Texas State University
**Part-Time Faculty Excellence in Teaching Award**
Nomination Form

Name Dr. Austin Talley Net ID abt30

Department Ingram School of Engineering College Science and Engineering

Current TXST teaching appointment FTE% 20%

Number of long semesters of TXST teaching at 50% or more FTE Zero, Two long semesters at 20% FTE

Statement of Teaching Philosophy (300 words maximum):

While the core of traditional college instruction is the lecture, I believe this instructional format should not be boring and certainly not be a one-sided presentation. Through the incorporation of active learning products as a regular lecture aid, including anecdotes from my industry experience, and the inclusion of selected project-based learning assignments, I strive to keep lecture-based courses a place of engaged learning. Further, I strongly believe the classroom should not be the only location for engaging students. Mentoring, either through a formal advisor/advisee relationship or through informal conversations is an important tool for engaging students' interest in learning.

As an example of active learning incorporated into lecture, I am including a description of a foam rod, which is shown in Figure 1. My intention is to give the students hands-on tools for understanding how stress elements react to different combined loading. The students can see that all three-stress elements on the surface of the rod are affected in the same way with uniform shear stress. I hand these foam rods out to students when we start discussing stress elements in the course. The rod is made out of pipe insulation about a foot long with three square stress elements drawn on it with silver marker. I would have the students manipulate the rods with the loading scenarios in class to help them understand how each stress element is affected. This same tool is also useful when students are having difficulty with homework problems. I would work with them one-on-one to manipulate the rod to help them answer their own questions. This active learning product is a great example of a small, inexpensive learning item that engages students in literally grasping concepts in a hands-on way.

**Figure 1: Combined Loading Foam Rod Active Learning Product**

# AUSTIN B. TALLEY, P.E., Ph.D.

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New Braunfels, TX 78132

home: 830.626.3170
Austin@talleyweb.com

## EDUCATION

University of Texas at Austin

**Ph.D. in Mechanical Engineering, Manufacturing and Design Area** Aug 2013; GPA: 3.90
*Research Topic:* Universal Design: Designing Products that All Individuals Can Use
*Advisor:* Dr. Richard Crawford

**M.S. in Mechanical Engineering, Manufacturing and Design Area** Aug 2008; GPA: 3.80
*Research Topic:* Understanding the Effects of Active Learning in Action: Analyzing and Improving Learning with Engineering Design
*Advisor:* Dr. Richard Crawford

Texas A&M University

**B.S. in Mechanical Engineering** May 2002; GPA 3.60
**Minor in Leadership Development**

## WORK EXPERIENCE

**Lecturer** May 2013-present
Texas State University, San Marcos TX

Lecturer for Ingram School of Engineering - MFGE 3316: Computer Aided Design and Manufacturing.

Lecturer for Engineering Technology Department - TECH 2342: Construction Materials and Processes

**Graduate Research Assistant and Teaching Assistant** Aug 2006-Aug 2013
University of Texas, Austin, TX

Teaching assistant for Machine Elements, Mechanical Engineering Design Methodology, and The Engineered World: Products and Innovations. Graduate student research in Engineering Product Development with Universal Design, Active learning hands-on activities, Transformation 2013 T-Stem initiative, Beyond Blackboards Program, and Understanding the Effects of the Design Technology and Engineering for All Children (DTEACh) program on K-12 teachers and students in the classroom.

**Research Consultant** Sept. 2007-present
Austin Children's Museum, and Texas Education Service Center Region 20 and 13

Providing services in developing curriculum, teaching, and assessment of programs that implement engineering design concepts in STEM subject areas. Services provided for programs that focus on teacher professional development and students in the classroom of design-based learning curriculum.

**Quality Engineer - Manufacturing** June 2004 to Aug. 2006
National Instruments, Austin, TX

Supported the quality department as a project designer, manager, instructor, and technical leader in quality initiatives. Formally trained over 150 employees in root cause analysis. Led program to bring about adoption of Top Corrective Actions in manufacturing department. Trained in Six Sigma green belt and lean manufacturing process improvement.

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Project lead on the ISO 9001 quality program. Supported Continuous Improvement initiatives throughout manufacturing in Austin, Texas, and Debrecen, Hungary. Led efforts to train engineering mentors who served 150 classrooms in the Texas Hill Country area.

**Applications Engineer** Aug. 2002 to June 2004

National Instruments, Austin, TX

Provided technical support to solve customers' technical challenges with implementing National Instruments' products. This support included problem solving and designing computer programming code for more than a hundred companies including, NASA, Lockheed, Jet Propulsion Laboratory, Massachusetts Institute of Technology, VI Systems, University of Mississippi, and individual contractors. Taught over 500 hours of graphical programming to scientists and engineers in a variety of locations in the US and Canada. Volunteered in intercity elementary schools teaching engineering concepts with RoboLab. Supported measurement and automation software and hardware. Led major projects with Academic Marketing, RoboLAB-Community Relations, Sales, Marketing and R&D.

**Engineering Leadership Program Co-op - R&D** Jan.- May 2001

National Instruments, Austin, TX

Built a mechanical demo of an industrial automation mix batch processing plant using Lookout software and performed beta testing for the Lookout software group. Participated in the Co-op Engineering Leadership Program.

**Maintenance Engineer Co-op - Specialty Chemicals** May – Aug. 2000

Hampshire Chemical, Deer Park, TX

Worked for three months at the facility during a series of quality initiatives aimed an integrating the facility into the Dow culture. Designed and implemented small design projects and safety inspections. Gained experience working in specialty small batch chemical production.

**Reliability Engineer Co-op - Chlor-Alkali** Aug. – Dec. 1999

Dow Chemical, Lake Jackson TX

Worked on a team that investigated and overhauled pump failures during shutdowns at three Chlor-Alkali plants. Implemented plant reliability studies, assembled asset utilization data, and completed small design projects. Supervised night crews overhauling equipment during emergency shutdowns. Gained experience of working in an industrial environment across five Chlor-Alkali plants.

## TEACHING EXPERIENCE

**Texas State University**

**Lecturer**

| | |
|---|---|
| MFGE 3316: Computer Aided Design and Manufacturing. | Fall 2013 |
| TECH 2342: Construction Materials and Processes | Summer 2013 |

**University of Texas at Austin**

**Teaching Assistant - Mechanical Engineering**

| | |
|---|---|
| ME 388 : Machine Elements | Summer 2008, 2009 |
| ME 366J: Mechanical Engineering Design Methodology | Spring 2008 |
| UGS 302:The Engineered World: Products and Innovations | Fall 2007, 2008, 2009 |

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**Co-Instructor - Design, Technology, and Engineering for All Children (DTEACh)**
Professional Development Institute for K-12 Teachers

| | |
|---|---|
| DTEACh Basic (80 hour two week) | Summer 2006, 2007, 2008 |
| DTEACh Basic (40 hour one week) | Summer 2009, 2011, 2012 |
| DTEACh Solar Energy (8 hour one day) | Spring 2010, 2011, 2012 |
| DTEACh Programing (8 hour one day) | Spring 2007, 2008, 2009 |
| DTEACh Robotics (8 hour one day) | Fall 2010, 2011, 2012 |

**Consultant - Texas Education Service Center Region 20 and 13**
**Instructor – Partnership with Sul Ross University - Del Rio**
Professional Development Institute for 6-12 Teachers and Student Robotics Camp

| | |
|---|---|
| Underwater Robotics - Uvalde CISD (40 hour one week) | Summer 2010 |
| Underwater Robotics - Crystal City ISD (40 hour one week) | Summer 2010 |
| Underwater Robotics - Dilley ISD (40 hour one week) | Summer 2011 |
| Underwater Robotics - Eagle Pass ISD (40 hour one week) | Summer 2011 |

**National Instrument Corporation**
**Instructor – Customer Education Training**

| | |
|---|---|
| LabVIEW Basics I&II (40 hour one week) (Qty 6) | 2003, 2004 |
| LabVIEW Intermediate I&II (40 hour one week) (Qty 2) | 2004 |
| LabVIEW Instrument Control (24 hour three day) | 2004 |
| LabVIEW Field Point (24 hour three day) | 2004 |
| Lookout Industrial Automation (40 hour one week) | 2004 |

**Instructor – Quality Engineering Training**

| | |
|---|---|
| Six Steps – Root Cause Analysis (16 hour two day)(Qty 3) | 2004 |
| Six Steps – Root Cause Analysis (8 hour one day) (Qty 5) | 2005, 2006 |

## HONORS

| | |
|---|---|
| **Engineering Student Leadership Award, University of Texas** | 2013 |
| **Licensed Professional Engineer**, Texas (104816) | 2009 |
| **Finalist in RESNA Student Design Competition** | 2007 |
| **Cockrell Graduate Fellowship,** Cockrell Foundation | 2006 |
| **Mechanical Engineering Department Fellowship**, University of Texas | 2006 |
| **Competent Toastmaster** | 2005 |
| **Tau Beta Pi,** Engineering Honor Society | 2001 |
| **Kappa Theta Epsilon**, Co-op Honor Society | 2001 |
| **Pi Tau Sigma,** Mechanical Engineering Honor Society | 2000 |
| **T.R. Spence Award in Engineering Design Graphics** | 1998 |
| **National Merit Commended Scholar** | 1997 |
| **President's Endowed Scholar,** Texas A&M University | 1997 |
| **Shell Oil Company Foundation Merit Scholarship** | 1997 |
| **Fina/Dallas Morning News All-State Scholar-Athlete Scholarship** | 1997 |
| **Co-Valedictorian of high school graduating class of 413 students** | 1997 |

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**Boy Scout Eagle Award.** 1994

## ASSOCIATIONS

Deacon, **Central Presbyterian Church** (Austin, TX)
2009-2011

Member, **American Society for Engineering Education**
2007-present

Member, **American Society of Mechanical Engineers** 1997-present

Board Member, **Rainey Neighborhood Association**
2010-2011

Student Chapter President, **American Society for Engineering Education**, UT 2008-2011

Vice President of Scholarships, **Capital City A&M Club**
2005-2006

Member, **Toastmasters International**
2002-2006

Executive Council, **United Campus Ministries**
1999-2002

Chapter Vice President, **Texas A&M Kappa Theta Epsilon**
2001-2002

Chapter Vice President, **Texas A&M Pi Tau Sigma**
2000-2001

Society Representative, **Texas A&M Student Engineering Council**
2000-2001

## PUBLICATIONS

Crawford, R, White, C., Muller, C., Petrosino, A., Talley, A., and Wood, K., "Foundations and Effectiveness of an Afterschool Engineering Program for Middle School Students," 2012 American Society for Engineering Education Annual Conference, San Antonio, Texas, 2012.

Talley, A., "Doing Engineering Education Research Outside of Your Research Group: A Case Study," Poster Proceedings of 2012 American Society for Engineering Education Annual Conference, San Antonio, Texas, 2012.

Talley, A., Talley, K., and Crawford, R., "Engineering Applicability of a Universal Design Performance Measure," 2011 American Society of Mechanical Engineering 2011 International Design Engineering Technical Conference, Washington, DC, 2011.

Talley, A., White, C., Wood, K., and Crawford, R., "Longitudinal Evaluation of Project-Based Professional Development Institute: Mixed Method Assessment with MBTI Type Correlations," 2011 American Society for Engineering Education Annual Conference, Vancouver, British Columbia, Canada, 2011.

Talley, A., "Helping Students Build: Prototyping Kit of Student Design," 2011 American Society for Engineering Education Gulf Southwest Annual Conference, Houston, Texas, 2011.

Talley, A., White, C., Wood, K., and Crawford, R., "Designing Interdisciplinary Curriculum & Teaching: Investigating Innovation & Our Engineering World," 2010 American Society for Engineering Education Annual Conference, Louisville, Kentucky, 2010.

Talley, A., and Albert, J., "Reviving an ASEE Student Chapter: Taking a Student Chapter from Dormant to Active," Poster for Proceeding of the 2010 American Society for Engineering Education Annual Conference, Louisville, Kentucky, 2010.

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White, C., Talley, A., Wood, K., and Crawford, R., "Influences and Interests in Humanitarian Engineering," 2010 American Society for Engineering Education Annual Conference, Louisville, Kentucky, 2010.

Jensen, D., White, C., Talley, A., Crawford, R., and Wood, K., "From Brainstorming to C-Sketch to Principles of Historical Innovators: Ideation Techniques to Enhance Student Creativity," 2010 American Society for Engineering Education Annual Conference, Louisville, Kentucky, 2010.

White, C., Talley, A., Wood, K., and Crawford, R., "Curriculum Design for Design Curriculum," 2010 Consortium for Research in Teacher Education Annual Symposium, Austin, Texas, 2010.

Talley, A., "Ways to Measure the Impact of an After-School Robotics Outreach Program," 2010 American Society for Engineering Education Gulf Southwest Annual Conference, Lake Charles, Louisiana, 2010.

Talley, A., Schmidt, K., and Crawford, R., "Who Says LEGOs are Just Toys? – Creating LEGO Prototypes for K-5 Design Challenges Using Functional Modeling," 2009 American Society for Engineering Education Annual Conference, Austin, TX, 2009.

Talley, A., Fowler, M., Soontornvat, C., Schmidt, K., and Crawford, R., "Did it Work? - Analysis of Ways to Measure the Impact of an After-School Robotics Outreach Program," 2009 American Society for Engineering Education Annual Conference, Austin, TX, 2009.

Talley, A., "Engineering Product Development with Universal Design," ASME 2009 Early Career Technical Conference, Arlington, TX, 2009.

Linsey, J., Talley, A., White, C., Jensen, D., and Wood, K., "From Tootsie Rolls to Broken Bones: An Innovative Approach for Active Learning in Mechanics of Materials," Advances in Engineering Education Journal 1(3) Winter 2009.

Talley, A., and Crawford, R., "Who Says LEGOs Are Just Toys? - Creating LEGO Prototypes For Design Challenges Using Functional Modeling," Poster Proceedings of 2008 Graduate and Industry Networking Conference, Austin, TX, 2009.

Talley, A., "Understanding the Effects of Active Learning in Action: Analyzing and Improving Learning with Engineering Design." Thesis, The University of Texas at Austin, August, 2008.

Talley, A., Schmidt, K., Wood, K., and Crawford, R., "Active Learning in Action, Understanding the Effects: What Happens When the 'New' Wears Off in Teacher Training," 2008 American Society for Engineering Education Annual Conference, Pittsburgh, PA, 2008.

Talley, A., Linsey, J., Schmidt, K., Jensen, D., and Wood, K., "Active Learning Products to Enhance Mechanics Education – Design, Development, Implementation and Assessment," Poster Proceedings of 2008 American Society for Engineering Education Annual Conference, Pittsburgh, PA, 2008.

Linsey, J., Talley, A., Jensen, D., Wood, K., and Schmidt, K., "PHLIpS for Active Learning," Proceedings of 2008 American Society for Engineering Education Annual Conference, Pittsburgh, PA, 2008.

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Talley, A., "Active Learning in Action: Understanding the Effects," Poster Proceedings of 2008 Graduate and Industry Networking Conference, Austin, TX, 2008.

Linsey, J., Talley, A., Schmidt, K., Cobb, B., Jensen, D., and Wood, K. L., "Using Active Learning to Enhance Student Understanding in Engineering Mechanics," Poster Proceedings of 2007 American Society for Engineering Education Annual Conference, Honolulu, HI, 2007.

Linsey, J., Talley, A., Jensen, D., Wood, K., Schmidt, K., Kuhr, R., and Eways, S., "From Tootsie Rolls to Composites: Assessing a Spectrum of Active Learning Activities in Engineering Mechanics," Proceedings of 2007 American Society for Engineering Education Annual Conference, Honolulu, HI, 2007.

Nippert, M., Brantley, J., Panga, A., Putnam, N., Talley, A., and Walther, B., "Design of an Assistive Plant Watering System." Conference Proceedings of Rehabilitation Engineering and Assistive Technology Society of North America Annual Conference, Phoenix, AZ, 2007.

Talley A., and Diaz, D., "Understanding LEGO Electrical Components: Motors, Sensors, and More," Conference Proceedings of International RoboLAB Conference, Austin, TX, 2005.

## PRESENTATIONS

**New Horizons in STEM Education Conference 2014**, "In the Students Hands: Active Learning Products in the Engineering Classroom," College and Career Readiness Initiative Faculty Collaborative (San Antonio, TX)

**American Society for Engineering Education**, "Curriculum Exchange: Middle School Students Go Beyond Blackboards to Solve the Grand Challenges," 2013 Annual Conference (Atlanta, Georgia)

**American Society for Engineering Education**, "Foundations and Effectiveness of an Afterschool Engineering Program for Middle School Students," 2012 Annual Conference (San Antonio, Texas)

**American Society for Engineering Education**, "Doing Engineering Education Research Outside of Your Research Group: A Case Study," 2012 Annual Conference (San Antonio, Texas)

**American Society for Engineering Education**, "Longitudinal Evaluation of Project-Based Professional Development Institute: Mixed Method Assessment with MBTI Type Correlations," 2011 Annual Conference (Vancouver, British Columbia, Canada)

**Eagle Pass Independent School District,** "Rio Grande College Title V Underwater Robotics Science Camp and Teacher Professional Development Institute," 2011 (Eagle Pass, TX)

**Dilley Independent School District,** "Rio Grande College Title V Underwater Robotics Science Camp and Teacher Professional Development Institute," 2011 (Dilley, TX)

**STEMsation Conference**, "Light Up Your Imagination with Hands-on STEM," 2011 Education Service Center Region 20, (San Antonio, TX)

**Texas Computer Education Association,** "Engineering Products with Universal

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Design," 2011 High School Student Robotics Webinar, (TX)

**American Society for Engineering Education Gulf Southwest**, "Helping Students Build: Prototyping Kit of Student Design," 2011 Annual Conference (Houston, TX)

**LeTourneau University,** "Methodology for Engineering Products with Universal Design," 2010 Guest Speaker in Engineering Design Course (Longview, TX)

**LeTourneau University,** "Using Design with Hands-on Active Learning in the Classroom," 2010 Guest Speaker of College of Education (Longview, TX)

**Uvalde Consolidated Independent School District,** "Rio Grande College Title V Underwater Robotics Science Camp and Teacher Professional Development Institute," 2010 (Uvalde, TX)

**Crystal City Independent School District,** "Rio Grande College Title V Underwater Robotics Science Camp and Teacher Professional Development Institute," 2010 (Crystal City, TX)

**American Society for Engineering Education**, "Reviving an ASEE Student Chapter: Taking a Student Chapter from Dormant to Active," 2010 Annual Conference (Louisville, KY)

**Consortium for Research in Teacher Education**, "Curriculum Design for Design Curriculum," 2010 Annual Symposium (Austin, TX)

**American Society for Engineering Education Gulf Southwest**, "Ways to Measure the Impact of an After-School Robotics Outreach Program," 2010 Annual Conference (Lake Charles, LA)

**American Society for Engineering Education**, "Who Says LEGOs are Just Toys? – Creating LEGO Prototypes for K-5 Design Challenges Using Functional Modeling," 2009 Annual Conference (Austin, TX)

**American Society for Engineering Education**, "Did it Work? - Analysis of Ways to Measure the Impact of an After School Robotics Outreach Program," 2009 Annual Conference (Austin, TX)

**American Society of Mechanical Engineers**, "Engineering Product Development with Universal Design," 2009 Early Career Technical Conference, (Arlington, TX)

**Graduate and Industry Networking Conference,** "Who Says LEGOs Are Just Toys? - Creating LEGO Prototypes For Design Challenges Using Functional Modeling," 2009 Poster Proceedings (Austin, TX)

**American Society for Engineering Education**, "Active Learning in Action, Understanding the Effects: What Happens When the 'New' Wears Off in Teacher Training," 2008 Annual Conference (Pittsburgh, PA)

**American Society for Engineering Education**, "Active Learning Products to Enhance Mechanics Education – Design, Development, Implementation and Assessment," Poster Proceedings of 2008 Annual Conference (Pittsburgh, PA)

**Graduate and Industry Networking Conference,** "Active Learning in Action:

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Understanding the Effects," 2008 Poster Proceedings (Austin, TX)

**Rehabilitation Engineering and Assistive Technology Society of North America,** "Design of an Assistive Plant Watering System." 2007 Annual Conference, (Phoenix, AZ)

**International RoboLAB Conference,** "Understanding LEGO Electrical Components: Motors, Sensors, and More," 2005 Conference, (Austin, TX)

**Course Syllabus**

**Number and Title:** MFGE 3316 – COMPUTER AIDED DESIGN AND MANUFACTURING

**Department:** Engineering

**Designation:** Required

**Catalog Description:** Topics include: design process, transformation and manipulation of objects, description of wireframe, surface, and solid models, finite element analysis, product data exchange, process planning, machine elements, fundamentals of numerical control programming for turning and milling processes, fundamentals of CAD/CAM systems, CNC code generation by CAD/CAM software, and CNC machining.

**Prerequisites:** ENGR 1313 and MFGE 2332.

**Course Goals and Objectives:** This course will provide the student with the fundamentals of design process, Computer Aided Design, Computer Aided Manufacturing, CAD and CAM integration, and latest hardware and software technologies in these fields. The emphasis of the course will be on software (i.e. writing/generating programs for different applications). Hence, you will learn to develop programs for CNC and other automatic systems in this course.

**Course Outline:**

- Fundamentals of design
- Computer Aided Design
- Wireframe modeling
- Surface modeling
- Solid modeling
- Product data exchange
- Computer Aided Manufacturing
- CAD/CAM software
- Computer Numerical Control programming

**Class/Laboratory Schedule:** Lecture 3 hr. /week
Laboratory – 1.5 hr/week

**Assessment of Student Learning:** Assessment will be performed by the course instructor. The course grade will depend upon performance in the tests, homework, and various assigned work. The final letter grade will be determined by the student's raw score as well as by the performance of the class (class average and standard deviation) as a whole. Additionally, attendance policies may also have an impact on the letter grade.

**Text Required:** None.
Reference books: Selected chapters from the following as the reference:
Computer Numerical Control, (2007), 3rd Edition, by Stenerson J., Curran K. Prentice Hall.

Mastering CAD/CAM, (2005), by Ibrahim Zeid, McGraw Hill.

Principles of Computer Aided Design and Manufacturing by Farid M. Amirouche, Second Edition, Prentice Hall, 2003

**Class/Laboratory Schedule:** Lecture 3 hr. /week
Laboratory – 1.5 hr/week

## Office Hours

If you have any questions or doubts that need to be cleared, you may meet me at my office during the following hours:

T: 11:00 AM-11:59 AM
R: 11:00 AM-11:59 AM

Other times, make arrangement by email or call

Classroom
RFM 1239

Lab
RFM 1239 and 1235

Class Time
T 9:30-11:00 AM
R 9:30-11:00 AM
Lab: R 8:00-9:20 AM

Office RFM 4243

Phone 512-245-2137 (Department) – 512-245-3065 (Office)

Email
Austintalley@txstate.edu

**Contribution to the Professional Component:**
This course provides students with the ability to understand the design process and contemporary tools and techniques in manufacturing. CAD/CAM include understanding fundamentals of design, transformation and manipulation of objects, description of wireframe, surface, and solid models, finite element analysis, product data exchange, process planning, machine elements, fundamentals of numerical control programming for turning and milling processes, fundamentals of CAD/CAM systems, CNC code generation by CAD/CAM software, and CNC machining.

**COURSE POLICIES:**

- Submissions: All assigned work is due on dates as announced in the class.
- Absences: Absences are not recommended in general. Scheduled exam absences or overdue homework and projects will not be accepted unless there exists legitimate excuses (illness, death in the family, etc.) and adequate documentation is furnished. However, it is the student's responsibility to obtain class notes, handout materials, if any, etc. when a scheduled lecture is missed. Any other departmental policies on absences must be adhered to.
- Academic Honesty: Students are expected to be aware of and abide university policies regarding to academic dishonesty: cheating and plagiarism. Sanctions will be applied as described in Section 02.04 of the university honor code.
- Attendance Policy: Punctuality and regular participation in lectures is strongly encouraged. **Do not arrive late or leave during lecture.** This behavior will not be tolerated since it distracts your classmates.
- Calculators: These devices are expected for all quizzes and exams. However, you must show all your work since partial credit may not be awarded if intermediate calculations are omitted.
- Usage of Electronic Devices: Please turn off all electronic devices prior to class time.
- Students with Disabilities: Students with special needs (as documented by the Office of Disability Services) should identify themselves to the professor at the beginning of the semester and provide appropriate documentation to receive the support required.
-

**Evaluation:**

- Homework & Quiz 20%
- Literature Research 10%
- Midterm 20%
- Project 20%
- Final Exam 25%
- Attendance: 5%

(each absence -1%, each delay or early exit -0.5%, every volunteer class work +0.5%)

**Prepared By:** Dr. Austin Talley

**MFGE 3316 –CAD/CAM**

**2-D Product**

Using the steps of the design process discussed in class, design a product with the constraints listed.

Constraints

1. Must fit in a 6 inch by 6 inch square with a depth of no greater than 1 inch.
2. The material for the product should be designed to be metal, plastic or wood
3. The must be able to be cut by a 3 axis CNC machine without resetting the part.
4. You must have your hand dimensioned drawing of the part approved before you can start using Mastercam.

Deliverables

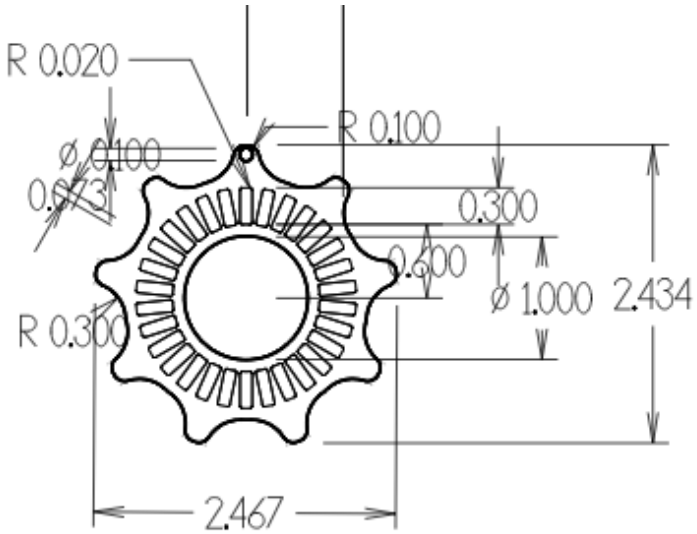
1. Hand concept drawings and written statements demonstrating the design process used.
2. Hand dimensioned drawing of the product
3. Print out of Mastercam drawing with dimensions
4. Group three minute presentation of your product design

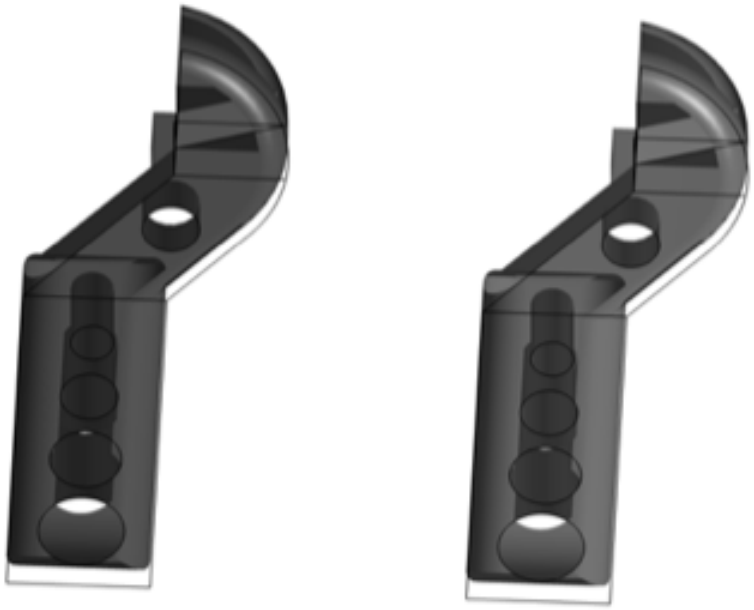
Students: _____ _____ _____

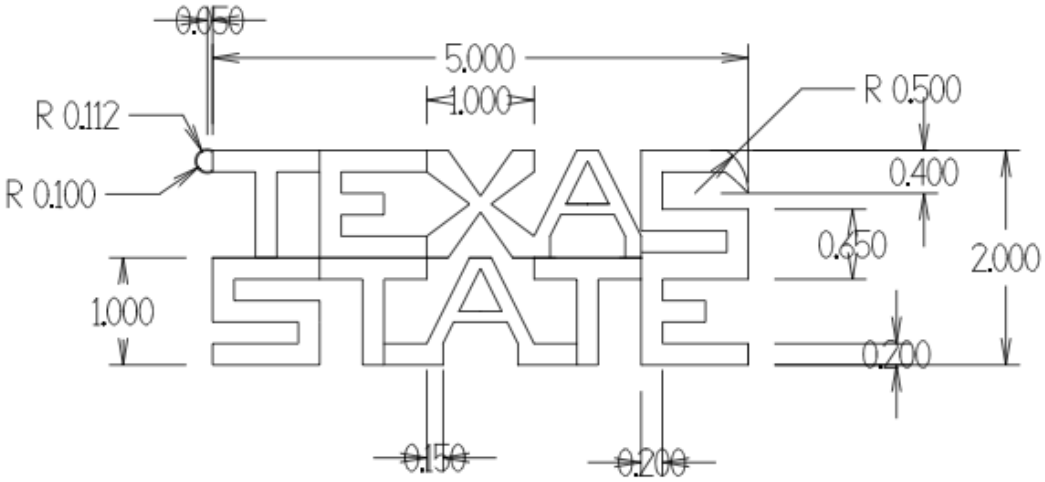
Product _____

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Organization** | Audience cannot understand presentation because there is no sequence of information. | Audience has difficulty following presentation because student jumps around. | Student presents information in logical sequence which audience can follow. | Student presents information in logical, interesting sequence which audience can follow. |
| **Subject Knowledge** | Student does not have grasp of information; student cannot answer questions about subject. | Student is uncomfortable with information and is able to answer only rudimentary questions. | Student is at ease with expected answers to all questions, but fails to elaborate. | Student demonstrates full knowledge (more than required) by answering all class questions with explanations and elaboration. |
| **Graphics** | Student uses superfluous graphics or no graphics | Student occasionally uses graphics that rarely support text and presentation. | Student's graphics relate to text and presentation. | Student's graphics explain and reinforce screen text and presentation. |
| **Eye Contact** | Student reads all of report with no eye contact. | Student occasionally uses eye contact, but still reads most of report. | Student maintains eye contact most of the time but frequently returns to notes. | Student maintains eye contact with audience, seldom returning to notes. |
| **Elocution** | Student mumbles, incorrectly pronounces terms, and speaks too quietly for students in the back of class to hear. | Student's voice is low. Student incorrectly pronounces terms. Audience members have difficulty hearing presentation. | Student's voice is clear. Student pronounces most words correctly. Most audience members can hear presentation. | Student uses a clear voice and correct, precise pronunciation of terms so that all audience members can hear presentation. |

Examples of Students MasterCAM Drawings





Texas State University
**Selected Student Comments**
MFGE 3316 Fall 2013

**Question:**

The technical and/or teaching skills of the instructor, and if he/she is aware of the current developments in his/her field.

**Student comment:**

I enjoyed the professor. It's a difficult and constantly changing field, so he did well adjusting.

**Question:**

The degree and/or type of communication between student and instructor.

**Student comment:**

Good, Face to Face personal communication, very approachable and helpful regarding questions

**Question:**

Make any other statements you with about this course and/or instructor.

**Student comment:**

The prof. was helpful, the class enjoyable, overall I had a great semester

Texas State University

**Description of the 2-D Product Project**

As a part of the course, the students are introduced to the engineering design process. The students learn about the stages of the engineering design process with in class hands on examples. The students also have practiced in-class concept generation techniques to generate and document design concepts with hand drawn and computer added drawings (CAD). As a part of the engineering design process the students learn about incorporating design constrains as a part of the design process. The 2-D Product project is an intermediate mini project for the students to synthesize the many concepts presented in class on the engineering design process. The project was done mostly in class/lab with teams of three to four students. A mid project check on the groups was done with the project approval of the hand drawing of the design before the students could start on the CAD drawings. This was done to promote discussion and interaction with the instructor and each other, along with making sure the groups were effectively cooperating working as a team. The groups were encouraged to help other groups and share ideas as they encountered difficulties rendering their designs in the CAD (MasterCAM) software. In previous semesters as this stage in the course the students were recreating CAD drawing of designs given to them, this project change was done to help engage the students to create and take pride in their own innovative designs while practicing CAD skills. The students presented a wide range of designs some examples are shown in the MasterCAM drawings. I believe this project provided the students with multiple opportunities for the participants to interact in the leaning experience. The project focused on students synthesizing the design concepts to create a new product while practicing CAD skills. This course had two additional groups projects that came after this projects that focused on using the tools they had learned to create new products/designs. The students brief in class presentation of their design allowed all the groups to give feedback to each other and reflect on the experiences.