**John and Willie Leone Family Department of
Energy and Mineral Engineering (EME)**

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EME M.S. CHECKSHEET – Non-Thesis-Based

Name:_____ PSU ID: _____

1) EME *non-thesis* M.S. course credit requirement: Thirty-three (33) course credits

Take two of following core EME courses (6 cred. total): EME 501 / 511 / 521 / 531/ 551		Course taken	Semester taken	**Completed? YES/NO**
	1			
	2			

27 additional course credits

-Base program students: Please show at least eighteen (27) additional credits of 500 courses (9 courses), which must include 2 additional core EME courses beyond those reported above. **Please complete 'Base EME program students' table** on your right.

-Option students: **Please complete option checksheet now.** In addition to the four courses (12 credits) indicated there, you are required to complete *five more graduate-level courses* (15 credits). Please indicate the five additional courses in the **'EME students completing an option' table** on your right.   Of these five, **at least two** of these courses must be from the EME core *and/or* option list (and NOT already reported elsewhere in these check sheets).

Base EME program students:
Show 27 cred (9 courses) of 500-level classes

	Two additional classes from EME 501/511/521 /531/551 core (not used before)	
	Course taken	**Semester taken**
1		
2		
	Show additional 21 cred (7 classes) of 500-level courses	
3		
4		
5		
6		
7		
8		
9		

EME students completing an option:
Show 15 cred (5 courses) of 500-level classes

	Two additional classes from your OPTION list AND/OR from EME 501/511/521 /531/551 core list (not used before)	
	Course taken	**Semester taken**
1		
2		
	Show additional 9 credits (3 classes of 3 cred/each) of 500-level courses	
3		
4		
5		

Completed? YES/NO

2) M.S. Research Culminating Experience: Three (3) credits of an EME research capstone experience

EME 580 (course-based) (3 cred) **or EME 596** (paper-based; must also submit paper approval form) (3 cred)	Course taken:	**Completed? YES/NO**
	Semester taken:	

3) Remaining M.S. Milestones					**Indicate dates:**
Date **SARI@PSU CITI Online Training** passed:					
Date of each **SARI @PSU 5 hr. training:**					
Date **Exit Survey** completed:					

Please note that, in addition to the Departmental requirements above, PSU's Grad School will (independently) verify that you satisfy PSU-wide degree completion criteria. Among those, by the time you desire to graduate, you must have **GPA > 3.0,** have

EME OPTION CHECKSHEET (M.S. and Ph.D.)

Name: _____ PSU ID: _____

ESysE Option Specialization Courses (12 credits)		
Requirement / Credits	Class & Semester taken	Credits earned
ENNEC 540(3)		
ENNEC 560(3)		
EME 522(3)		
EME 523(3)		
EME 524(3)		
EME 526(3)		
EME 527(3)		
IE 505(3)		
IE 516(3)		
Total credits (must add to 12):		

FSc Option Specialization Courses (12 credits)		
Requirement / Credits	Class & Semester taken	Credits earned
FSC 503(3) *or* CHE510(3)		
FSC 504(3)		
FSC 506(3)		
EME 570 *or* CHE 536		
CHE 544(3) *or* CHE 546		
ME 523(3)		
Total credits (must add to 12):		

MMPE Option Specialization Courses (12 credits)		
Requirement / Credits	Class & Semester taken	Credits earned
MNG 541(3)		
MNG 554(3)		
MNG 512(3)		
MN PR 505(3)		
MN PR 507(3)		
Total credits (must add to 12):		

PNGE Option Specialization Courses (12 credits)		
Requirement / Credits	Class & Semester taken	Credits earned
PNG 501(3)		
PNG 502(3)		
PNG 512(3)		
PNG 518(3)		
PNG 520(3)		
PNG 526(3)		
PNG 530(3)		
PNG 555(3)		
PNG 566(3)		
PNG 577(3)		
PNG 597s (†)		
Total credits (must add to 12):		

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(**†**) Any PNG 597s (Special Topics class) may be used here. However, no PNG 596 (Individual Studies) credits may be used within this 12-credit option course count.

EME M.S. Non-thesis – Pre-approved list of classes

All EME Core Courses:
EME 501(3): Design Under Uncertainty in EME Systems
EME 511(3): Interfacial Phenomena in EME Systems
EME 521(3): Mathematical Modeling of EME Systems
EME 531(3): Thermodynamics in EME Systems
EME 551(3): Safety, Health, and Environmental Risks in EME Production

Any course within EME Graduate Option list:
CHE 510(3): Surface Characterization of Materials (FSc option)
CHE 536(3): Heterogeneous Catalysis (FSc option)
CHE 544(3): General Transport Phenomena (FSc option)
CHE 546(3): Transport Phenomena II (FSc option)
ENNEC 540(3): Economic Analysis of Energy Markets (ESysE option)
EME 522(3): Computational Methods for Electric Power Systems Analysis (ESysE option)
EME 523(3): Stochastic Optimization Methods for Energy and Environmental Systems (ESysE option)
EME 524(3): Machine Learning for Energy and Mineral Engineering Problems (ESysE option)
EME 526(3): Solar Utility and Portfolio Management (ESysE option)
EME 527(3): Stochastic Modeling of Spatial Variability in Energy and Environmental System (ESysE option)
EME 570 (MATSE 570) (3): Catalytic Materials (FSc option)
FSC 503(3): Analytic Methods in Fuel Science (FSc option)
FSC 504(3): Problems in Fuels Engineering (FSc option)
FSC 506(3): Carbon Reactions (FSc option)
IE 505(3): Linear Programming (ESysE option)
IE 516(3): Applied Stochastic Processes (ESysE option)
ME 523(3): Numerical Solutions Applied to Heat Transfer and Fluid Mechanics Problems (FSc option)
MNG 541(3): Surface Mine Equipment Selection Anal. (MMPE option)
MNG 554(3): Rock Mechanics Design (MMPE option)
MNG 512(3): Mineral Property Evaluation (MMPE option)
MN PR 505(3): Particle Separation (MMPE option)
MN PR 507(3): Hydrometallurgical Processing (MMPE option)
PNG 501(3): Flow in Porous Media (PNGE option)
PNG 502(3): Coupled Flow and Deformation in Porous Media (PNGE option)
PNG 512(3): Numerical Reservoir Simulation (PNGE option)
PNG 518(3): Design of Miscible Recovery Projects (PNGE option)
PNG 520(3): Thermodynamics Hydrocarbon Fluids (PNGE option)
PNG 526(3): Well Stimulation (PNGE option)
PNG 530(3): Natural Gas Engineering (PNGE option)
PNG 555(3): Unconventional Resources Analysis (PNGE option)
PNG 566(3): Reservoir Characterization (PNGE option)
PNG 577(3): Production and Completions Eng. (PNGE option)
PNG 597(3): Special Topics (PNGE option)

Other non-EME/non-option courses:
AEREC 510(3): Econometrics I
AEREC 511(3): Econometrics II
AEREC 512(3): Applied Microeconomic Theory I
AEREC 529(3): Applied Welfare Economics
CHE 524(3): Chemical Engineering Applications of Thermodynamics
CHE 576 (CE 576) (3): Environmental Transport Processes
EMCH 524A(3): Mathematical Methods in Engineering
IE 525(3): Convex Optimization
STAT 501(3): Regression Methods
STAT 502(3): Analysis of Variance and Design of Experiments
STAT 515(3): Stochastic Processes and Monte Carlo Methods
STAT 540(3): Statistical Computing
STAT 557(3): Data Mining I

& Up to 6 credits of 400-level undergrad courses (please seek prior review from AHGE for selecting UG courses)

Please note: Taking 12 cred/semester allows non-thesis M.S. students to graduate in 3 semesters