Mechanical Engineering and Engineering Science Overview

Scott Smith
Chair







David George

John Ziegert



Chris Evans



Nenad Sarunac



Katherine Weaver



Tony Schmitz



Alireza Tabarraei



Gert Goch



Kile Stinson



The WILLIAM STATES LEE COLLEGE of ENGINEERING

Au revoir, friends



Robin Coger



Yogi Hari



Larry Sharpe



Winter Turner



New Department Jobs



Ed Morse Associate Chair for Graduate Programs



Charles Lee Director of CBES



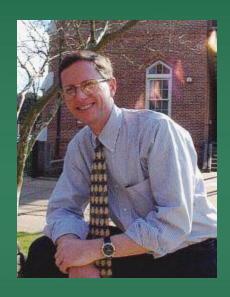
Mesbah Uddin
Director of NCMARC



Kevin Lawton
Associate Chair for
Undergraduate Programs



On Leave



Jim Cuttino



Horacio Estrada

Facilities

Motorsports Research





New Facilities

Motorsports Research







Curriculum

BSME

BSME with a Motorsports Concentration

BSME with an Energy Concentration

		Academic Plan for:				Student ID		
Pre-Requisites and/or Co-Requ	isites	Course	Term		s and/or Co-Requisites		Course	Term
MATH 1241	ENGR	1201		ENGR 1201	MATH 1241	ENGR	1202	
CHEM 1251L	CHEM	Chambro y 1 (3) 1251		MATH 1241	PHYS 2101L	PHYS	Physics 1 (6) 2101	
CHEM 1281	CHEM	Chambiny Lab (1) 1251L		PHYS 2101		PHYS	Paperior 1 Late (1) 2101L	
MATH 1103 OR PLACEMENT	MATH	Calcular I (2) 1241		MATH 1241		MATH	1242	
MATERIAL DE PERCENTAL AT	ENGL	Engine 1 (0) 1101			NGL 1101	ENGL	English II (2) 1102	
CHECK CATALOG	LBST	Arts & Society (2) 110X		CITICAL COLI	RSE CATALOG		CE ELECTIVE (3)	
inca carazoo	1 2001		SOPHOMORE VE		LL CALALOO	John	CE ELECTRE (5)	
Pre-Requisites and/or Co-Requi	isites	Course	Term	Pre-Requisite	s and/or Co-Requisites		Course	Term
PHVS 2101		Physics II (2)		ENGR 1202	PHYS 2102L MEGR 2156		Manuf. Springer (2)	
PHYS 2102L MATH 1242	PHYS	2102		MEGR 2141	MATH 2241	MEGR	2150	
		Physics II Lab (5)		MEGR 2180 ENGR 1201	MATH 2241 ENGR 1202	-	Entire Proj. Lab (2)	
PHYS 2102	PHYS	2102L		PHYS 2102	MEGR 2141	MEGR	2156	
		Engr Mechanics I (2) 21.61			MATH 2241		Total Manhavire (2) 23.44	
PHYS 2101 MATH 1242	MEGR	Calculus III (2)	$\overline{}$	MEGR 2141		MEGR	Det. Equation (2)	
MATH 1242	MATH	2241 Maga Esperatus (I)	\vdash	MATH 1242		MATH	2171 Back Diet Begr (I)	
SOPHOMORE STANDING	ECON	2101			HVS 2102	ECGR	2161	
	LRST	Wanter Calture (6) 2101		MEGR 2141	MATH 2241	MEGR	Computational Methods (6) 2240	
	1 1.851	-244			TO MOTORSPORTS &	MEGR	Materiparis Chila I (I) 7700	
			JUNIOR YEAR	509901	HORE STANDING	AUCGR	1299	
Pre-Requisites and/or Co-Requi	isites	Course	Term		s and/or Co-Requisites		Course	Term
MATH 2171	MEGR	Thermodynamics I (5) 3111		MEGR 3111		MEGR	Thermodynamics II (ii) 3112	
MEGR 2141 MATH 1242	MEGR	Dynamic Systems I (2) 3121		MEGR 3121 MEGR 2240	MATH 2171	MEGR	Synamic Systems II (2) 3122	
HEM 1281 MATH 2171	MEGR	Engr Materials (2) 3161		MATH 2171	MEGR 3111	MEGR	Ren Transfer (2) 3116	
		Ness & Instrum.(3)	$\overline{}$	ECGR 2161	MEGR 2144		Design Frei, Lab II (2)	
ECGR 2161 MEGR 3171		3171 Instrum, Lab (2)	\vdash	MEGR 2156		MEGR	3156 Fluid Mechanica (2)	
PHYS 2102L MEGR 317		3171L	_	MEGR 3121 MEGR 2144	MECR 3161	MEGR	3114 Medic & Marantin Lab (2)	
CHECK COURSE CATALOG	Motorquet	Technical Electro (i)		MEGR 3171L	MEGR 3121	MEGR	3152	
			SENIOR YEAR					
Pre-Requisites and/or Co-Requi MEGR 3156 MEGR 3152	isites	Course Senter Desire 1/0)	Term	Pre-Requisite	s and/or Co-Requisites	_	Course Senior Evelop II (1)	Term
MEGR 2299		3255					3256	
MEGR 3281 SENIOR STANDING	MEGR	Motorgora Claic II (0) 3355		MEGR 3255/3	166	MEGR	Motorque's Claic III (1) 3356	
CHECK COURSE CATALOG	METEROGRAL ELECTRIC () or Monogory Technic Electric ()		CHECK COURSE CATALOG		NE TECRNOCAL ELECTIVE (I) ar Motorsports Technical Electric (I)			
SEE BELOW FOR MATH						METEC	NOTICAL ELECTIVE (I) or	
REQUIREMENT		LECTIVE ¹ (3) Global Understanding (3)	\vdash	CHECK COU	RSE CATALOG	Makes	Ethical Imme (5)	_
	LBST	2102 Mach and & Design (ii)	$\overline{}$			LBST	221X Thermal Fluids BSN (8)	
MEGR 3122 MEGR 2144	MEGR	3221		MEGR 3114	MEGR 3116	MEGR	3216	
MEGR 3171L MEGR 3114	MEGR	Thermal Places Lab (C) 3251						
SENIOR OR JUNIOR STANDING	G ENGR	Prof. Danalogement (I) 3295						
			Total Houry: 126	Motorsports: 12	7 F1	aroliment Term		
Pre-Requisite - C or Better Requir Co-Requisite	ed					raduation Term:		
Motorsports					u	WANTED TALK		
						Student Signal	N/f	
						-		
			MATH FLECTIVE			Adhisor Signas	Tal.	
							etrology). Students who fulfill t	

B.S.M.E. DEGREE IN MECHANICAL ENGINEERING AND ENGINEERING SCIENCE WITH A CONCENTRATION IN MOTORSPORTS ENGINEERING EDESIMAN VEAD

			IAN YEAR		
ENGR 1201	INTRO TO ENGR I	2	ENGR 1202	INTRO TO ENGR II	2
CHEM 1251	CHEMISTRY I	3	PHYS 2101	PHYSICS I	3
CHEM 1251L	CHEMISTRY I LAB	1	PHYS 2101L	PHYSICS I LAB	1
MATH 1241	CALCULUS I	3	MATH 1242	CALCULUS II	3
ENGL 1101	ENGLISH I	3	ENGL 1102	ENGLISH II	3
LBST 110X	ARTS AND SOCIETY	3	SCIENCE EL	ECTIVE	3
		15			15
	SO	HOM	ORE YEAR		
PHYS 2102	PHYSICS II	3	MEGR 2180	MANUF, SYSTEMS	3
PHYS 2102L	PHYSICS II LAB	1	MEGR 2156	DESIGN PROJ. LAB I	2
MEGR 2141	ENGR MECHANICS I	3	MEGR 2144	SOLID MECHANICS	3
MATH 2241	CALCULUS III	3	MATH 2171	DIFF. EQUATIONS	3
ECON 2101	MACRO ECONOMICS	3	ECGR 2161	BASIC ELECT, ENGR	3
LBST 2101	WESTERN CULTURE	3	MEGR 2240	COMPUTATIONAL METHODS	3
0001 2101	WESTERN COLICIE	-	MEGR 2299	MOTORSPORTS CLINIC I	1
		16			18
		UNIC	R YEAR		
MEGR 3111	THERMODYNAMICS I	3	MEGR 3112	THERMODYNAMICS II	3
MEGR 3121	DYNAMIC SYSTEMS I	3	MEGR 3122	DYNAMIC SYSTEMS II	3
MEGR 3161	ENGR MATERIALS	3	MEGR 3116		3
MEGR 3171	MEAS & INSTRUM	2	MEGR 3156	DESIGN PROJ. LAB II	2
	INSTRUM LAB	2	MEGR 3114		3
	TS TECHNICAL ELECTIVE	3	MEGR 3152	MECHS & MATRLS LAB	2
		16			16
		FNIC	R YEAR		
MEGR 3355	MOTORSPORTS CLINIC II	2		MOTORSPORTS CLINIC III	2
	TS TECHNICAL ELECTIVE	3		RTS TECHNICAL ELECTIVE	3
	TS TECHNICAL ELECTIVE	3	LBST 221X	ETHICAL ISSUES	3
BST 2102	GLOBAL UNDERSTANDING	3	MEGR 3216		3
MEGR 3221	MACH ANAL & DESIGN	3	MATH ELEC		3
MEGR 3251	THERMAL/FLUIDS LAB	2			-
ENGR 3295	PROF. DEVELOPMENT	1			
DITOIC JEJJ	TROLED VEROLINE	17			14
	1/06.	OTAL	HOURS 127		

B.S.M.E. DEGREE IN MECHANICAL ENGINEERING AND ENGINEERING SCIENCE WITH A CONCENTRATION IN ENERGY ENGINEERING Requirement for Admission to Energy Concentration. Sophomers tettading; 674: 2.9

CHEM 1251 CF CHEM 1251L CF MATH 1241 CF ENGL 1101 EF LBST 110X AF PHYS 2102 PF PHYS 2102L PF MEGR 2141 EF	TITO TO ENGR I HEMISTRY I HEMISTRY I LAB ALCULUS I NGLISH I RTS AND SOCIETY SG HYSICS II HYSICS II LAB	2 3 1 3 3 3 15 DPHOM 3	MATH 1242 ENGL 1102 SCIENCE ELI ORE YEAR	ENGLISH II	2 3 1 3 3 3		
CHEM 1251L CF MATH 1241 CF ENGL 1101 EN LBST 110X AF PHYS 2102 PF PHYS 2102L PF MEGR 2141 EN	HEMISTRY I LAB ALCULUS I NGLISH I RTS AND SOCIETY HYSICS II	1 3 3 3 15	PHYS 2101L MATH 1242 ENGL 1102 SCIENCE ELI	PHYSICS I LAB CALCULUS II ENGLISH II	1 3 3		
MATH 1241 C/ ENGL 1101 EN LBST 110X AF PHYS 2102 PHYS 2102L PH MEGR 2141 EN	ALCULUS I NGLISH I RTS AND SOCIETY SC HYSICS II	3 3 3 15	MATH 1242 ENGL 1102 SCIENCE ELI ORE YEAR	CALCULUS II ENGLISH II	3 3 3		
ENGL 1101 EN LBST 110X AF PHYS 2102 PF PHYS 2102L PF MEGR 2141 EN	NGLISH I RTS AND SOCIETY SCHYSICS II	3 3 15 DPHOM	ENGL 1102 SCIENCE ELI ORE YEAR	ENGLISH II	3		
DBST 110X AF PHYS 2102 PF PHYS 2102L PF MEGR 2141 EN	RTS AND SOCIETY SCHYSICS II	3 15 OPHOM	SCIENCE ELI		3		
PHYS 2102 PH PHYS 2102L PH MEGR 2141 EN	SC HYSICS II	15 OPHOM	ORE YEAR	ECTIVE			
PHYS 2102L PF MEGR 2141 EN	HYSICS II	PHOM			15		
PHYS 2102L PF MEGR 2141 EN	HYSICS II						
PHYS 2102L PF MEGR 2141 EN		3					
MEGR 2141 EN	TYSICS II LAB		MEGR 2180	MANUF. SYSTEMS	3		
		1	MEGR 2156	DESIGN PROJ. LAB I	2		
	NGR MECHANICS I	3	MEGR 2144	SOLID MECHANICS	3		
	ALCULUS III	3	MATH 2171	DIFF. EQUATIONS	3		
ECON 2101 M.	ACRO ECONOMICS	3	ECGR 2161	BASIC ELECT. ENGR	3		
LBST 2101 W.	ESTERN CULTURE	3	MEGR 2240	COMPUTATIONAL METHODS	3		
			MEGR 2499	ENERGY ENG. CLINIC I	1		
		16			18		
		JUNIO	R YEAR				
MEGR 3111 TF	HERMODYNAMICS I	3	MEGR 3112	THERMODYNAMICS II	3		
MEGR 3121 D3	YNAMIC SYSTEMS I	3	MEGR 3122	DYNAMIC SYSTEMS II	3		
MEGR 3161 EN	NGR MATERIALS	3	MEGR 3116	HEAT TRANSFER	3		
MEGR 3171 M	EAS. & INSTRUM.	2	MEGR 3156	DESIGN PROJ. LAB II	2		
	STRUM. LAB	2	MEGR 3114	FLUID MECHANICS	3		
MATH ELECTIVE	31	3	MEGR 3152	MECHS & MATRLS LAB	2		
		16			16		
		SENIO	R YEAR				
	NERGY ENG. CLINIC II *	2	MEGR 3456	ENERGY ENG. CLINIC III *	2		
ENERGY TECHNI		3		CHNICAL ELECTIVE	3		
ENERGY TECHNI	ICAL ELECTIVE	3		CHNICAL ELECTIVE	3		
	OBAL UNDERSTANDING		LBST 221X	ETHICAL ISSUES	3		
	ACH ANAL & DESIGN	3	MEGR 3216	THERMAL/FLUIDS DSN	3		
MEGR 3251 TH	ERMAL/FLUIDS LAB	2					
ENGR 3295 PR	OF. DEVELOPMENT	1					
* Must be an appro	ved Energy-related project	17	* Must be an a	pproved Energy-related project	14		
TOTAL HOURS 127							

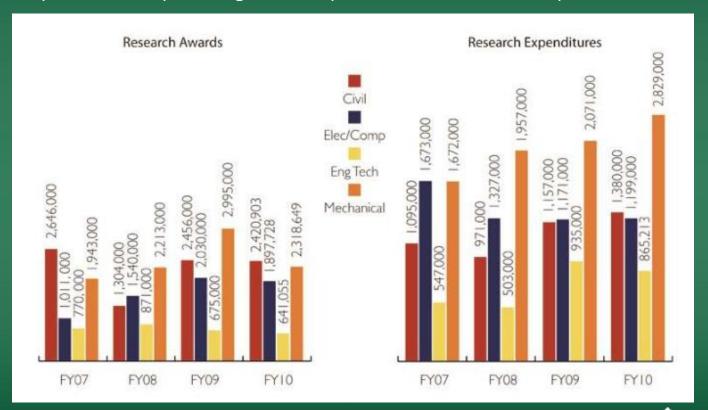
 $^{\rm 1}$ Note: All Mechanical Engineering students must meet the Statistics requirement described on the back of this page.

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Research

- ME accounted for about 34% of the research awards in the college FY 7-10
- ME accounted for about 40% of the research expenditures in FY 7-10
- Proposal activity has significantly increased in the last year







- ME has 4 of the 14 US CIRP Fellows (and 170 world-wide) This is the highest concentration anywhere in the world. Goch is a German CIRP Fellow.
- Dr. Coger received the 2010 Harshini V. de Silva Graduate Mentor Award
- Dr. Cherukuri received the 2011 Harshini de Silva Award
- Dr. Cherukuri received a Fullbright Award for 2011
- Dr. Coger was elected to the College of Fellows of the American Institute for Medical and Biological Engineering
- Dr. Smith and team received an R&D 100 Award
- Dr.s Smith, Hocken, and Miller received the ASME Blackall Award
- Dr. Evans Received the 2010 Lifetime Achievement Award from the American Society Precision Engineering
- Dr. El-Ghannam was selected to serve on the ASTM Task Force Committee for the Bone graft material
- The ASME Student Design Team won the regional Competition at NC State





ASME Student Design Team







Recent Highlights

- The department hosted the 2011 ASPE Spring Topical Meeting (our 2nd in 3 years)
- Dr. Davies was a Finalist for the Bank of America Award for Teaching Excellence
- Dr. Lawton received the College of Engineering Undergraduate Award for Teaching Excellence
- The SAE Mini-Baja team received the Git-R-Done Award
- Dr. Smith was named an Outstanding Alumnus from University of Florida
- Dr. Tkacik served as the Chair of the SAE Systems Engineering Academia Committee
- The student section of ASME hosted the Student Professional Development Conference (SPDC)
- Dr. Ziegert was selected to Chair the Editorial Committee of the North American Manufacturing Research Institute (NAMRI) of the Society of Manufacturing Engineers
- A new Magneto-Rheological Finishing machine was installed in our Optics Processing Laboratory

