



**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**

**2017 ENGINEERING EXPO**

**APRIL 7, 2017**

**Coordinator: Dr. Laura Lackey, Professor, Senior Associate Dean**

**Vehicle Competition Teams**

**Hill Climber (Dr. Hill & Dr. Kunz)**

**9:00 AM**

**TEAM 1 Savage, Sewell, Patel, Mendizabal**

**Lab: Shaw**

**TEAM 2 Verhine, Sims, Powell**

**Lab: Butler**

**TEAM 3 Boyd, Gatland, Leslie, Rogie**

**Lab: O'Brien**

**TEAM 4 Almawash, DeLoach, Pettit, Kozma**

**Lab: Butler**

**TEAM 5 Brown, Greene, Lim, Rutherford**

**Lab: O'Brien**

**Tug-of-War (Dr. Biswas & Dr. Schultz)**

**9:00 AM**

**TEAM 1 Pena, Melvin, Bryan, Ely**

**Lab: Thomas**

**TEAM 2 Detwiler, Chester, McLemore, Ferrara**

**Lab: Butler**

**TEAM 3 Brewer, Delmonico, Tokuyama, Alvord**

**Lab: Shaw**

**TEAM 4 Tribou, Field, Craighead, Winds**

**Lab: Butler**

**TEAM 5 Smith, Burns, White, Southwick**

**Lab: Shaw**

**TEAM 6 Burke, Horde, Modi, Shroff**

**Lab: O'Brien**

**Off-road Derby (Dr. Fu & Dr. Thitsa)**

**9:50 AM**

**TEAM 1 Dupaty, Wiley, Herne, Sledge**

**Lab: Shaw**

**TEAM 2 Perdomo, Eastern, Levy, Carel**

**Lab: Butler**

**TEAM 3 Campbell, Keiser, Moore, Simon**

**Lab: O'Brien**

**TEAM 4 Bremar, Dungan, Perry, Pringle**

**Lab: Shaw**

**TEAM 5 Patel, Hunter, Graham, Levy**

**Lab: Thomas**

**Rampster (Dr. Butler & Dr. Moody)**

**9:50 AM**

**TEAM 1 Mattson, Quinn, Moshell, Lewis**

**Lab: Butler**

**TEAM 2 Cox, Kupersmith, Myers, Thompson**

**Lab: O'Brien**

**TEAM 3 Anderson, Davis, Weber, Moody**

**Lab: Shaw**

**TEAM 4 Beasley, Ford, Tollison, Scott**

**Lab: Thomas**

**TEAM 5 Enamorado, Lawing, Remoroza, Ton-Nu**

**Lab: O'Brien**

**TEAM 6 Durden, Cosby, Simmons, Fulwood**

**Lab: Thomas**

<b>Undergraduate Research Track</b>		<b>Chair: Dr. Joanna Thomas</b>	<b>SEB 201</b>
1	Harpe, Granger; Patterson, Ryan; Culp, Kevin; Dr. Hill, Stephen; Dr. Mihut, Dorina	Study of the Erosion Behavior on Metals and Polymers	
2	Le, Khang; Patterson, Ryan; Dr. Mihut, Dorina; Dr. Hill, Stephen; Dr. Lackey, Laura	Antibacterial Effects of Silver, Copper and Titanium Nanoparticles Deposited using DC High Vacuum Magnetron Sputtering on Filtering Materials	
3	Culp, Kevin; Mihut, Dorina; Dr. Hill, Stephen; Dr. Afshar, Arash	Mechanical Properties Improvement by Using Coatings on Metals and Polymers	
4	Alyamani, Ryan; Aldhubaie, Abdulaziz; Dr. Afshar, Arash; Dr. Mihut, Dorina; Dr. Hill, Stephen	Effects of Environmental Exposure on Polymeric Materials	

<b>Undergraduate/Graduate Research Track</b>		<b>Chair: Dr. Edward O'Brien</b>	<b>SEB 202</b>
1	Cai, Runyu; Dr. Xue, Xiaojie; Dr. Martin, Clyde; Dr. Thitsa, Makhin	Nonlinear Feedback Control For Suppressing Crosstalk In Semiconductor Optical Amplifiers	
2	Lunsford, Brent; Conley, Lynsdey; Feeney, Janea; Dr. Hyun, Sinjae; Dr. Nelson, David;	<a href="#">STEM Empowerment through LEGO Robotics</a>	
3	McNichols, James; Penley, Spencer; Dr. Choi, Anthony	Development of a Low-Cost High Altitude Research Platform	
4	Gonzalez, Gabriel; Dr. Vo, Ha	<a href="#">Biomechanical Evaluation Of Hybrid, Bicortical And Unicortical, Screw Configurations For Internal Bone Plate Fixation Of Long Bone Fracture: An In-Vitro Study Of Porcine Femur Bone Models</a>	

**Lunch** **University QUAD** **12:00 PM – 1:30 PM**

**Poster Presentation** **SEB** **1:30 PM – 3:00 PM**

<b>Senior Design Track</b>		<b>1<sup>st</sup> Floor in SEB</b>	
1	Lunsford, Brent; Minter, Daniel; Conley, Lyndsey; Dr. Hyun, Sinjae; Dr. O'Brien, Edward; Dr. Hill, Stephen	<a href="#">Walker Modification for 360 Degree Rotation</a>	
2	Castonguay, Kayleigh; Long, Kevin; Treend, Dylan; Dr. Choi, Anthony; Dr. Barnett, Kevin; Dr. Sumner, Loren	<a href="#">Automated Lawn Mowing Robot</a>	
3	Clemons, Allison; Lloyd, Amy; Phifer, Justin; Dr. Hyun, Sinjae;	<a href="#">Redesigning a Portable Traction Machine for Non-Surgical Spinal Decompression</a>	

4	Hall, Jevora; Patel, Janki; Wilzman, Andrew; Dr. Vo, Ha Van	Universal Trans/Ulnar Radial Prosthesis
5	Feeney, Janea; Kashin, Sarah; Stepanski, Brian; Dr. Barnett, Kevin; Dr. Choi, Anthony; Dr. Hill, Stephen	Semi-Autonomous Submarine
6	Berns, Holly; Dimopoulos, Katelyn; Martin, Zachary; Monty, Ryan; Dr. Schultz, Scott; Dr. MacCarthy, Michael	Temperature Control of Specialized Nutritious Foods
7	Thomas, La'Darius; Thompson, Brandon; Watts, Micah; Dr. Vo, Ha.	Hydroelectric-Powered Generator
8	Graves, Micah; Ramirez, John; Sharry, Ryan; Dr. Vo, Ha.	Adjustable Pediatric Transtibial Prosthesis for Vietnamese Children
9	Balinda, Pierre; Al-dhorgham, Faisal; Mackowski, Daniel; Dr. Ekong, Donald; Dr. O'Brien, Edward; Dr. Barnett, Kevin	Agricultural Multi-Sensor Nodal Network with Mesh Network Wireless Communication Topology
10	Arrendale, Ethan; McMullen, Ian; Merz, Caroline; Dr. Vo, Ha	Semi-Automatic Wound VAC Device
11	Frazier, Jonathan; Liu, Harrison; Ryan, Joseph; Barnett, Kevin ; Dr. Jenkins, Hodge; Dr. Marek, Kenneth	Acoustic Guitar Bracing Pattern Analysis
12	Deremer, Matthew; Pace, Luke; Woiwode, Christopher; Dr. Barnett, Kevin; Dr. Choi, Anthony; Dr. Kunz, Richard	SLAM in an Unknown Environment
13	Brady Bradshaw, Nick Tripodi, Jaimeson Taylor; Dr. Scott Schultz	Inventory Management at Elliott Machine Shops
14	Cai, Huan Huan (Tommy); Smith, Jeff; Marable, Scott; O'Berry, Stariel; Dr. Vo, Ha	Transradial-Ulnar Prosthesis
15	Rainwater, Michael Paul; Milush, Martin; Arnold, Lendell; Dr. Schultz, Scott	Mercer University Center Weight Tree Relocation
16	Viramgama, Devkumar; Kaminsky, Evan; Culp, Kevin; Dr. Sumner, Loren; Dr. Hill, Stephen; Dr. Mihut, Dorina;	Mobile Furnace for melting metal
17	Gilbert, William; Wyker, Grayson; Ghazipura, Bilal; Dr. Sumner, Loren	Single Man Hovercraft
18	Edwards, Jacob; Harris, Matthew; Raybould, Catherine; Dr. Biswas, Pablo; Dr. Schultz, Scott	Improving the Alexander II Carpool Process
19	Brunson, Daniel; Harper, Alex; Orozco, Jose; Dr. Choi, Anthony	Precision Agriculture Weed System (PAWS)
20	De Witt, William, Bennet, Kyle, Alosaimi, Khalid; Dr. Choi, Anthony	Swarm Robot Pair
21	Kleckley, Clifford ; Forbes, Princess ; Pennamon D'vante; Dr. Burtner, Joan	Hose Isle Redesign
22	Hartman, Trey; Hazelrig, Dylan; Dr. Schultz, Scott	MTA Bus Route Improvement

23	Hemstreet, Austin; Kicklighter, Addie; Mumuney, Sekinat; Dr. Vo, Han; Hill, Dr. Stephen	Negative Pressure Mechanical Wound VAC
24	Aldhubaie, Abdulaziz; Alyamani, Ryan; Ta, Thanh; Welch, Neal; Dr. Mihut, Dorina; Dr. Hill, Stephen	Corrosion Test Chamber
25	Busby, Gaby; Brown, Indi; Smith, Hannah; Dr. MacCarthy, Michael	Solar Desalination Still for Use in Developing Countries
26	Doresky, Jack; Goubeaux, Tyler; Jones Caleb; Dr. Jenkins, Hodge	Mars Rover Suspension
27	Miller, Kahlil; Davis, Austin; Derek, Byrne; Dr. Hodge, Jenkins; Dr. Barnett, Kevin	Automated Stray Dog Rescue Crate
28	Glover, Clay; Ulversoy, Kyle; Wheeler, Kyle; Dr. Sumner, Loren; Dr. Lackey, Laura; Dr. Michael, Maccarthy	Low Cost Solar Thermal Water Heater

### Engineering Research Track

1<sup>st</sup> Floor in SEB

29	Rexhausen, Victoria; Dornisch, Ariel; Dr. McCreanor, Philip	Sustainable Gray Water Treatment: Comparing Field and Lab Eljen GSF Systems
30	Harpe, Granger; Patterson, Ryan; Culp, Kevin; Dr. Hill, Stephen; Dr. Mihut, Dorina	Study of the Erosion Behavior on Metals and Polymers
31	Le, Khang; Patterson, Ryan; Dr. Mihut, Dorina; Dr. Hill, Stephen; Dr. Lackey, Laura	Antibacterial Effects of Silver, Copper and Titanium Nanoparticles Deposited using DC High Vacuum Magnetron Sputtering on Filtering Materials
32	Culp, Kevin; Dr. Mihut, Dorina; Dr. Hill, Stephen; Dr. Afshar, Arash	Mechanical Properties Improvement by Using Coatings on Metals and Polymers
33	Alyamani, Ryan; Aldhubaie, Abdulaziz; Dr. Afshar, Arash; Dr. Mihut, Dorina; Dr. Hill, Stephen	Effects of Environmental Exposure on Polymeric Materials
34	Brandon Thompson, Charlotte Rosalie, Andrew Kelley; Dr. McCreanor, Philip	Evaluation of the Use of Eljen GSF Modules for the Treatment of Synthetic Gray Water
35	Bates, William; Sanchez Lara, Sebastian; Svensson, Caleb; Dr. McCreanor, Philip	Comparison of Intermittent Sand Filter Columns using ASTM C33 and #20 Filter Sand to Treat Synthetic Gray Water
36	Howard, Alan; Dr. Biswas, Pablo	Manufacturing Process Improvement on Valve Timing Control Production

### Honors Program Track

Freshman Honors

2<sup>nd</sup> Floor in SEB

1	Young, Cortland; Chester, Blake	Go Baby Go! - Build Team LYC
2	Loggins, Dylan; Preziosi, Joey; Chiu, Sam	Go Baby Go! - Build Team CLP
3	Cimino, Amanda; Patton, Caitlyn	Go Baby Go! - Build Team CMP
4	Andrews, Jen; Deremer, Timothy; Peshek, Hannah; Thompson, Amanda	Go Baby Go! - Build Team ADPT

5	Chester, Blake; Lokasundaram, Vikram; Young, Cortland	Go Baby Go! - Build Team CLY
6	Moshell, Jack; Dornisch, Ariel; Hall, Chase	Go Baby Go! - Build Team DHM
7	Mahnke, Sabrina; Chrabuszczyk, Daniella	Go Baby Go! - Build Team MACH
8	Dornisch, Ariel; Hall, Savannah	Go Baby Go! - Build Team HD
9	Thompson, Caitlin	Go Baby Go! - Build Team MRRT
10	Peshek, Hannah; Andrews, Jennifer; Deremer, Timothy; Thompson, Amanda	Go Baby Go! - Build Team APTD
11	Chiu, Sam; Loggins, Dylan; Preziosi, Joey	Go Baby Go! - Build Team CLP
12	Connell, Mary; Earnesty, Sarah; Svensson, Caleb	Go Baby Go! - Build Team CES

Honors Program Track		Sophomore Honors	2 <sup>nd</sup> Floor in SEB
13	Greene, Nathan	Characteristics of Electrospun Nanofibers	
14	Munoz, Juan; Patel, Sagar; Speece, Brooke; Taubner, Benjamin	Othopedic Support System for Cerebral Palsy Patients	
15	Thompson, Amanda; Miller, Annabeth	Adaptive Toy - Joystick Control	
16	Loughner, Nathan	Analysis of mechanical properties of honeycombs and Auxetic material With variations in cell geometry	
17	Littleton, Sarah	Ejector System for Use in a High-Altitude Air Balloon	
18	Saunders, Bryson	Sediment Flow Sensing	
19	Leslie, Morgan	Toy Car Modified for Children with Limited/No Mobility of Upper Extremities	
20	Deremer, Timothy; Laue, Parker; Shelton, Grant	URSA (Unmanned Reconnaissance and Surveillance Aircraft)	
21	Galyon, Emily	Design and Development of a Class Scheduling Tool	
22	Meyer, Alex	Saltwater Immersion Chamber for Corrosion Testing	
23	Tutterow, Chris; Vikraman, Shruthi	Clinical Orthopedic Trauma: Gait Analysis	
24	Grantham, Zachery	Properties of an Alternator	
25	Bass, Joseph; Hughes, Jordan	Self-Propelled Hovercraft	
26	Greene, Nathan	Characteristics of Electrospun Nanofibers	

Honors Program Track		Junior Honors	2 <sup>nd</sup> Floor in SEB
27	Rawden, Aja	High Altitude Balloon Ground Station Upgrade	
28	Booth, Dakota; Modi, Sagar; Sobowale, Adewumni; Sonntag, Maximilian	Detecting gait abnormalities using the G-Node and MatLab	
29	Haselwander, Austin; Davenport, Brian; Poschel, Daniel	Mimicking Human Motion with a Robotic Arm	
30	Rivera, Jose ; Hancock, Brandon; Sagoo, Harpal	Smart Knee Orthotic	
31	Kimmel, Daniel	Mobile Solid Waste Processing and Its Application to Glass Waste Reduction in the Bibb County, Georgia Area	

32	Elliott, Forrest	<a href="#">Plasma Experimentation and Instrumentation</a>
33	McCorkle, Christopher; Grogan, Tyson;	<a href="#">One Handed Video Game Controller with Pro Micro</a>
34	Rexhausen, Victoria	<a href="#">Sustainable Gray Water Treatment: Exploring Eljen GSF and Residential Gray Water Flows</a>
35	Weeks, Abbie	<a href="#">Portable Ultrasound Unit for Field Detection of Pregnancy in Large Cattle</a>

Honors Program Track		Senior Honors	2 <sup>nd</sup> Floor in SEB
36	Schlappi, Erik; Reagin, Lauren	<a href="#">Transient Analysis of Patient Specific Abdominal Aortic Aneurysm</a>	
37	Ramirez, John; Treend, Dylan	<a href="#">Power Generating Water Wheel Toy</a>	
38	Raybould, Catherine	<a href="#">Testing the Feasibility of MycoBoard as a Building Material</a>	
39	Ulversoy, Kyle; Stepanski, Brian	<a href="#">MUSE Mario Kart Project</a>	
40	Wheeler, Kyle	<a href="#">Performance Evaluation of a Small Tesla Turbine</a>	
41	Kashin, Sarah	<a href="#">Portable Solar Powered Charger</a>	
42	Mumuney, Sekinat	<a href="#">Using the Drop Vertical Jump (DVJ) Test to Determine Anterior Cruciate Ligament (ACL) Injury Risk</a>	
43	Welch, Neal	<a href="#">Solid Rocket Propellant Testing Apparatus</a>	

***Special Thanks to***

**Thanks for participating the 2017 Engineering Expo!**

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

***Laura Lackey, Professor, Senior Associate Dean and Freshmen Design Competition Coordinator***

***Hodge Jenkins, Associate Professor and Senior Design Manager***

***Scott Shultz, Associate Professor, Associate Dean and Senior Design Manager***

***James Wright, Senior Design Manager***

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

***Denise Collins, Dean's Office***

***Trena Rogers, Associate Dean's Office***

***Sinjaee Hyun, 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***



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