



**MERCER ENGINEERING**

*Different by design*



**FRESHMAN DESIGN**  
**ENGINEERING HONORS**

**SENIOR DESIGN**  
**ENGINEERING RESEARCH**

**BIOMEDICAL ENGINEERING**

**COMPUTER ENGINEERING**

**ELECTRICAL ENGINEERING**

**ENVIRONMENTAL ENGINEERING**

**INDUSTRIAL ENGINEERING**

**INDUSTRIAL MANAGEMENT**

**MECHANICAL ENGINEERING**

**TECHNICAL COMMUNICATION**

**2015 ENGINEERING EXPO**

**April 10, 2015**

**Coordinator: Dr. Jack Mahaney, Associate Professor**

**Vehicle Competition Teams**

**Cable Car**

TEAM 1	Bartlett, Maith, Hopkins, Walcott
TEAM 2	Alshimmari, Ferdinandi, Reyes, Tello
TEAM 3	Brown, Elliott, Jones, Manson
TEAM 4	Bates, Hardin, Marrufo, Rawden
TEAM 5	Billbrey, Granzow, Sony, Vizcarra
TEAM 6	Allmond, Dang, Mossen, Walker
TEAM 7	Firkus, Granger, Kim, Semmendinger
TEAM 8	Grogan, Poschel, Alonso, Bronk
TEAM 9	Downham, Gurley, Lamberth, Scrivner
TEAM 10	Childers, Jia, Winfield
TEAM 11	Curtis, Gooding, Green-Tagalog, Reveles
TEAM 12	Brock, Ginn, Graves, Hernandez

**SEB Auditorium**

Lab: Mahaney
Lab: Mahaney
Lab: Shaw
Lab: Mines
Lab: Mines
Lab: O'Brien
Lab: Schultz
Lab: Schultz
Lab: Lackey
Lab: Givens
Lab: Givens
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**Hill Climb**

TEAM 1	Brunk, Surber, Veith
TEAM 2	Duseau, Erickson, Latherow, Stricklin
TEAM 3	Lowery, Oluwsakin, Sigle, Wang
TEAM 4	Bandara, DeBoer, Sanchez, Vick
TEAM 5	Adesuyi, Dang, Heilesen, Kooplicat
TEAM 6	Adams, Jackson, Mirov
TEAM 7	Dognazzi, Grant, Rivera, Glenn
TEAM 8	Hay, LaFountain, Trammel, Trieschmann

**EGC Lobby**

Lab: Mahaney
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Lab: O'Brien
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Lab: Schultz
Lab: Lackey

**Tug-of-War**

TEAM 1	Davenport, Holcomb, Haselwander, McCoy
TEAM 2	Carr, Jackson, Pendley, Wise
TEAM 3	Barkelew, Geha, Muldrew, Weeks
TEAM 4	Coleman, Henning, Storey, Wheeler
TEAM 5	Drew, Harding, Rasmussen, Taylor
TEAM 6	Howard, Kutrufis, Pierre, Whitehurst
TEAM 7	Herd, Mazurkiewicz, Sonntag
TEAM 8	Massey, Moore, Philp, Rodgers
TEAM 9	Andrew, Molnar, Rexhausen, Tyra
TEAM 10	Dent, Howard, Little, Tran
TEAM 11	Lima, Roberst, Wood
TEAM 12	Chokbengbourne, Ford, Murphy, Ukabam

**EGC Atrium**

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**Sponsor Presentation****SEB****9:30 AM – 11:30 AM****Visit sponsors in SEB 236****Kumho Tire Inc., MERC, Navicent Health, and Robins Air Force Base****Poster Presentation****SEB****10:30 AM – 11:30 AM****Senior Design Track****1<sup>st</sup> Floor in SEB**

<b>1</b>	<b>Caleb Yawn, Brad Harrison, Jesse Barnes, Dr. Barnett, Dr. Hill</b>	<b>“PETM”</b>
<b>2</b>	<b>Kyle Behm, Owen Bolig, James Wischmeyer Dr. Hill, Dr. Hyun</b>	<b>Multiphase Flow Meter</b>
<b>3</b>	<b>Anthony Schmidt, David Crabtree, Kevin Tagoe, Dr. Sumner</b>	<b>Axial Flow Turbine for Sisit Kenya</b>
<b>4</b>	<b>Brian Gentry, Aaron Odom, Patrick Morris, Dr. Barnett, Dr. Jenkins, Dr. McCreanor</b>	<b>Gulfstream Foreign Object Debris (FOD) Recycler</b>
<b>5</b>	<b>Tonia Drury, Trevor Hendrix, Bradley Thigpen, Dr. Lackey, Dr. Hill</b>	<b>Manual Well Drilling: The Baptist Method</b>
<b>6</b>	<b>Monique, John Robison, Gina Taff, Dr. Choi, Dr. O’Brien</b>	<b>Robotic Hand With Variable Grip</b>
<b>7</b>	<b>Caroline Cooper, Zach Schindler, Ryan Thompson, Robbie Wilkins, Dr. Wright</b>	<b>Rainwater Harvesting System</b>
<b>8</b>	<b>Joe Simpson, Tim Geran, Nick Reina, Dr. Thitsa, Dr. Barnett, Dr. O’Brien, Dr. Juang, Dr. Kunz</b>	<b>Automatic Dryer</b>
<b>9</b>	<b>Stephen Boyer, Derwin Eackles Jr., Ryan Jones, Dr. Schultz, Dr. Wright:</b>	<b>Anaerobic Digestion</b>
<b>10</b>	<b>Harrison Hancock, Ashani Samuels, Joseph Sappington, Dr. Wright, Dr. Juang</b>	<b>Solar Energy Conservation System</b>
<b>11</b>	<b>Abu Abdella, Gellela Belachew, Mia Jones-Johnson, Dr. Obrien</b>	<b>3-Axis Accelerometer</b>
<b>12</b>	<b>Tam Phuong, Wahaj Khan, Justin Evans, Dr. Obrien</b>	<b>Minimally Invasive Sleep Apnea Device</b>
<b>13</b>	<b>Britney Hudson, Lori-Ann Thomas, Joshua Lindsey, Avery Strickland, Dr. Hyun, Dr. Jenkins Dr. O’Brien</b>	<b>Affordable Powered Hand Prosthesis</b>
<b>14</b>	<b>Brett Eckles, Michael Taylor, Bradley Young, Dr. O'Brien , Dr. Kunz</b>	<b>A Mechanized Ankle Prosthetic for Lower Limb Prosthetic Patients</b>
<b>15</b>	<b>Jonathan Atzmon, Renita Mason, Sebastian Piedrahita, Dr. Kunz, Dr. Burtner, Dr. Schultz</b>	<b>Minimizing Door-to-Disposition Time in the Emergency Department at Coliseum Medical Centers</b>

**Engineering Research Track****1<sup>st</sup> Floor in SEB**

16	Marcos Nve-Nsi, Dr. Thitsa	Fliess' Functional Series Method for Schrödinger Equation
17	Aaron Brantley, Kayla Dunbar, Joseph Moore, Dr. Radharamanan	Mobile Charging Platform
18	Sebastian Piedrahita, Albert Sykes, Ryan King, Dr. Radharamanan	HelpMe: The App
19	Andrew Wilzman, Dr. Sinjae Hyun	Mathematically modelling particle growth in the lungs
20	Bradley Thigpen, Caroline Ravazzi, Larissa Silva, Matheus Souza, Dr. McCreanor	Optimal Loading Rate for Treatment of Synthetic Gray Water with a #20 Intermittent Sand Filter

**Honors Program Track****Freshman Honors****2<sup>nd</sup> Floor in SEB**

21	Dakota Boothe, Dr. McCreanor	Potential for Aliivibrio fischeri to be Used as Street Lighting Near Shore Lines
22	Abbie Weeks, Dr. McCreanor	Exploring Nanotechnology through the Synthesis of CdSe Quantum Dots and Copper Nanowires
23	Cody Gregor, Harpal Sagoo, Dr. McCreanor	Improving the Gakken V-Twin Steam Engine
24	Tyson Grogan, Dr. McCreanor	Improving Coliform Counting with a Light Box and ImageJ
25	Jasmine Gurley, Maximillian Sonntag, Mr. Edward Irwin	Biomechanical Analysis of a Front Kick
26	Austin Haselwander, Daniel T Kimmel, Aja J. Rawden, Victoria C. Rexhausen, Dr. McCreanor	Turning a Strandbeest into a Strandfeesh
27	Donovan Latherow, Dr. McCreanor	EEG Controlled Vehicle
28	Christopher Scrivner, Dr. McCreanor	A Way Velcro Can Help Children Walk
29	Brian Tyra, Dr. McCreanor	Design and construction of a post-knee surgery rehabilitation device
30	Nicholas Brown, Dr. McCreanor	Developing a Pong App for Android Devices
31	Daniel Poschel, Brian Davenport, Dr. McCreanor	Spider Mimicry in Robotics

**Honors Program Track****Sophomore Honors****2<sup>nd</sup> Floor in SEB**

32	William De Witt, Timothy Welch, Ryan Alyamani, Dr. O'Brien	Constructing and Monitoring a Farnsworth Fusor
33	Matthew Deremer, Kyle Ulversoy, Luke Pace, Dr. O'Brien	The MUSE Mario Kart Power Racing Project
34	Tyler Goubeaux, Dr. McCreanor	You're Too Close – Tailgater Alert System
35	Daniel Mackowski, Dr. Mihut	Small Scale Corrosion Testing Apparatus
36	Sarah Kashin, Brian Stepanski, RalphCorser, Dr. O'Brien	Electromechanical Energy Conversion Demonstration
37	Amy Lloyd, Dr. O'Brien	Evaluation of the Limitless Robotic Lower Arm Prosthetic
38	Sekinat Mumuney, Mr. Irwin, Dr. O'Brien	Hip-Width and its Correlation to Anterior Cruciate Ligament (ACL) Injury Risk

39	John Ramirez, Thanh Ta, Derek Harrison, Dr. McCreanor	The Design of a Spherical Omni-Rover
40	Kyle Wheeler, Dr. Mines	Affect of Water Temperature and Depth on the Oxygen Transfer Coefficient
41	Kevin Long, Dylan Treend, Robert Statham, Dr. Mihut	Construction and Testing of a Lab-Scale Composite T-Beam
42	Catherine Raybould, Dr. McCreanor	Analysis of Refugee Housing Alternatives
43	Kevin Culp, Drs. Moody and McCreanor	LEAP Motion Control of a Quadcopter

Honors Program Track	Junior Honors	2 <sup>nd</sup> Floor in SEB
44	Jonathan Alfred, Erik Schlappi	Wrist Based Fitness Tracker
45	Joshua Bublitz, Andrew Roy, Dr. Vo	Novel Prosthetic Ankle Design for Use on MOM Vietnam
46	Ryan DeRuiter, Dr. Vo	Three-Dimensional Knee Model for Future Total Knee Replacement Design Project
47	Jonathan Easter, Dr. Burtner	Patient Transport Patterns at a Central Georgia Hospital
48	Nicole Garcia, Alexander Simpson, Dr. McCreanor	Wireless Communication Device for the Hearing Impaired
49	Gabriel Gonzalez Quintero, Drs. Vo and McCreanor	A Study of the Metatarsal Pad and Its Effects on Metatarsal Stress Fractures
50	Paul Johnson, Cameron Underwood, Dr. McCreanor	Simulating and Testing the Girandoni Air Rifle
51	James McNichols, Spencer Penley, Dr. McCreanor	Development of a Low-Cost High Altitude Research Platform
52	John Niesen, Dr. McCreanor	Actually, It is Rocket Science!
53	Lauren Reagin, Chris Murdock, Dr. Hyun	Experimental Study to Characterize the Size Increase of Sub-micron Aerosol Particles in a Moist Environment

Honors Program Track	Senior Honors	2 <sup>nd</sup> Floor in SEB
54	Jonathon Atzmon, Drs. Burtner and McCreanor	Simulation in Healthcare
55	Brett Eckles, Bradley Young, Dr. McCreanor	Residential AC Condensate Production Monitoring System
56	Patrick Morris, Dr. McCreanor	Reducing Drag Forces on a Tractor-Trailer
57	Erin Mullinax, Dr. McCreanor	Automation of Data Extrapolation from Time Domain Reflectometry Based Water Level Measurement

## Lunch

EGC

11:30 AM – 12:30 PM

Lunch is provided for those who present at the Expo – including Freshman Design Competition, Poster Presentations, and Podium Presentations.

**Coordinator: Dr. Jack Mahaney, Associate Professor**

**Vehicle Competition Teams**

**Off Road**

- TEAM 1 Hancock, A. Kelley, Ramirez-Pharr, Sobowale
- TEAM 2 Castillo, Lord, McKinney, Schneider
- TEAM 3 Armstrong, Grella, Hunter, McCorkle
- TEAM 4 Mattick, Sagoo, Tandon, Wilson
- TEAM 5 Chapman, Garcia, Hudson, Le
- TEAM 6 Black, Carter, McDonald, Monty
- TEAM 7 Booth, Boyd, Hensel, Modi
- TEAM 8 DiCarlo, Harris, Neal, Whitfield
- TEAM 9 Mahlbacher, Orozco, Sancar
- TEAM 10 Bernuy, DiGiusto, Warmesley

**SEB Lobby**

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**Rampster**

- TEAM 1 Bouer, Gregor, K. Kelly, Udemba
- TEAM 2 Caravello, Coker, Elrod, Freeman
- TEAM 3 Atkinson, Hampton, Sampson, Troop
- TEAM 4 Arcuri, Gordon, Miller, Whitehead
- TEAM 5 Kenton, Renfro, Tillery, Wissmach
- TEAM 6 Chilumuna, Hadjaz, Rasberry, Yates
- TEAM 7 Kimmel, Schindler, Gibbs, Peter
- TEAM 8 Johnson, Pylant, Reynolds, Stockton
- TEAM 9 Dease, McManus, Matthews, Watwood
- TEAM 10 Apple, Ayala, Hahn, Turnbough
- TEAM 11 Alghmadi, Brown, Manley, Martinez

**EGC Atrium**

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**Podium Presentation**

**1:30 PM – 3:00 PM**

**Session A Engineering Honors**

**SEB 201**

**Moderator: Dr. Philip McCreanor**

**Jonathan Alfred, Erik Schlappi**

**Wrist Based Fitness Tracker**

**Joshua Bublitz, Andrew Roy, Dr. Vo**

**Novel Prosthetic Ankle Design for Use on MOM Vietnam**

**Ryan DeRuiter, Dr. Vo**

**Three-Dimensional Knee Model for Future Total Knee Replacement Design Project**

**Jonathan Easter, Dr. Burtner**

**Patient Transport Patterns at a Central Georgia Hospital**

**Nicole Garcia, Alexander Simpson, Dr. McCreanor**

**Wireless Communication Device for the Hearing Impaired**

**Gabriel Gonzalez Quintero, Drs. Vo and McCreanor**

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**Paul Johnson, Cameron Underwood, Dr. McCreanor**

**Simulating and Testing the Girandoni Air Rifle**

**James McNichols, Spencer Penley, Dr. McCreanor**

**Development of a Low-Cost High Altitude Research Platform**



John Niesen, Dr. McCreanor	Actually, It is Rocket Science!
Lauren Reagin, Chris Murdock, Dr. Hyun	Experimental Study to Characterize the Size Increase of Sub-micron Aerosol Particles in a Moist Environment
Jonathon Atzmon, Drs. Burtner and McCreanor	Simulation in Healthcare
Brett Eckles, Bradley Young, Dr. McCreanor	Residential AC Condensate Production Monitoring System
Patrick Morris, Dr. McCreanor	Reducing Drag Forces on a Tractor-Trailer
Erin Mullinax, Dr. McCreanor	Automation of Data Extrapolation from Time Domain Reflectometry Based Water Level Measurement

**Session B Engineering Research SEB 110**

**Moderator: Dr. Richard Kunz**

1:30 PM – 1:45 PM	Andrew Wohlrabe, Dr. MacCarthy	The Development of a Low-cost, Lead Free Wellpoint Drilling System for Use in Household Well Systems in Coastal Areas of Madagascar
1:45 PM – 2:00 PM	Britney Hudson, Lori-Ann Thomas, Joshua Lindsey, Avery Strickland, Dr. Hyun, Dr. Jenkins Dr. O'Brien	Affordable Powered Hand Prosthesis
2:00 PM – 2:15 PM	Brett Eckles, Michael Taylor, Bradley Young, Dr. O'Brien, Dr. Kunz	A Mechanized Ankle Prosthetic for Lower Limb Prosthetic Patients
2:15 PM – 2:30 PM	Jonathan Atzmon, Renita Mason, Sebastian Piedrahita, Dr. Kunz, Dr. Burtner, Dr. Schultz	Minimizing Door-to-Disposition Time in the Emergency Department at Coliseum Medical Centers
2:30 PM – 2:45 PM	Tam Phuong, Wahaj Khan, Justin Evans, Dr. O'Brien	Minimally Invasive Sleep Apnea Device
2:45 PM – 3:00 PM	Stephen Boyer, Derwin Eackles Jr., Ryan Jones, Dr. Schultz, Dr. Wright:	Anaerobic Digestion

***Special Thanks to***

**Thanks for participating the 2015 Engineering Expo!**

***Wade Shaw, Dean of School of Engineering***

***Jack Mahaney, Associate Professor and Freshmen Design Competition Coordinator***

***Phillip McCreanor, Professor and Honors Program Director***

***Richard Kunz, Associate Professor and Senior Design Manager***

***Sinjaee Hyun, Associate Professor and Engineering Research Program Director***

***Session Chairs, Research Advisors, Lab Lecturers and Project Clients for Freshmen Design Competition, Clients and Technical Advisors for Senior Design Projects***

# Engineering Expo 2015 Sponsors

Thank you for our sponsors' generous support:

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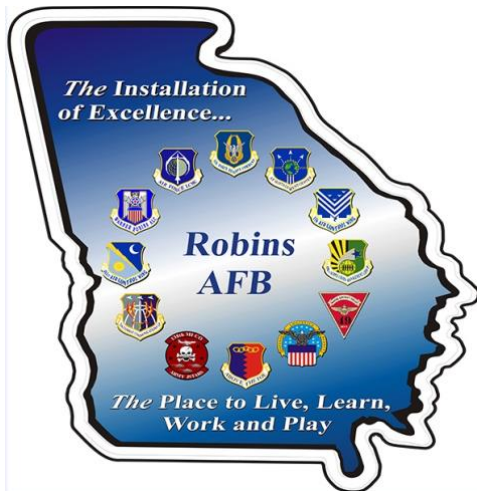


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