-6.

“Comparative Study of the Effect of Welding Process on the Structure of the Heat Affected Zone in Titanium Alloys,” in Proceedings of the International Conference on Titanium Products and Applications, Lake Buena Vista, FL, Titanium Development Association, Dayton, OH, 1990.

“Mathematical Modeling of Duplex Surface Treatment of a Low Alloy Steel,” in Proceedings of the Fourth International Conference on Surface Modification Technologies, Paris, France; T.S. Sudarshan, D.G. Bhat, M. Jeandin and J.F. Braza (eds), The Minerals, Metals and Materials Society, Warrendale, PA, 1991, pp. 393-399. ISBN 0-87339-167-5.

“Computer Simulation of Droplet-Deposit Interactions in Spray Coating,” in Proceedings of the Fourth International Conference on Surface Modification Technologies, Paris, France; T.S. Sudarshan, D.G. Bhat, M. Jeandin and J.F. Braza

(eds), The Minerals, Metals and Materials Society, Warrendale, PA, 1991, pp. 665-675. ISBN 0-87339-167-5. Coauthored with D. Zeng.

“Applications of Graphics Supercomputers to Directional Solidification and Welding,” in Proceedings of the Fifth International Conference on Modeling of Casting and Welding Processes, Davos, Switzerland; M. Rappaz, M.R. Ozgu and K.W. Mahin (eds), The Minerals, Metals and Materials Society, Warrendale, PA, 1991, pp. 349-354 and 825-827. ISBN 0-87339-172-1. Coauthored with A.F. Giamei and D.E. Edwards.

“Modeling Refractory Material Production by Self-Propagating High Temperature Synthesis (SHS),” in Proceedings of the MRS Symposium on Synthesis and Processing of Ceramics: Scientific Issues, Boston, MA, Materials Research Society, Pittsburgh, PA, 1991. Coauthored with T. Crane. ISBN 1-55899-143-3

“Computer Simulation of Mold Filling Processes,” in Proceedings of the EPD Congress '92, San Diego, CA; J.P. Hager (ed), The Minerals, Metals and Materials Society, Warrendale, PA, 1992, pp. 481-487. ISBN 0-87339-142-X.

“A Simulation Based Approach to the Development of Knowledge Based Welding Rules,” in Modeling of Casting, Welding and Advanced Solidification Processes - VI, T.S. Piwonka, V. Voller and L. Katgerman (eds), The Minerals, Met. and Mat. Society, Warrendale, PA, 1993, pp. 153-160. ISBN 0-87339-209-4. Coauthored with A.F. Giamei, J.H. Cowles, Jr., M. Bruskotter.

“Transient Heat Conduction Through Dissimilar Laminae with Time-Varying Boundary Conditions,” in Proceedings of the 1993 Annual Meeting of the American Society of Mechanical Engineers, New Orleans, LA, Nov. 1993, Paper 93-WA/HT-3 pp. 1-8. Coauthored with S. Reid Hanford.

“Mathematical Modeling of Rapid Solidification,” in “Rapid Solidification Technology: An Engineering Guide,” T.S. Srivatsan and T.S. Sudarshan (eds), Technomic Publishing Co., Lancaster, 1993, pp. 3-70. ISBN 0-87762-926-9.

“Recent Developments in Welding Modeling,” in Modeling of Casting, Welding and Advanced Solidification Processes VII, M. Cross and J. Campbell (eds.), The Minerals, Metals and Materials Society, Warrendale, PA, 1995. ISBN 0-87339-297-3. Coauthored with A.F. Giamei.

“Professor Julian Szekely’s Research: The MIT Years”, in Proceedings of the Julian Szekely Memorial Symposium on Materials Processing, H.Y. Sohn, J.W. Evans and D. Apelian (eds.), The Minerals, Metals and Materials Society, Warrendale, PA, 1997, ISBN 0-87339-384-8, pp.21-31

“An integrated mathematical model of the plasma spraying process”, in Thermal Spray: Meeting the Challenges of the 21st Century, Proceedings of the 15th International Thermal Spray Conference, May 1998, Nice, France, C. Coddet (ed), ASM, Ohio, 1998,

pp. 335-340. Coauthored with J.W. McKelliget, G. Trapaga and M. Cybulski. ISBN 0-87170-659

“The Continuing Impact of the Research of Professor Julian Szekely, in Proceedings of the Szekely-Muchi Memorial Symposium on Materials Processing, Nagoya, Japan, 2001. Coauthored with J.Evans and D. Apelian.

A. Dennis, T. Scotton, T. El-Wardany, J. Irish, P. Wang and E. Gutierrez-Miravete, “Machining Process Optimization through Modeling and Simulation”, 2nd CIRP International Conference on High Performance Cutting, Vancouver, BC, Canada, June 2006.

E. Gutierrez-Miravete, "Experiences in the use of Third Wave Systems Software at RPI" presented at the Third Wave Systems User's Conference, Seattle, WA, May 15-17, 2007.

B. Baron and E. Gutierrez-Miravete, “Modeling Convective Heat Transfer under Laminar Flow of a Newtonian Fluid in Simple Geometries”, presented at the COMSOL 2007 User’s Conference, Newton, MA, October 4-6, 2007.

E. Rogers and E. Gutierrez-Miravete, “An Analysis of the Thermal Effects of Focused Laser Beams on Steel”, presented at the COMSOL 2007 User’s Conference, Newton, MA, October 4-6, 2007.

M. Crosskey and E. Gutierrez-Miravete, “A Modeling Study of Diffusion Wear of Carbide Tools in Titanium Machining”, presented at the COMSOL 2007 User’s Conference, Newton, MA, October 4-6, 2007.

B. LaBarge and E. Gutierrez-Miravete, “Finite Element Model of a Magnet Driven Reed Switch”, Proceedings of the COMSOL Users Conference, Boston, MA, October 2008

E. Kaufmann and E. Gutierrez-Miravete, “Computation of Velocity, Pressure and Temperature Distributions near a Stagnation Point in Planar Laminar Viscous Incompressible Flow”, Proceedings of the COMSOL Users Conference, Boston, MA, October 2008

P. Lankeu Ngankeu and E. Gutierrez-Miravete, “An Analysis of Plunger Temperature during Glass Parison Pressing”, Proceedings of the COMSOL Users Conference, Boston, MA, October 2008

J. Streeter and E. Gutierrez-Miravete, “A Study of Lubricating Flows in MEMS Bearings”, Proceedings of the COMSOL 2009 User’s Conference, Boston, MA, October 2009.

N. Barnett and E. Gutierrez-Miravete, “An Analysis of Skimboard Hydrodynamics”, Proceedings of the COMSOL 2009 User’s Conference, Boston, MA, October 2009

J. Michalski and E. Gutierrez-Miravete, "An Analysis of Heat Conduction with Change of Phase with Application to the Solidification of Copper", Proceedings of the COMSOL 2009 User's Conference, Boston, MA, October 2009.

Other publications (major research reports, etc.) Architects should complete a separate form (available from the Dean of Architecture) for buildings, planning projects, works of art, and exhibits of work.

"Mathematical Model of Continuous Casting of Rods Using a Mold with Non-Axisymmetric Heat Extraction," Technical Paper A89-14, TMS, Warrendale, 1989, pp 1-6.

"Mathematical Model of Orbital TIG Welding of Thin Walled Pipes," in Proceedings of the X Inter-American Conference on Materials Technology, San Antonio, TX; Organization of the American States, 1989, pp. 29.9-29.33. Coauthored with K.J. Zacharias. (In Spanish).

“Mathematical Model of Galvanic Corrosion in Seawater Environments,” in Proceedings of the X Inter-American Conference on Materials Technology, San Antonio, TX; Organization of the American States, 1989, pp. 4.7-4.9. (In Spanish).

“The Use of Computer Simulation in Education in Materials Science and Engineering,” in Proceedings of the X Inter-American Conference on Materials Technology, San Antonio, TX; Organization of the American States, 1989, pp. 26.7-26.11. (In Spanish).

“The Mathematical Modeling of Rapid Solidification Processing,” NASA Contractor Report 179551, Lewis Research Center, Cleveland, OH, 1986. 225 pp.

“A Library of Computer Programs for the Modeling and Simulation of Materials Engineering Systems.” Unpublished.

“MICRO: A Computer Program for Simulation of Welding Processes,” United Technologies Research Center, East Hartford, CT, Project 242479, 1990-Date.

“F2D: A Computer Program for Simulation of the Strip Casting Process,” Olin Metals Research Laboratory, New Haven, CT, Project NHT 17763, 1991- 1992.

“Development of a Mathematical Model for Simulation of Thermo-Elastic Stresses in Continuous Casting Molds,” Final Research Report, Institutet for Metallforskning, July, 1994, 52 pp. (In Swedish).

GROW Code: Theoretical Foundation and Users Guide. United Technologies Research Center, 2001.

Spanish Translation of “Basic Corrosion and Oxidation,” by J.M. West, Ellis Horwood, Chichester, 1980, 247 pp. ISBN 0-85312-196-6. Translation published by Editorial Limusa, Mexico City, Mexico, 1986. ISBN 968-18-1929-2.

Spanish Translation of “Rate Processes of Extractive Metallurgy,” H.Y. Sohn and M.E. Wadsworth (eds.), Plenum Press, New York, 1979, 472 pp. ISBN 0-306-31102-X. Translation published by Editorial Trillas, Mexico City, Mexico, 1986. ISBN 968-24-1915-8.

Spanish Translation of "Principles of Extractive Metallurgy," by T. Rosenquist, 2nd. ed., McGraw-Hill, New York, 1983, 506 pp. ISBN 0-07-053910-3. Translation published by Editorial Limusa, Mexico City, Mexico, 1987. ISBN 968-18-2144-0.

Spanish Translation of "Fluid Flow Phenomena in Metals Processing," by J. Szekely, Academic Press, New York, 1979, 437 pp. ISBN 0-12-680840-6. Translation published by Editorial Limusa, Mexico City, Mexico, 1988. ISBN 968-18-1823-7.

Spanish Translation of "Collected Papers of Paul Bergsoe on the Metallurgical Technologies of Pre-Columbian America," various sources Commissioned by the Museo del Banco Central of Ecuador; in the press.

Spanish Translation of "Essentials of Materials Science," by A.G. Guy, McGraw-Hill, New York, 1976, 426 pp. ISBN N.A. Unpublished.

Spanish Translation of "Ternary Equilibrium Diagrams," by D.R.F. West, 2nd. ed., Chapman and Hall, London, 1982, 149 pp. ISBN 0-412-22970-6. Unpublished.

Spanish Translation of "Rates of Phase Transformations," by R.H. Doremus, Academic Press, Orlando, 1985, 176 pp. ISBN 0-12-220530-8. Unpublished.

V. **Research Grants and Contracts**

(Give title of project, other senior investigators, starting and completion dates, amount of funding, sponsoring agency.)

A. **Proposals approved and funded**

A Proposal To Develop A Computer Program To Analyze Thermal Processes In Welding (PI) 1989-1996, 75k, United Technologies Research Center, East Hartford, Ct
Mathematical Modeling Of Spray Forming Of Copper Alloys (PI) 1989, 10k, Olin Corporation, Metals Research Laboratory, New Haven, Ct

A Proposal To Develop A Computer Program For The Analysis Of Strip Casting Processes (PI) 1991-1992, 10k, Olin Corporation, Metals Research Laboratory, New Haven, Ct

Development Of An Ansys-Based Computer Program For The Analysis Of Thermal Processes In Direct Chill Casting Molds (PI) 1993, 15k, Olin Corporation, Metals Research Laboratory, New Haven, Ct

Development Of A Model Of The Tapping Of Ferroalloy Smelting Furnaces (PI) 1993, 3k, Cambridge Materials Modeling Group, Cambridge, Ma

A Proposal For Modeling The Thermal Field In Continuous Casting Molds (PI) 1994, 12k, Swedish Institute For Metals Research, Stockholm, Sweden

Development Of A Mathematical Model Of Welding of Hollow Cylinders (PI) 1995, 7k, United Technologies Research Center, East Hartford, Ct

Development Of An Ansys-Based Computer Program For The Analysis Of Alloy Dispersion In Direct Chill Casting Tundishes (PI) 1996, 15k, Olin Corporation, Metals Research Laboratory, New Haven, Ct

Development Of A Mathematical Model Of Thermal Evaporation Of Ceramic Melts (PI) 1997, 7k, United Technologies Research Center, East Hartford, Ct

Development Of A Mathematical Model Of Localized Heating of Solid Cylinders (PI) 1997, 5k, United Technologies Research Center, East Hartford, Ct

Development Of Physically-based Constitutive Equation Models for Metals at High Temperatures (PI) 1999, 5k, United Technologies Research Center, East Hartford, Ct

Development Of A Mathematical Model of Inclusion Dissolution Process in Titanium Alloys (PI) 2000, 8k, United Technologies Research Center, East Hartford, Ct

Further development Of A Mathematical Model of Inclusion Dissolution Process in Titanium Alloys (PI) 2001-2005, 10k/yr, United Technologies Research Center, East Hartford, Ct

Development of a Computer-based system for prediction of Hard-Alpha Inclusion Behavior in Titanium Alloys, RPI Provost Office, Research Revitalization Program, 25k. Starting in Fall 2001-2002.

Modeling and Simulation of Machining Operations for Supply Chain Improvement, Connecticut Center for Advanced Technology, 100k, 2005-2007

Development of Finite Element Models for Thin Slab Continuous Casting Processing, Olin Corporation, 40 k, 2005-2007.

Modeling and Simulation of Metal Manufacturing Operations for Supply Chain Improvement, Connecticut Center for Advanced Technology, 100k, 2008-2010

B, Proposals submitted and not funded with current status

Interactive Modeling Of The Solidification Process In Complex Castings (PI) Submitted To The Connecticut Board Of Higher Education On July, 1988, 88 Pp. Not Funded.

Mathematical Modeling Of Rapid Solidification Processing (PI) Submitted To The National Science Foundation On July 1989, 25 Pp. Not Funded.

Proposal For Research On The Fundamental Attributes Of Cadmium Plating With A View Toward Substitution (PI) Submitted To The Environmental Research Institute, University Of Connecticut On March 1993, 11 Pp. Not Funded.

The Development Of A Framework For The Management Of Technological Innovation In Environmentally Conscious Manufacturing (Co-PI) Submitted To The National Science Foundation On July 1993, 10 Pp. Not Funded.

Deploying Pollution Prevention And Risk Reduction Curricula In A Small And Medium-Size Business Community (PI) Submitted To The Northeast Waste Management Official's Association On March, 1995, 6 Pp. Not Funded.

C. Briefly describe your current research interests

Mathematical modeling and computer simulation of metals processing and manufacturing operations. Deterministic and stochastic simulation methodologies. Industrial ecology. Applied mathematics and computer simulation.

VI. Editorship of Journals, Reviews of Manuscripts, Books, and Research Proposals
(Give organization of journals, significant items reviewed, date.)

Book Manuscript Review:

"Sintering: Densification, Grain Growth and Microstructure"
by Suk-Joong L. Kang, Elsevier, approx 500 pp, 2003

"An Introduction to the Superalloys" by R. Reed, Institute of Physics, 2004

"Statistics for Engineers and Scientists", by W. Navidi, Chapter 4, Mc Graw-Hill, 2004.

Research Proposal Reviews:

"Development Novel Production Techniques for High Grade Nanostructured Aluminum Alloys" Proposal Number 41912-MS submitted to the Materials Science Division, Army Research Office, 2000

"Plasma Window for Electron Beam Welding", Northeast Utilities , 2001-2002

"Study on the Development of Metal Recycling by Waste Oxidized Fines Interacting with Liquid Iron under Imposing the External Specific Arc Plasma and Electromagnetic Influences" for the US Civilian Research and Development Foundation (CRDF), 2003

"Plasma, Acoustical and Electromagnetic Fields during Self-propagating High Temperature Synthesis",
US Civilian Research and Development Foundation (CRDF), 2004

"Characterization and Testing of Coated Nickel and Iron-Based Superalloys for Application in High Temperature Power Installations"
US Civilian Research and Development Foundation (CRDF), 2004

"A Novel Nanostructural Diamond-Based Polycrystalline Composite Material"
US Civilian Research and Development Foundation (CRDF), 2006

"Transport and Reaction Processes in Multiphase Systems", National Council for Science and Technology, Mexico, 2006.

"Studies about Procedures used to Model Wetting and Drying During Flooding of Complex Topographies", National Council for Science and Technology, Mexico, 2006.

Proposal for a New Graduate Program in Natural Resources and Energy,
Center for Research and Advanced Studies (CINVESTAV), Saltillo, Mexico, 2007.

Technical Paper Review:

"Columnar-Equiaxed Transitions leading to Tree Ring Structures during VAR of Ni-based Superalloys" submitted to Metallurgical and Materials Transactions, 2001

"Investigation of Three-Dimensional Stress Fields and Slip Systems for FCC Single Crystal Superalloy Notched Specimens" submitted to the Turbo Expo 2004 conference, American Society of Mechanical Engineers, 2003

"A New Method of Prediction of TCP Phase Formation in Superalloys" by A. Bahrami et al., Manuscript EL2004-408 submitted to the journal "Materials Science and Engineering", 2004.

"Evolution of Slip through the Thickness of a Single Crystal Nickel-Base Superalloy Notched Specimen" submitted to the Turbo Expo 2006 conference, American Society of Mechanical Engineers, 2005

"A Numerical Simulation of Super-Plastic Die Forging process for Zr-Based Bulk Metallic Glass Spur Gear" . Manuscript EL2005-707 submitted to the journal "Materials Science and Engineering", 2006.

"How Not to Measure Sustainable Value (and How One Might)", Manuscript ECOLEC-D-08-00688, submitted for publication to Ecological Economics, 2009.

“Predictive Control of Decantation in Batch Sedimentation Process”. Manuscript AIChE-09-12180, submitted for publication to the American Institute of Chemical Engineers Journal, 2009.

“An Implicit Finite Difference Method for the Solution of Two-Dimensional Moving Boundary Problems”, submitted for publication to the International Journal for Computational Methods in Engineering Science and Mechanics, 2009.

VII. Service

VIII.

A. Service to University

1. University, school and departmental committees and dates for each.

MANE Program Coordinator, 2005-date

Mechanical Engineering Student Faculty Advisor (~ 200 students)

Faculty Search Committee, Department of Engineering and Science, 2009.

Faculty Search Committee, Department of Engineering and Science, 2007.

Faculty Search Committee, Department of Engineering and Science, 2003.

RPI Re-accreditation Committee, 2002.

Governance Committee, Faculty Senate, 1992-1993

2. Other service and administration activities.

Coordinator, Mechanical Engineering Program, 2005-date

ME Cohort Advisor, GE-EB, Groton, 2005-date

Coordinator, Engineering Programs, DoES, 2004-2005

Coordinator, Metallurgy/Materials Certificates, 1998-date

Coordinator, DSES Certificate Programs, 1999-2004

Curriculum Chair, Metallurgy Program 1987-1998

Offered courses on site at corporate sites on demand.

Taught courses during every other summer as required during the 1987-1997.
Developed new courses and programs targeting student demand as required.

Interim Associate Chair, Department of Engineering and Science.
Fall 2001-May 2004.

3. Undergraduate student advising and counseling (number and year).

None

4. Graduate student advising and counseling (number and year).

Approximately 10 students per year

<u>Year</u>	<u># of Advisees</u>
2009	256
2008	190
2007	140
2006	105
2005	73
2004	73
2003	74
2001	50

B. Professional Societies (Past and Current)

I am or have been a member of the following professional societies:

American Association for the Advancement of Science (AAAS),
American Mathematical Society (AMS),
American Powder Metallurgy Institute (APMI),
American Society of Mechanical Engineers (ASME),
American Society for Metals (ASM),
American Welding Society (AWS),
Iron and Steel Society (ISS),
The Minerals, Metals, and Materials Society (TMS), (Local Chapter Chairman 1992-1993)
Materials Research Society (MRS),
National Association of Corrosion Engineers (NACE),
Society for the Advancement of Materials and Process Engineering (SAMPE),
Society for Industrial and Applied Mathematics (SIAM),
Society of Manufacturing Engineers (SME),
Society of Plastics Engineers (SPE),
System Dynamics Society,
The American Ceramic Society Inc. (ACS),
The Scientific Research Society of Sigma Xi,
American Society for Quality (ASQ),
American Chemical Society,
American Institute of Chemical Engineers (AIChE)
Institute for Operations Research and the Management Sciences (INFORMS)
University Materials Council (UMC)
Materials Academic Advisory Board, University of Connecticut

C. Community and Public Service

(Give national, state, and local organizations; position held; dates.)

VIII. Professional and Public Lectures

(List invited and contributed papers and Lectures, giving title, organization, and dates.)

“Modeling and Simulation of Metal Machining Processing”, Invited Talk given during the 20th anniversary celebration of the Foundation of the Metallurgical Laboratory at the National University of Mexico, March 30, 2007.

Conference Participation: "Heat Transfer, Solidification and Bulging Phenomena in Continuously Cast Thin Slabs Produced by the Compact Strip Process" (coauthor) First Congress and Exhibit of the Mexican Steel Industry Mexican Chapter of the Iron and Steel Society Monterrey, Mexico , 11/22-24, 2004

Laser Materials Processing Modeling Capabilities at R@H Connecticut Center for Advanced Technology East Hartford 9/26/03 <http://www.rh.edu/~ernesto/talks/ccat.ppt>

Simulation Modeling and Analysis
IEE-APICS Joint Hartford Chapter Fall Meeting

Rensselaer at Hartford 10/14/03 <http://www.rh.edu/~ernesto/talks/apics01a.ppt>

"Mathematical Modeling of Health Conduction and Mass Diffusion" CINVESTAV-Salttillo, Mexico, 11/26/2004 <http://www.rh.edu/~ernesto/F2003/MMCCDM>

"Classical and Computational Mechanics for Materials " CINVESTAV-Salttillo, Mexico, November 24-25, 2005, <http://www.rh.edu/~ernesto/F2005/CINVESTAV/>

"Moving Boundary Problems", Department of Mechanical Engineering, University of Vermont, Burlington, VT, Spring 2006, <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2006/UVM/>

"Mathematical Modeling of Machining Operations", Invited Lecture on the 20th anniversary of The Metallurgy Laboratory of the National University of Mexico, Mexico City, Mexico, Spring, 2007, <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2007/UNAM/>

"Experiences with Machining Modeling at RPI", Invited Lecture, Third Wave Systems, Seattle, WA, Spring 2007 <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2007/ThirdWaveSystems/>

COMSOL User's Conference, Newton, MA, 3 presentations, Fall 2007, <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2007/COMSOL2007/>

Mathematical Modeling Experiences in Graduate-level Engineering education at RPI, Invited Lecture, 20th anniversary of the foundation of CINVESTAV-Salttillo, Fall, 2008, <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2008/>

COMSOL User's Conference, Boston, MA, 3 presentations, Fall 2008, <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2008/COMSOL2008/>

Mechanical Engineering Design aided by Models of Gravity Driven Free Surface Flow Systems, United Plumbing Technologies, Wethersfield, CT, Spring 2009, <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2009/>

Workshop on Finite Element Modeling of Engineering Systems with COMSOL, CINVESTAV-Salttillo, Mexico, July 13-15, 2009, <http://www.ewp.rpi.edu/hartford/~ernesto/Su2009/CINVESTAV/>

COMSOL User's Conference, Boston, MA, 3 presentations, Fall 2009, <http://www.ewp.rpi.edu/hartford/~ernesto/Presentations/2009/COMSOL/>

IX. Honors and Awards
(List names and dates)

Full Scholarship from the Mexican Government to pursue Graduate Studies at Massachusetts Institute of Technology, 1980-85

X. Sabbatical leaves, off-campus study programs, foreign professional travel
(Dates and topics)

Sabbatical Leave at Swedish Institute for Metals Research, Stockholm, Sweden, January-August 1994

Attendance to and participation as speaker in a number of international conferences abroad (see list under conference proceeding above).

Visiting Lecturer, Department of Engineering, Universidad Iberoamericana, Summer 1998, 2003

Visiting Lecturer, Mexican Iron and Steel Society, Instituto Tecnológico de Monterrey, Monterrey, Mexico, Summer 1999, 2000.

Visiting Faculty Advisor, Universidad Iberoamericana, Summer 1999, 2000.

Visiting Researcher, CINVESTAV, Saltillo, Mexico, Summer 2001-2009

XI. Other Activities (Consulting, Current and Previous)

(List other relevant activities such as consulting, [include name of company and days per year], expert witness, or significant activities not included in previous categories).

United Technologies Research Center, East Hartford, CT. Consultant 40 days/yr.

Connecticut Light and Power. Consultant 5 days/yr.

Olin Metals Research Laboratory, New Haven, CT. Consultant 40 days/yr.

Connecticut Center for Advanced Technology, 50 days/yr

Other consulting 5 days/yr.

XII. In addition to the above information include, if pertinent, concrete evidence of teaching ability and any unusual contributions to university affairs, such as curriculum advising or development, continuing education participation, etc.

Currently advising almost 200 graduate students pursuing the Master of Engineering in Mechanical Engineering degree in the Hartford Campus. Advising activities include assistance with curriculum and course selection, academic problems and culminating project selection.

Working closely with the Marketing Department to boost enrolment in our Advanced Studies and Cohort Programs.

Actively participated in gestation and development of the Cohort Program IPM for UT-PW. Intimately involved in curriculum development and teaching.

I also oversee the workings of the Graduate Certificate in High Temperature Materials Technology, a program consisting of three, carefully selected, subject-related electives leading to a Graduate certificate concurrent with the Master's degree.

Certificate Program In Pollution And Waste Prevention In Manufacturing Offered On Request, On-Site To Employees Of The Hamilton Standard Division Of United Technologies Corporation, 180 Hours Of Instruction , From Fall 1991 Through Fall 1992.

Certificate Program In Environmental Management, Section On On-Site To Employees Of The Electric Boat Division Of General Dynamics Corporation, 9 Hours Of Instruction, Fall 1995, Fall 1996, Fall 1997; 12 Hours of Instruction Spring 1998, Fall 1998.

Provided short courses on site on demand. Also, lectured via Distance Education Technology as required by the Institute.

In the time 2004-2006 I participated in the development of the new Master of Engineering in Mechanical Engineering Curriculum. This also involved the production of descriptive materials that were submitted and approved by the CT Board of Higher Education. During this time I also served as Academic and Administrative Coordinator of Engineering Programs.

During the Summer of 2005 I participated in the Working Group for the development of a new MEng in Mechanical Engineering Cohort Program focused on Structural Mechanics and Thermo-fluids for the Electric Boat Division of General Dynamics. The curriculum is in place and the program is now running successfully.

In 2005-2006 I participated in the Working Group for the Development of a New MEng in Engineering Science Cohort Program focused on Manufactured Product Quality through Process Improvement for the Pratt &Whitney division of United Technologies Corporation. The curriculum is in place and the program is now running successfully.

I developed from scratch on short notice and taught multiple times the course DSES-6070 Statistical Methods for Reliability Engineering to various IPM Cohort groups, including DE during 2007-2008.