ME Bulletin

News for Mechanical Engineering Majors

Vol. 56, No. 1 ME Advising Office • 2560 EB • 355-3338 Fall, 2018

COVER STORY:

Formula SAE Wins Trophy!

See page 13

PHOTO PROVIDED BY CHRISTIAN ABBATE

Dr. Gary Cloud, SAE Formula faculty advisor, is shown hoisting their 2nd place trophy in the air moments after they received it!

Teaching Award Nomination Form:

Learning How to Solve Engineering Problems by Professor Ron Averill, ME Associate Chair

Most engineering courses involve problem solving, and solving problems requires the development of several types of knowledge and skills. From course to course, the kinds of problems that are solved and the specific knowledge and skills required can be very different. But across a wide range of courses we can define categories of knowledge and skills that are required for solving most problems. By referring to these categories while studying and practicing, we can develop a framework for learning. This framework provides a location and a structure for storing important knowledge, making it easier to recall.

Let's call these learning categories the Seven C's:

1. Concepts are the fundamental ideas, laws, principles, theories, hypotheses and models that form the basis for most of what we understand and do as engineers. By themselves, they are often not sufficient to solve problems, but they are required to formulate problems, develop solutions and interpret results.

Hint: Before you start solving a practice problem, list the concepts that will be involved in the solution. Review this list after solving the problem and make corrections, as needed.

2. Compass is a guide, or a set of suggested steps, for solving a certain class of problems. It is not usually a detailed process because the nature of each problem is unique and requires some creativity in the application of the relevant concepts. A Compass connects all of the other C's for a given problem type.
Hint: If a compass or solution guide is not provided for you, develop one and use it for all practice problems. Update it when you find limitations or inconsistencies.

3. Computations include the mathematical skills required to solve a problem (e.g., algebra, calculus, vector operations …) and to present data (e.g., significant digits, units …). These are often thought of as "turn the crank" sorts of operations, but a rich set of tools and a deep understanding of them is necessary to be a good problem solver.

Hint: Practice these skills until you can perform them without much thought. Then you can focus more on the other aspects of the problem.

4. Communication takes many forms, but its purpose is always to tell a story. In the context of problem solving, communication skills are needed to define the problem, justify the assumptions, describe the detailed solution steps and interpret the results. Key features include overall organization and structure, step-wise clarity and flow, diagrams, drawings and plots.
Hint: Develop an organized and clear way to communicate all solutions. Include all details, and don't skip steps.

5. Consistency is instrumental in the development of good problem solving habits, skills and communication. This refers to, for example, the repeated use of reliable step-by-step procedures, convenient sign conventions and coordinate systems, meaningful notations … Solving similar problems a different way every time is possible, but it's not very effective.

Cont'd on pg 14

ME Bulletin

The *ME Bulletin* is published twice a year (fall & spring) for sophomores, juniors, seniors, faculty, and staff of the Department of Mechanical Engineering. Photographs were taken by Craig Gunn unless noted otherwise.

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In This Issue

ASME E Fests

by Craig Gunn,

Director of Communications

Make sure that you put April 5-7, 2019 on your calendar. Those are the days when the Department of Mechanical Engineering and ASME will sponsor the 2019 ASME E Fest on campus at Breslin. We are expecting anywhere from 1000 to 3000 students, parents, faculty, and active participants to bring the rousing world of engineering to MSU.

ASME's Engineering Festivals (E-Fests) are regional events for engineering students that include design competitions, career development workshops, access to thought leaders and innovators in various engineering fields, and networking opportunities. E-Fests are three-day, two-night regional events built around design, advanced manufacturing and robotics technologies. They enable engineering students to expand their knowledge, test and showcase new skills and inspire innovation.

It is a full weekend of fantastic activities including speakers, educational sessions, design competitions, and entertainment, including music and food. But equally exciting is the outdoor Human Powered Vehicle Competition, which will allow teams to show their expertise in all things engineering.

For preliminary details on how to participate, go to https://www.asme.org/events/competitions/student-design-competition

To see more of what is in the planning stages from E Fests over the past few years and those to come, go to
https://efests.asme.org/gallery/images/e-fest-west-2018
https://efests.asme.org/gallery/images/e-fest-east-2018
https://efestsouthamerica.asme.org/

E-Fest Competitions

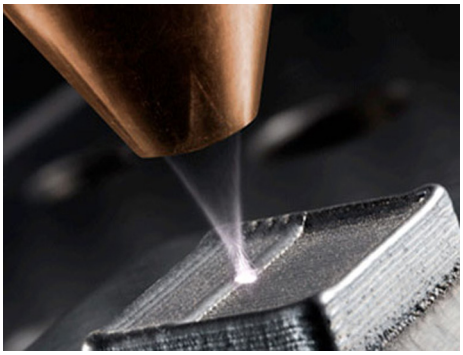
Old Guard Competitions
The oral presentations allow students to showcase their technical presentation skills. The poster competition demonstrates their ability to visually convey technical information.

Human Powered Vehicle Challenge (HPVC)
Human-powered transport is often the only type available in underdeveloped or inaccessible parts of the world, and if well designed, can be an increasingly viable form of sustainable transportation.

ASME's Human Powered Vehicle Challenge provides an opportunity for students to demonstrate the application of sound engineering design principles in the development of sustainable and practical transportation alternatives. HPVC students work in teams to design and build efficient, highly engineered vehicles for everyday use—from commuting to work, to carrying goods to market.

Student Design Competition (SDC)
The ASME Student Design Competition provides a platform for ASME student members to present their solutions to a range of design problems - from everyday household tasks to groundbreaking space exploration. Each team is required to design, construct and operate a prototype meeting the requirements of an annually determined problem statement.

EFESTS.ORG



EFESTS.ORG

ASME Innovative Additive Manufacturing 3D Challenge (IAM3D)
When natural disasters occur it often leaves thousands of people without food, water, or power. The 2019 ASME IAM3D Hovercraft competition tasks university students to use additive manufacturing and an iterative design process to create an unmanned emergency resupply hovercraft that can traverse many mediums to deliver lifesaving aid to those in need. One submittal, a design report showing your vehicles detailed design, will be required prior to participating in the physical obstacle course.

•***Now is the time*** to prepare for a weekend of fantastic excitement.

•***Now is the time*** to think about designing, building, and testing your own HPVC.

•***Now is the time*** to discover a competitive excitement in the world of engineering that requires you to speak, write, design, and perform as all engineers do.

April 5-7, 2019 Awaits You!!

Teaching Award Nomination Form:

Students Select Dr. Reid Bush for the 2018 Withrow Award!

PATRICIA MROCZEK

Dr. Tom Voice, Associate Dean for Administrative Affairs, Dr. Tamara Reid Bush, and Dr. Manooch Koochesfahani, Associate Dean for Graduate Studies and Faculty Development.

Professor Tamera Reid Bush received the 2018 Withrow Teaching Excellence Award last spring at a special awards luncheon and ceremony. She was presented with an inscribed plaque, a medallion, and a small stipend. Each year a committee consisting of student representatives from ASME and Pi Tau Sigma reviews nominations from ME juniors and seniors and makes the selection.

Dr. Tamara Reid Bush joined the MSU ME department in Fall 2009. She currently holds the position of Associate Professor in the Department of Mechanical Engineering at Michigan State University. Broadly, Dr. Bush's area of research is whole-body biomechanics. She conducts in-vivo experimentation, methods development, and modeling to better understand clinically motivated problems connected with human movement and force generation. More specifically, her research is in the areas of seating mechanics, hand function, prosthetics, design for persons with disabilities, and soft tissue injury.

Dr. Bush takes a genuine interest in the success of her students and that of the department in educating future engineers. She has a very engaging personality and teaching style that draws students to the engineering profession. While she maintains a robust research program, she also has a passion for excellence in teaching which is critical to providing students a solid foundation for life-long learning. Her students praise her for engagement and concern with their learning. They feel that she has the ability to put them at ease with difficult concepts, which allows them to get the most out of her courses. Dr. Bush presents a positive aura to everyone she has interaction with, and she is a very positive role model for the department and college.

The words of students say it all:

- "She is an inspirational professor who truly loves her job, and that is reflected in everything she touches."
- "Dr. Bush has laid the groundwork for my entire career."
- "The dedication and passion that she shows inside and outside the classroom is unmatched."
- "She is a great example of a successful woman in engineering."

Dr. Bush is a Fellow in the American Society of Mechanical Engineers, a two-time recipient of the Withrow Teaching Award, and an Executive Board Member of the American Society of Biomechanics. Most recently she received MSU's Inspirational Woman Award for Professional Achievement.

Dr. Bush participates in all types of water sports including swimming, water-skiing, and wind-surfing. She also enjoys hiking with her family and photography.

Academic Advising

1) **ME Juniors and Seniors** are advised by **Gaile Griffore**. For an appointment, call 355-3338, or go to 2560 EB.

2) **Sophomore juniors-to-be with a 3.1 GPA** are advised by **Gaile Griffore**. For an appointment, call 355-3338, or go to 2560 EB.

3) **Sophomores** who do not fit the criteria in number 2 above are advised by **Jeffrey Tsang**. Schedule an appointment with at online at: https://login.msu.edu/?App=Shibb-SSC-GradesFirst

4) **ME Freshmen** are advised in G-60 Wilson Hall on a walk-in basis only.

Deadline: Nov 16

Department News

•**Hamidreza Modares** has joined the ME department as an assistant professor. Dr. Modares received his Ph.D. in electrical engineering from the University of Texas at Arlington in 2015. He comes to us from the Missouri University of Science and Technology where he was an assistant professor. His research interests include Cooperative Control of Multi-agent Systems, Security of Cyber-physical Systems, Autonomous Systems, Game Theory, Machine Learning, Robotics, and Power Systems. Dr. Modares's outside interests include lifting weights, boxing, watching movies, and spending time with his family and friends.

•**Dr. Wei Che Tai** has joined the ME department as an assistant professor. After receiving his Ph.D. from the University of Washington in 2014, Dr. Tai did postdoctoral research at the Energy Harvesting and Mechatronics Research Lab, at Virginia Tech. His research interestes include Multibody, Rotor and Vehicle Dynamics, Nonlinear Vibration and Dynamics, Smart Structures, Vibration Energy Harvesting, Reduced Order Modeling, and Modal Analysis. Dr Tai enjoys watching movies and playing sports. He played varsity handball at National Taiwan University and his team won the national handball championship in division II three times!

•**Professor Neil Wright** has been elected to the rank of Fellow in the ASME. The ASME confers the distinction of Fellow grade on "worthy candidates to recognize their outstanding engineering achievements." Only a few ASME members reach the rank of Fellow.

•**Jennifer Ju**, ME senior, is one of five recipients of the Second Annual #NewFaceofTech STEAM Scholarship Challenge, sponsored by HARMAN International. The five winners receive a $2,000 grant to help them achieve their STEAM career aspirations along with a coaching session with a HARMAN executive. Jennifer's dream is to be a product engineer in the automotive industry. "A grant will help open my opportunities for further education and also relieve me of some of the financial burden of finishing up the rest of my undergraduate studies. I find driver assistance and driver interface systems interesting, and I want to be involved with the new technology movement to improve standards of life through technology and science."

Graduate Studies in Mechanical Engineering at Michigan State University by Dr. Daniel Segalman

The mechanical engineering department at MSU is ranked #56 among an ME programs in the United States. The Department of Mechanical Engineering offers programs leading to Master of Science and Doctor of Philosophy degrees, both in mechanical engineering and engineering mechanics. An individualized plan of study can be designed from a wide range of courses and research experiences to suit the professional aspirations of graduate students. A plan of study typically includes courses within and external to the department. The Mechanical Engineering Department offers research experiences in four broad areas: Fluid Thermal Science & Engineering, Biomechanics Engineering, Dynamic Systems & Controls, and Solid Mechanics, Design, & Manufacturing. The research opportunities are diverse, and they can range from working closely with an individual faculty member and/or as part of a team in a large interdisciplinary research center. Graduate students are expected to engage in research that pushes the boundaries of science and engineering and leads to new knowledge creation.

The PhD Degree is a research-based degree with specific course requirements set by a research advisor and committee to support the student's area of research. Students complete both coursework and research requiring 2 to 5 years beyond the MS degree. Students with an MS degree, or equivalent, in Mechanical Engineering, Engineering Mechanics, or a related area can be admitted into the PhD program. By special consideration students without an MS degree can be admitted directly into the PhD program.

The faculty are unusually collegial, being very supportive of each other and each other's students. The deadline for application is December 31 of the previous year.

Pi Tau Sigma

As a service to the Mechanical Engineering community at MSU, the Mechanical Engineering Honor Society Pi Tau Sigma will be hosting Senior Electives Night. In late November, we will be reviewing the senior electives available to ME's in the upcoming semester, providing a description and members' personal experiences with the classes. This will be an open event, which will be announced in a DECS popup, and all students are invited to attend.

Teaching Award Nomination Form:

Nominate

your favorite professor for the 2019 Withrow Teaching Excellence Award!

Deadline: Friday, Nov. 16

To access the Nomination Form:

1) Go to the ME Website:

https://www.egr.msu.edu/me/

2) Click on Undergraduate

3) Click on Forms and Policies

4) Select Withrow Nomination

THANKS!

New Senior Elective for Spring: ME 413–Cryogenic-Thermal Systems!

Cryogenic system applications are found in aerospace, industrial gas and energy processes, and particle physics experimental facilities. This includes space vehicle propulsion systems, space simulation facilities, air separation plants, LNG systems, and helium cryogenic systems for particle accelerators.

In conjunction with the MSU-FRIB Cryogenic Initiative, the Mechanical Engineering Department is offering a new course in Spring 2019, ME 413-Cryogenic Thermal Systems, 3 credits (Prerequisite: ME 410 or concurrently).

This course is an introduction to the thermal and fluid aspects of cryogenic systems. It will include low temperature properties of materials and fluids, an introduction to cryogenic liquefaction and refrigeration cycles, separation and purification systems, instrument systems for low temperature measurement, fluid storage and distribution, and vacuum technology.

This course complements the one being taught this fall, ME 414-Mechanical Design of Cryogenic Systems (Prerequisite: ME 370), to provide a well-rounded introduction to the thermal-fluids and mechanical aspects of cryogenic systems. *Submitted by by Dr. Pete Knudsen.*

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Curriculum News

Co-op Students: Before you leave for your Spring 2019 co-op rotation, be sure to discuss your schedule for next Fall 2019 / Spring 2020 with your academic advisor.

ME 481–ME Design Projects requires *department approval* before you can enroll. If you have an accurate long-term schedule on file in the ME Advising Office, request approval by submitting the ME 481 Approval Form: https://www.egr.msu.edu/me/me481-approval-form. If you do not have an accurate long-term schedule on file, schedule an appointment with **Gaile** by calling 517-355-3338 or stopping by 2560 EB.

ME 491/001–Humanitarian Engineering (3 credits) will be offered Spring 2019 as a design intensive Senior Elective. See page 15 for more information.

ME 491/602–Creating an Autonomous Vehicle (3 credits) will be offered Spring 2019 as a design intensive Senior Elective. See page 15 for more information.

Class Standing. ME juniors and seniors can obtain this information in 2560 EB. Sophomores should go to G-60 Wilson. Be prepared to show your MSU I.D.

Job Search Advice: The Center is available to answer questions about your job search. To ask a question or schedule an appointment, go to their NEW LOCATION in C108 Wilson or call 517-355-5163. Or, email the office at: careers@egr.msu.edu

Prerequisites: The ME department expects all students, *including members of the Honors College*, to observe all course prerequisite requirements. If you have a question about prerequisites, contact the ME Advising Office.

Deadline: Nov 16

The Center for Spartan Engineering student engagement / career office has relocated to C-108 Wilson Hall!

If you:

- need resume writing assistance
- are searching for co-ops, internships, and /or full-time jobs
- would like to develop a job search strategy
- want to get the most out of LinkedIn and Handshake tools
- have questions on negotiations and evaluating your offers
- simply want to drop by and chat…we'll see you there!

Here are our hours of operation:

- Monday – 10:00 AM - 7:00 PM
- Tuesday – 10:00 AM - 7:00 PM
- Wednesday – 10:00 AM - 7:00 PM
- Thursday – 10:00 AM - 7:00 PM
- Friday – 8:00 AM - 5:00 PM

Follow us and stay up-to-date on career resources at:

- Twitter: MSUengineers
- Instagram: MSUengineer
- Facebook: MSUEngineers

Tutoring

•The ME Learning Center in 1237 EB, has free mentors for ME 201, 222, and 361 at 6-10 p.m. on Sunday through Thursday.

•The Guided Learning Center (GLC) in 1108 EB, offers free drop in tutoring in math up to differential equations, science courses (chemistry, physics, etc.), and many core engineering courses. To request assistance, go to: https://www.egr.msu.edu/dpo/academics/guided-learning-center [Scroll down and click on application form]

•The Cornerstone & Residential Experience (CoRe) program offers free tutoring in G24B Wonders Hall on Sunday through Thursday from 6 - 10 pm. This "drop-in" setting provides help for MTH 132 and 133; CEM 141 and 151; and PHY 183 and 184.

•ME graduate student and Pi Tau Sigma undergraduate tutors can be contacted through the ME Advising Office. These tutors charge a fee, which you can negotiate with them. If you are interested, email **Gaile Griffore** at griffore@egr.msu.edu

MICHIGAN STATE UNIVERSITY Design Day COLLEGE OF ENGINEERING

Friday, December 7, 2018
Engineering Bldg

Come and see our students lead, create, and innovate

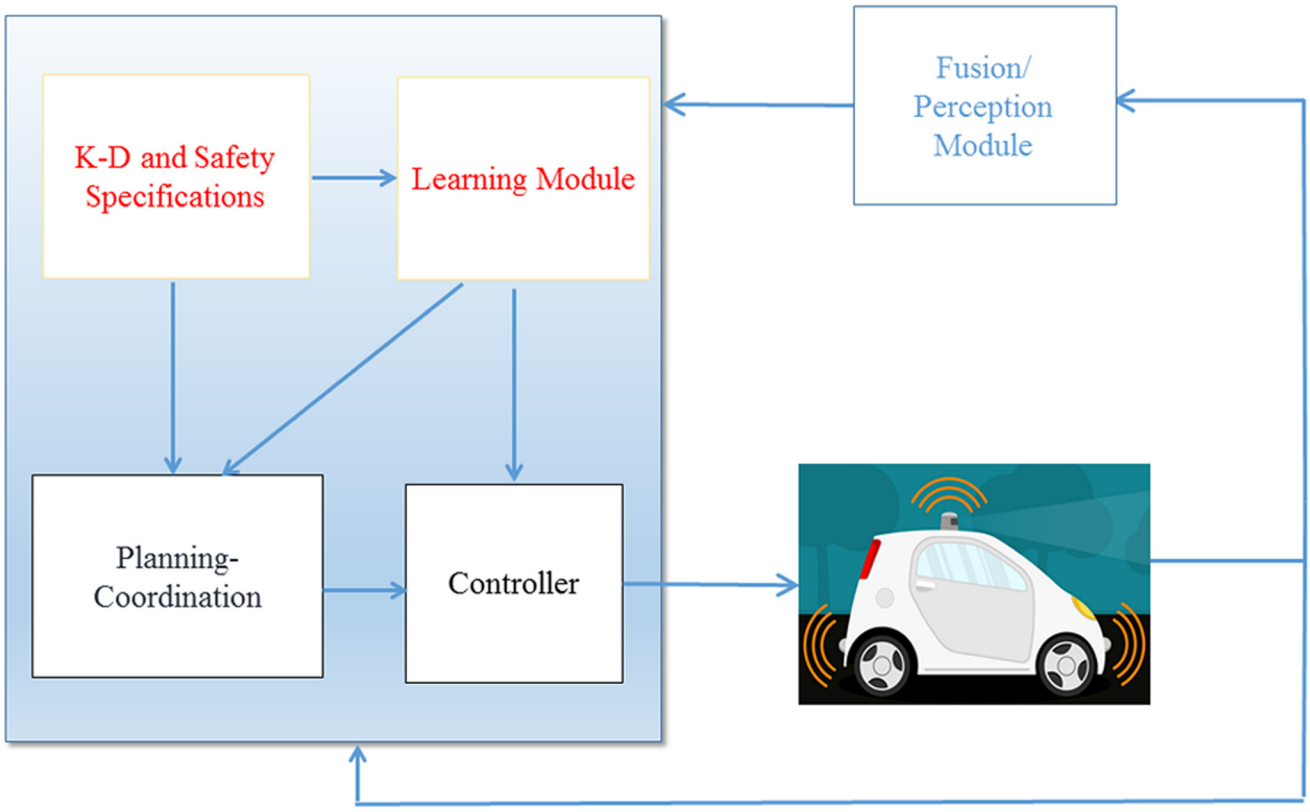
- Competitions
- Demonstrations
- Presentations
- Awards

Assured Autonomy for Cyber-Physical Systems by Dr. Hamidreza Modares

Cyber-physical systems (CPSs) are composed of a population of interrelated physical components or agents that are equipped with communication and computation cyber capabilities. They have enabled emerging smart systems for improving the quality of human life, performing dangerous and dull tasks, improving services, and augmenting human capabilities. Agents attempt through their interactions to jointly and cooperatively solve common tasks or achieve common group objectives, while satisfying their own selfish and possibly conflicting objectives. An example is a group of autonomous vehicles moving in a common environment with the group objective(s) of performing coordinated, collaborative or synchronized tasks (e.g., surveillance, exploration, distributed sensing, formation, search and rescue, platoon, and lane merging) as well as selfish objectives of satisfying safety constraints imposed by the environment (e.g., obstacle avoidance) or by the vehicle dynamics (e.g., state and input constrains).

> One of the main bottlenecks in deploying successful distributed CPSs is designing secure control protocols that can learn about system uncertainties progressively while showing some level of functionality in the presence of attacks or threats.

The cyber aspect of communication in CPSs brings a lot of advantages and opportunities to CPSs. For instance, the connectedness of the autonomous cars can be beneficial for many important functions. As an example, communicating sensory data between cars can improve perception of the surroundings which reduces accidents. Moreover, connectivity is a key enabler in some tasks such as platoon and lane merging, which require cooperation among autonomous cars to avoid traffic congestion and conflicts. However, control of connected and self-driving cars is challenging as the control designers cannot foresee all possible circumstances that connected and autonomous cars will face during their operations. Moreover, emerging CPSs are under significant



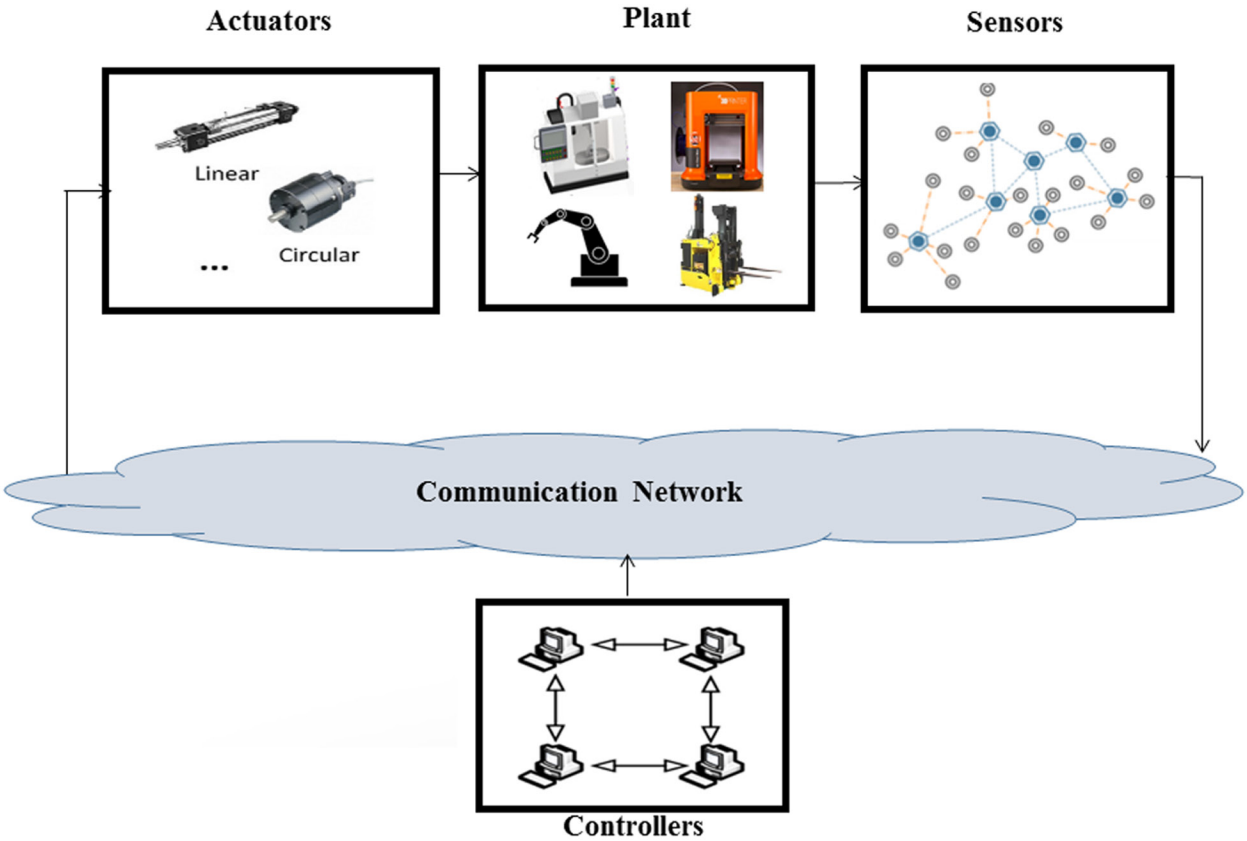
GRAPHIC PROVIDED BY DR. MODARES

Figure 1. Different modules of a self-driving car. The perception module fuses the information it receives from many sensors to perceive its surrounding environment and possibly detect anomalies. The planning/coordination module plans an obstacle-free trajectory for the car while assuring that safety specifications are satisfied. The controller then applies appropriate forces to make the car track the planned trajectory. Learning is required to adapt to changes in both planning and control levels.

uncertainties and changes. The source of change ranges from natural adversaries such as fault, failure and aging, and network imperfection, to deliberate adversaries such as cyber-physical attacks, and to the external environment in which the system is operating. The chance of survival as well as the performance of the system can be greatly increased by quickly detecting changes and adapting in anticipation of those changes. This requires learning from experience to achieve desired behaviors in all circumstance, including unforeseen and novel threatening ones.

On the other hand, due to their networked nature, attacks and unreliable communication networks can escalate into disastrous consequences and significantly degrade the performance of the entire autonomous network. Figure 1 shows the different modules of a self-driving car. A cyber-physical attack can, for example, target a small subset of sensors in the self-driving car (e.g., GPS) and consequently fool the perception module, leading it to a wrong understanding of its surrounding environment and/or its location. The planner and controller modules then use this falsified information and can make wrong and potentially catastrophic decisions if the system is not empowered with resiliency and learning capabilities. One of the main bottlenecks in deploying successful distributed CPSs is designing secure control protocols that can learn about system uncertainties progressively while showing some level of functionality in the presence of attacks or threats.

Dr. Hamidreza Modares' research focuses on the design of robust and secure learning-enabled CPSs, with application to self-driving cars, smart grids, and unmanned aerial and ground vehicles. He has also recently started working on smart manufacturing systems as an application of CPSs. Figure 2 shows a smart manufacturing system in which variety of components, from sensors used to monitor the system to conveyer belts and to robots, collaborate in a dynamic unstructured shop floor to increase productivity and improve quality by adapting to the customers' needs and variations in their workspace. His research group studies how to reflect the imperfect foresight and/or risk caused by adversaries and changes in the future decision-making strategies of CPSs and consequently develop smart and autonomous CPSs that can adapt to changes as well as can restore an acceptable functionality following threats and attacks. To achieve this, he tries to bring together machine learning, information theory, game theory, control theory, and temporal logic.



GRAPHIC PROVIDED BY DR. MODARES

Figure 2. A smart manufacturing system, composed of sensors, robots, 3-D printers, actuators and controllers. The robots need to continually sense their surrounding environment and collaborate with each other and other components to collaboratively perform a task while adapting to changes and needs.

100 Seniors to Graduate in December!

Congratulations to all mechanical engineering December graduates! On behalf of the ME faculty, I wish you the greatest happiness and success in your careers, graduate studies, and personal lives. The following students had applied for graduation by October 10. If your name is missing, please contact me immediately (Email Gaile at <griffore@egr.msu.edu> Tele: 517-355-3338).

Prakash Subodh Agrawal
Mitchell R. Agrwal
Ryan Jacob Ahee
Ian Patrick Albert
Abdulrahman Saad Alqarni
Steven Tyler Atkin
Andrew Thomas Baran
Justin Raymond Barg
Kyle Benjamin Bauer
Alexa Marie Baylis
Benjamin Joseph Beckas
Michael Andrew Bertrand
Jacob Anthony Blankemeier
Amanda Deeion Boone
Zachary Taylor Bowling
Elijah Jonathan Broemer
Morgan Whitney Burr
Yibin Cheng
David Stephen Cohle
Zachary Evan Cook
Robert William Cortese
Dallas Wayne Creech
Luke Taylor Crompton
Nicholas David DeLang
Brian David Doyle
Emily Suzanne Duddles
Madison Beth Duncan
Benjamin Kyle Dunklee
Morgan Therese Ergen
Jacob Paul Fiebke
Evan Thomas Finses
Stuart Michael Gadigian
Xueran Gao
Yaocheng Ge
Aaron Washington Gordon
Lauren Elise Green
Valtcho Stoytchev Gueorguiev
Nathan William Hadobas
Tecumseh Martin Hakenjos
Lance James Haner
Holly Noelle Iglewski
Kory Richard Iott
Ivan Gueorguiev Iovtchev
Ethan Sawyer Jacobs
Brandon Michael Jett
Jun Jiang
Alexander Douglas Johnson
Christopher M. Johnson
Samantha Liam Jones-Jackson
Patrick Campbell Kelly
Jason Jaehun Kim
Genevieve Georgette Kobrossi
Suhas Kodali
Gabriel John Lefere
Jiangshan Li
Shiyu Liu
Michael Gary Logan
David Mitchell Mackens
Nathan Andrew McLean
Jack Gerald Michalski
Patrick M Miyamoto
Najah Mubashira
Kevin Edward Payne
Elizabeth Rose Pollack
Mauricio Pons Martinez
Reed Harrison Potter
Matthew James Rimanelli
Anna Banks Robinson
Drew Douglas Roth
Anindow Saha
Gabriel Vincent Sarnacki
Spencer Phillip Schang
Robbert Augustinus Schmit
Kevin Michael Schuett
Tianlun Shi
Nicole Marie Stanley
Ruiwei Sui
Yuexing Sun
Amy Doye Sutton
Aryka St Jean Thomson
Joel Mavian Todd
Diamant Topllari
Antonio Duaine Ulisse
Sivajyothi Vemulapalli
Philipp Waeltermann
Yanze Wang
Andrew David Webb
Matthew Paul Weber
Robert Wei Jr.
Aaron James Winter
Yingde Xie
Fan Xu
Jianan Yao
Simone Young
Zachary John Zettle
Chengming Zhang
Yi Zhou
Sipeng Zhuang
Michael Joseph Zielinsky
Levi Taylor Zimmerman

Teaching Award Nomination Form:

Dean's List

Congratulations to these 479 ME majors who made the Dean's List after Spring and Summer 2018. To be on the Dean's List, you must have a semester GPA of 3.5 or better. This list is from September 20. For updates, go to: http://www.reg.msu.edu/ROInfo/GradHonor/DeansList.aspx

SPRING 2018: Sam Addy, Prakash Agrawal, Mitch Agrwal, Nahyun Ahn, Shwan Al-Howrami, Mohamed Alameeri, Ali Alhajji, Ahmed Alhosani, Jimmy Almacddissi, Evan Alvanas, Naif Alzahrani, Jack Aman, Tony Anason, arah Angold-Stephens, Nathan Ansbro, Scott Anthony, Matthew Arenz, Garrett Armock, Rachel Arnold, Albert Asta, Ally Austin, Matthew Auvenshine, Ryan Babiarz, Sadab Bahar, Arjun Balakrishnan, Ryan Ball, Nathan Barbish, Cameron Barghahn, Brandon Barker, Will Barrett, Payton Bauman, Lexi Baylis, Jenna Beauregard, Madison Begin, Megan Beisser, Paul Beiter, Benyukhis, Tyler Michael Bigelow, Frank Biondo, Jake Blankemeier, Jacob Bloom, Dan Bojanowski, Ameya Bokil, Adam Bolyard, Jordan Bommarito, Jonathan Borgiel, Nick Boston, Zach Bowling, Noah Brackenbury, Matt Bradford, Stephen Branch, Hernan Brarda, Kole Brunsman, Nathan Buchweitz, Abbey Bugenske, Daniel Burchart, Brody Burke, Taylor Burris, Connor Campbell, Sydney Carmack, Ronald Carr, Sam Case, Josh Cassady, Matthew Cassiday, Trevor Chamberlain, Lauren Chance, Jillian Chandler, Robert Chaney, Adam Childress, Luke Chrisman, Josh Ciaccio, Sydney Clark, Stephanie Close, Liam Conlan, Zachary Cook, Paige Cordts, Graham Cornish, Tommy Coughlin, Lily Craigmalich, Nick Crane, Emma Curd, Jack Dailey, Drew Daily, Jenna Dalrymple, Trevor Dame, Devon Davenport, Kobie Davis, John Delang, Rosalie Deliz, Madison Dell, Marissa Depolo, Jessica Derkacz, Antonino Destasi, Oliver Deyoung, Diallo, Alhassan Matthew Donahue, Andy Dong, Brian Doyle, Steven Dubey, Tyler Dubois, Geena Duff, Carly Dugan, Drew Dunker, Ben Dunklee, Derek Edwards, James Ellison, Rachel Emerick, Nathan Engler, Phillip Erickson, Anthony Ethridge, Colton Fairbanks, Mike Falter, Ryan Fantin, Nate Farhat, Ishmael Fasina, Brian Fedewa, Kyle Fischer, Nicholas Flannery, Zach Flowers, Patch Floyd, Brianna Forsthoefel, Matt Forsyth, Lance Frahm, Alexis French, Will Gadbois, Stuart Gadigian, Jackson Garber, Ryan Garman, James Garrett, Jacob Genaw, Nick Gerich, Haram Gil, Kole Gilbert, Justin Gilgallon, Noah Gilman, Nathanael Ginnodo, Reison Gjolaj, Grant Gooch, Matthew Good, Lindsay Goodrich, Spencer Goosen, Aaron Gordon, Anna Graffeo, Jim Graham, Marissa Grazioli, Samuel Greenwald, Demarcus Gregory, Charlie Guidarini, Robert Gustke, Nathan Hadobas, William

Hahm, Andrew Hall, Andrew Hallam, Paul Han, Tal Hanani, Will Hartnagel, Karl Havens, Houduo He, Chris Heilman, Max Herzog, Lazerick Hill, Fritz Hittner, Laura Hohnstadt, Nate Holloway, Edward Hollstein, Caleb Holtschlag, Jackson Honeycutt, Ji Hong, Colin Horton, Michael Houser, Xuanwen Huang, Jill Hubbard, Ryan Huizinga, Emani Hunter, Rhylan Huss, Reed Hylka, Alex Ifkovits, Holly Iglewski, Jeffrey Ingell, Kory Iott, John Jaaska, Jillian Jakubiec, Daniel Jansen, Nathaniel Jenkins, Alex Jennings, Alexander Johnson, Samantha Jones-Jackson, Aaron Kaplan, Kelsey Karasek, Tom Karbon, Jacob Keller, Ross Kelly, Gabby Bledsoe, Danielle Keusch, Amjid Khogali-Watson, Do-Hyung Kim, Hyeungsuk Kim, Jason Kim, Taylor King, Alex Kintner, Andrew Kistler, Jean Klochko-Bull, Jason Koberstein, Suhas Kodali, Devin Kotal, Jonah Kowalczyk, Nicole Kowalski, Jennifer Kozlowski, Zak Kubiak, Jack Kuerbitz, Dean Kuharevicz, David Kumiega, Andrew Lamkin, Brett Lanski, Ethan Lau, Matt Lawrence, Emily Leblanc, Mitch Leblanc, Jack Leckner, Sang Lee, Montse Lewinmejia, Cam Lewis, Evan Lile, Ian Lindsley, Sean Lishawa, Huan Liu, Mingjia Liu, Simon Liu, Yangzhe Liu, Dom Long, Dylan Lott, Ryan Loveland, Christian Luedtke, Megan Luzenski, Maria Magidsohn, Matt Mann, Erin Maroney, Nolan Martin, Maria Martinpereira, Brandi Mazzella, Patrick Mccormick, Reid Mcdonnell, Autumn Mclane-Svoboda, Brendan Mclean, Brad McMahon, Douglas Mcnanney, Josh Meyer, Jack Michalski, Daniel Middleton, Owen Middleton, Austin Miller, Helen Miller, John Miller, Spencer Miller, Dante Minatel, Bradley Moore, Kanshu Mori, Nehemiah Mork, Morrice Morris, Robert Mothersell, Radhika Murgai, Josephine Muscato, EmmaJane Naegeli, Josue Natarenmoran, Shane Neal, Sara Nevedal, Jake Nevin, Daniel Nicklowitz, Allison Nielsen, Sarah Nold, Kyle Nouhan, Garrett Novak, Stephen Oberheim, Caleb Obrien, Tim Ohtake, Erick Olguin, Ginnie Olszewski, Bryce Oneill, Emily Oswald, Maggie Ozias, Nina Palazzolo, Andrew Palucki, Bram Parkinson, Mike Pastoria, Kelly Patterson, Evan Paupert, Josh Peckens, Jianyuan Peng, Alex Perkins, Sammie Pfeiffer, Brandon Phan, Megan Phanrisvong, Lehomm Pickard, Brian Pieciak, Joey Pinakidis, Adam Piper, Robert Pizzimenti, Anthony Podojil, Alexander Pomaville, Mauricio Ponsmartinez, Kurtis Potier, Michael Powers, Sean Powers, Jake Prusakiewicz, Zhiyuan Qu, Andrew Quang, Chase Quencer, Daniel Quinn, Katianne Rausch, Derek Raymond, Heather Raymor, Matt Razz, Tess Reed, Carter Reeds, Sydney Rehr, Li Ren, Vince Rende, Becky Reneker, Austin Rhodes, Matt Rice, Adam Richards, Jacob Richter, Matt Rimanelli, Noah Rimatzki, Sam Rinke, Spencer Rinke, Maggie Ritchie, Anna Robinson, Jeffrey Rockwell, Karisa Rodeghiero, Vincent Rogers, Derek Roggenbuck, Chase Rojeck, Danielle Rosebrook, Drew Roth, Ryan Rowe, John Royston, Taylor Ruelle, Zachary Sadler, Sammut, Jason Gavan Sarrafian, Jack Schlegel, Blake Schmidt, Matt Schram, Kyle Schreur, Kevin Schuett, Paul Schulman, Deshawn Schwan, Lucas Serraiocco, Nicole Shaffer, Ali Shami, Samar Sheikh, Jacob Sickelsteel, Ryan Simon, Matt Sinelli, Calvin Smith, Max Smith, Thomas Smither, Adam Speaks, Frank Spica, Andy Stamm, Kayla Starr, Ryan Stawara, Connor Steffens, Nick Stein, Jayme Stiglich, Steven Stine, Jake Stuifbergen, Anthony Su, Nate Sudek, Justin Suh, Ruiwei Sui, Shaotong Sun, Yuexing Sun, Caden Swindell, Paul Sytsma, Aiden Tang, Pankti Tank, Charlie Tappan, Jordan Thayer, Heidi Theisen, Spencer Thompson, Lars Thornton, Brant Toback, Kyle Tomaszewski, Diamant Topllari, Alex Toth, Katie Treloar, Patrick Tucker, Sarah Tumavitch, Antonio Ulisse, Matthew Urdea, Brian Valentine, Nick Van Oost, Mark Vanbuskirk, Caleb Vanloon, Alaura Vannest, Marc Veihl, Sivajyothi Vemulapalli, Bobby Vette, Dayana Villagran, Ben Vitek, Dennis Volostnykh, Philipp Waeltermann, Michael Walicki, Jacob Wallace, Lucas Walsh, Julia Walter, Connor Walters, Vanessa Wang, Yiming Wang, Zhenyu Wang, Zhiyao Wang, Lauren Ward, Nathan Ward, Bryan Warholak, Aaron Warstler, Jon Wasiel, Jeremiah Waterman, Brent Weakland, Andrew Webb, Demetria Webster, Xiaohang Wei, Megan Weiss, Nic Weller, Stephen Wernette, Jacob Wescott, Jonathan West, Miranda Whah, Jay Wideman, Nic Wiggins, Henry Wikol, Leah Williams, Reed Williams, Gabbie Wink, Chad Winner, Ross Wolniakowski, Kyle Woods, Lena Wuensch, Hannah Wyatt, Joey Xie, Xiaoyu Xiong, Jimin Yang, Keyen Yockey, David York, Ryota Yoshida, Zhengwei Yu, Tahha Zahid, Ross Zalewski, Gabrielle Zapolnik, Abdelrahman Zebdi, Connor Zehr, Zac Zettle, Hansheng Zhang, Haoran Zhang, Andy Zhao, Jack Zhao, Lucas Zheng, Zhehao Zhou, Evelyn Zielinski, Michael Zielinsky, Adam Ziemba, Levi Zimmerman, Cody Zorn, Yifan Zou.

SPRING 2018: Mohammed Al-Tameemi, Emma Curd, Jim Geddes, Zhaoqi Huang, Hyeungsuk Kim, Sang Lee, Matt Mann, Paul Marvin, Kyle Oliynyk, Danielle Rosebrook, Sivajyothi Vemulapalli, Travis Wahl, Robert Wei, Nic Weller.

SAE International

NEW SAE Aero Team!

The SAE Aero Team is a competitive fixed wing aircraft team trying to compete in the 2019 SAE Aero East/West competition. This is a brand new team at Michigan State University, and we will become an official student group in the Fall of 2018! We are currently looking for the following leadership positions:

- Business/Project Lead
- Aerodynamics Lead
- Structural Design Lead
- Electronics Lead
- Manufacturing Lead

If you are interested in any of those positions or working under those leads in the future, contact Chief Engineer Harrison Haynor (haynorha@msu.edu) and/or Design Advisor Jordan Thayer (thayerj3@msu.edu). Check out our website at http://spartanaero.weebly.com/sae-aero.html

ASME

ASME SETTING THE STANDARD 1880 2005

The American Society of Mechanical Engineers is an organization that enables collaboration, knowledge sharing, career enrichment, and skills development across all engineering disciplines, specifically geared toward mechanical engineers. ASME here at MSU gives mechanical engineers the opportunity to connect with each other and get involved.

Each semester we host student design competitions, such as junkyard wars or a 3D printing competition. We also, volunteer at community schools to help young people get interested in engineering ,and host corporate information sessions for our members to learn more about industry and connect with employers. ASME is a great way for mechanical engineers to build their resumes and make an impact on the community.

Baja SAE

The MSU Baja Racing Team is an official SAE Collegiate Design Team which designs, builds, and competes with an off-road Baja buggy each year. The team, which is student led, provides a unique opportunity for engineers to develop crucial hands on designing and manufacturing experience preferred by many companies, as well as leadership opportunities.

The team has been hard at work this year and will soon be unveiling our car for this year. Starting in the fall, students have learned how to use NX and FEA on a real world application and consider the manufacturing methods to make each part. After that, students are taught how to operate the machines in our shop to make their parts and how to interact with companies to order parts. The Baja team is a great opportunity for developing skills learned in the classroom and for building a professional network. *Submitted by Zac Brei, Project Manager.*

PHOTO PROVIDED BY ZAC BREI

Undergraduate Program Educational Objectives
Department of Mechanical Engineering
Michigan State University

(Approved by the ME Department Faculty on December 10, 2015)

Our graduates will:

- *Be competent and ethical engineers practicing in a diverse range of activities.*
- *Use their mechanical engineering education as a stimulus for personal and professional growth.*
- *Be recognized for their capability, creativity, and application of knowledge.*
- *Be independent and critical thinkers who identify problems and develop effective solutions.*

Teaching Award Nomination Form:

MSU – RWTH Aachen Program

by Prof. Brian Feeny, Program Director

College is a great time in life for trying new experiences, and a fantastic way to broaden your experiences is to take part in a Study Abroad program. Our exchange program with RWTH Aachen, Germany, provides a summer experience where you can work on an applied engineering project in an advanced facility, tour fascinating sites, savor European foods and beverages, soak in the ambiance of languages and culture, and meet new people. By doing a study abroad, you will get immersed in an environment with not just unique scenery, but where you can witness first hand different ways of meeting basic needs that are easily taken for granted.

MSU ME students with a 3.0 GPA or higher have the amazing opportunity to (a) live in Aachen, Germany (mid-May to end of July 2019), (b) earn 5 credits independent study plus 4 credits German language and culture, and (c) travel in Europe with planned 3-day weekends, i.e., the motto is "Work hard, play hard!" The experience will involve interaction with fellow engineering students from around the world at RWTH-Aachen, a premier European technical university. The city center is a blend of an old, historic European city and a modern college town. The superb rail system allows our students easy access to Munich, Paris, Amsterdam, Zurich, Rome, and many more destinations on their 3-day weekends. Those with a wanderlust for nature might consider places like Verndon Gorge in France, the Alps, Germany's

Jasmund National Park, or Stromboli in Italy.

Note: Scholarship funds are available through the North American Rockwell Endowment.

Find out more! Watch for an announcement about an upcoming informational meeting. You can also contact me at feeny@egr.msu.edu or 517-353-9451. A great way to get more information is to talk to former exchange students. They enjoy sharing their experiences with the program. Let me know, and I can help you get in contact with former Aachen exchange students. Don't miss this opportunity!

Study Abroad in France (ECAM in Lyon)

by Professor André Bénard

The Department of Mechanical Engineering offers a month-long study abroad program for junior-level students in Lyon, France each summer. The students stay at ECAM, a French engineering school located in the old part of Lyon, for the entire month of June. Students can take the equivalent of ME 201 or ME 410, both taught in English. They also take a French language course (taught in French). If you are interested in this program, please contact:
Ms. Maggie Blair-Ramsey <blairram@egr.msu.edu> or
Professor André Bénard <benard@egr.msu.edu>

COVER STORY

SAE International

Formula SAE

Formula SAE is a collegiate design series where students design, build, and race a small formula styled racecar. Over the past year, State Racing is coming off one of our best seasons yet with the SR-18! Some of our highlights include: 4th place, out of 120 teams, in the autocross event at Michigan International Speedway, 2nd place in the Design and Endurance events at the competition in Lincoln, Nebraska along with our best finish in team history at a sanctioned FSAE event of 2nd place overall, out of 80 other teams. Last month, the team headed up north for the Toronto Shootout. The team finished 3rd overall while posting the 2nd fastest time of the day which was only 0.010 seconds away from fastest time of the day.

The team is now wrapping up their designs for the upcoming cars, SR-19, with manufacturing just starting to get underway. The team is looking to switch around our design cycle to be able to bring the most durable, reliable, and battle tested car to the competition at Michigan International Speedway.
Submitted by Christian Abbate, Chassis Member.

PHOTO PROVIDED BY CHRISTIAN ABBATE

Formula SAE's SR-18 is shown with its trophies from the competition in Lincoln, Nebraska.

Cont'd from pg 2

Hint: Develop best practices in your solution processes and communication and don't vary from them. Be boring here and save the creativity for when it is actually useful.

6. Checks are strategies and methods to validate the accuracy of solutions. The most relevant approaches to use depend on the type of problem being solved. Examples include repeating (double-checking) computations, confirming that a final solution satisfies the boundary conditions, verifying that conservation laws are satisfied and so on.
Hint: A method used to check a solution should be different from the original method used. For example, calculate a moment using the right-hand rule, then check it with the full cross-product approach. Perform calculations on your calculator in a different order to check your work.

7. Collaboration plays an integral role in nearly every phase of engineering. Examples include interdisciplinary teams working on design projects and students in a study group practicing solutions to challenging problems. The success of a team usually depends on the leadership, goal setting, task planning and other teamwork skills of its members.
Hint: Take a leadership role in a club or in your study group. Practicing team skills is a great way to improve a few of those talents that employers are looking for.

Note that these are not steps for engineering problem solving. Rather, they are the main components or ingredients that are required to solve problems. In most problems, many of the Seven C's will play a role, though perhaps not all of them at once.

In addition to providing a framework for organizing new knowledge and skills, the structure and vocabulary of the Seven C's can be used to identify specific areas of learning strength and weakness. "I am not good at solving this type of problem" might be replaced with "I don't understand why this term is zero for this problem" (Concept) or "I don't know how to use this information to calculate the temperature" (Compass) or "I seem to get the wrong sign whenever I take a cross-product" (Computation) or … Then, additional practice and study can be targeted where it will help the most.

When practicing problem solving, identifying the role played by each of the C's helps to reinforce both the distinctions and the connections among them. This simple act helps you to better appreciate the broad set of skills and knowledge needed to be a good engineer, which in turn seems to motivate and guide more purposeful study.

❖❖❖❖❖

Michigan State University
Department of Mechanical Engineering

CRYOGENIC ENGINEERING CONCENTRATION

(12 Credits)

A mechanical engineering degree with the cryogenic engineering concentration signifies the interests and expertise of students in thermal and mechanical analysis and design techniques as applied to cryogenic engineering applications. To complete a Bachelor of Science degree in mechanical engineering with an engineering mechanics concentration, students must complete the requirements for the B.S. degree, including the following 12 credits:

•ME	413	Cryogenic-Thermal Systems	3 credits (Spring Only)
•ME	414*	Mechanical Design of Cryogenic Systems	3 credits (Fall Only)
•ME	416*	Computer Aided Design of Thermal Systems	3 credits (Fall Only)
•ME	442*	Turbomachinery	3 credits (Spring Only)

CREDIT DISTRIBUTION: The 12 credits in the concentration will fulfill the Senior Elective requirement, including the "design intensive" course component. Completion of the option will be noted on the final transcript.

The asterisk (*) signifies that the course is design intensive.

SPRING SEMESTER SENIOR ELECTIVES

▶**The asterisk (✻) after a course number indicates that it has been officially designated as "Design Intensive."**

ME 413 Cryogenic-Thermal Systems. 3(3-0). Prereq: (ME 410 or concurrently). *Rao.*

ME 417✻ Design of Alternative Energy Systems. 3(3-0). Prereq: (ME 410 or concurrently).*Bénard.*

ME 426 Introduction to Composite Materials. 3(3-0). Prereq: (ME 222). *Xiao.*

ME 433 Introduction to Computational Fluid Dynamics. 3(3-0). Prereq: ME 410 or concurrently. *Jaberi.*

ME 441 Aerodynamics and Aircraft Performance. 3(3-0). Prereq: (ME 332). *Allison.*

ME 442✻ Turbomachinery. 3(3-0). Prereq: (ME 332). *Engeda.*

ME 445✻ Automotive Powertrain Design. 3(3-0). Prereq: ME 444. *Schock.*

ME 464 Intermediate Dynamics. 3(3-0). Prereq: (ME 361). *Tai.*

ME 465✻ Computer Aided Optimal Design. 3(3-0). Prereq: (ME 222 and ME 280) and (ME 370 or concurrently) or (ME 371). ***Online Course.*** *Averill.*

ME 477 Manufacturing Processes. 3(3-0). Prereq: (ME 222) and (MSE 250). *Guo.*

ME 478✻ Product Development. 3(3-0). Prereq: (ME 477). *Kwon.*

ME 490 Independent Study. 1-4 credits. *See Override Instruction #2 below*. You may reenroll for a maximum of 6 credits.

ME 491✻ Selected Topics in Mechanical Engineering. Section 001: Humanitarian Engineering: Design, Build, Test, Communicate, International Projects. *See Override Instruction #1 below*. Course Description: Engineering for the promotion of human welfare, particularly in disadvantaged communities, disaster-stricken areas and resource-limited countries. Human centered design, product development and manufacturing. Global issues, poverty, underdevelopment, social justice, sustainability. Paper-based design projects solving real-world engineering problems. Prereq: (ME 370 or concurrently). *Lillehoj.*

ME 491✻ Selected Topics in Mechanical Engineering. Section 602: Creating an Autonomous Vehicle. *See Override Instruction #1 below*. Course Description: A hands on course in which students learn about autonomous vehicle technologies, as well as develop and implement components on test mobile platforms. Topics: Robotic Operating System (ROS), vehicle communication such as CAN bus, Sensing (GPS/IMU, lidar, camera, radar, sonar), Perception (localization, mapping, object recognition, tracking, fusion, deep learning), and Decision/Action (path planning, prediction, obstacle avoidance, vehicle control). There will be group and individual projects, regular presentations to the class, and mid and final reports. Prereq: (One semester of C++, Python or Java). Recommended: Proficiency with ROS (see ros.org for tutorials). NOTE: This course is being offered by the ECE department, and the number of ME majors will be limited to about 6 who receive enrollment approval from Dr. Morris. *Morris*.

ME 495 Tissue Mechanics. 3(3-0). Prereq: (ME 222). ***Biomedical Concentration Course***. *Wei.*

ME 497✻ Biomechanical Design in Product Development. 3(3-0). Prereq: (ME 370 or concurrently) or (ME 371). ***Biomedical Concentration Course***. *Bush.*

BE 444 Biosensors for Medical Diagnostics. 3(3-0). Prereqs: (BS 161) and (CEM 141) and (ECE 345). ***Biomedical Concentration Course.*** *Alocilja.*

CE 407 Materials Engineering: Properties, Selection and Processing. Prereq: (CE 221) and (ME 222). Recommended Background: MSE 250. *Lu*.

CHE 483 Brewing and Distilled Beverage Technology. *See Override Instruction #3 below*. Location: 2000 Merritt Road, East Lansing. Prereq: (Age 21 or higher) and (Senior standing) and (ME 410-Heat Transfer or concurrently). *Berglund.*

ENE 422 Applied Hydraulics. 3(2-2). Prereq: ME 332. *Mantha.*

MSE 465 Design & Application of Engineering Materials. 3(3-0). Prereq: MSE 250. *Eisenlohr.*

Graduate Level Courses: Honors College members and/or students with 3.5+ GPAs might consider taking a graduate course as a senior elective. Before enrolling, several signatures, including that of the instructor, are required. Possible choices for Spring 2019 nclude ME 814, 825, 861, and 872. *See Override Instruction #4 below*.

SENIOR ELECTIVE OVERRIDE INSTRUCTIONS

1) General Override Request Procedure: Complete and submit the ME Override Request Form: https://www.egr.msu.edu/me/me-override-request Please note that the ME department cannot overfill required courses to resolve conflicts with Senior Electives, Other Electives, Integrative Studies courses and employment schedules.

2) ME 490–Independent Study Enrollment Procedure: Find a professor who is willing to supervise your independent study, and discuss your plans with him/her. Complete an *ME 490/490H Enrollment Contract* (independent study form), available in the ME Advising Office in 2560 EB. After you and your professor have completed and signed both sides, return the form to the ME Advising Office for the remaining signatures, override, and enrollment.

3) CHE 483–**This course is full and no additional overrides will be given**. You can still set an alert via Schedule Builder, but it would be a good idea to enroll in a back-up course.

4) Complete the *Graduate Course Override* form, available in the ME Advising Office in 2560 EB. This is a paper form.

Department of Mechanical Engineering

MICHIGAN STATE
UNIVERSITY

ME Advising Office
Dept of Mechanical Engineering
Engineering Building
428 S. Shaw Lane, Rm 2560
East Lansing MI 48824-1226

Fall Semester Calendar

November 9	All currently enrolled students who have not enrolled by 8 p.m. in at least one course for Spring will pay a $50 late fee.
November 16	**Deadline for Withrow Teaching Award Nominations.** The nomination form is on the ME website (https://www.egr.msu.edu/me/). [Click on Undergraduate, and then Forms and Policies.]
Nov 22-23	Thanksgiving recess
December 7	**Last day of classes & Design Day.**
December 15	Undergrad Commencement Ceremony-Breslin at 2 pm. Lasts about 2 hours. No tickets required.
Dec 10-14	Final Exams
Dec 15-Jan 6	Semester Break
January 11	On-line Open Add Period for Spring 2019 ends at 8 p.m. **ALSO**, this is the deadline for May 2019 and August 2019 graduates to apply for graduation.
March 11	Scheduled Computer/Telephone Enrollment period for summer semester begins.
April 1	Computer Enrollment period for fall/spring 2019-2020 will begin on *approximately* April 1. Your enrollment access date will be posted on StuInfo in mid-March.