

Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

Name of Institution:		University of Kentucky, Lexington			
Major:	Agricultural	PE Examination:	Civil-Water Resources and Environmental		

	Institution	ABET Comparator ²
No. Examinees Taking ¹	1	14
No. Examinees Passing	0	11
Percent Examinees Passing	0%	79%

Means and Methods 3 0.0 42.9	BET parator ndard iation ³
	1.1
	1.0
Soil Mechanics 6 50.0 53.6	1.3
Structural Mechanics 6 33.3 53.6	1.4
Hydraulics and Hydrology 7 57.1 82.7	1.0
Geometrics 3 0.0 61.9	0.8
Materials 6 50.0 58.3	1.4
Site Development 5 80.0 68.6	1.2
Analysis and Design 4 100.0 75.0	0.8
Hydraulics Closed Conduit580.082.9	1.0
Hydraulics Open Channel 5 60.0 71.4	1.0
Hydrology 7 57.1 69.4	0.9
Groundwater and Wells 3 33.3 83.3	0.6
Wastewater Collection and Treatment650.050.0	0.9
Water Quality 3 66.7 73.8	0.9
Drinking Water Distribution and Treatment 6 66.7 61.9	1.0
Engineering Economics Analysis 1 100.0 71.4	0.5

1. <u>0</u> examinees have been removed from this data because they were flagged as a random guesser.

2. Comparator includes all examinees from programs accredited by the ABET commission noted.

3. The standard deviation is based on number of questions correct, not percentage of questions correct.

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Name of Institution:	University of Kentucky, Lexington		
Major:	Agricultural	PE Examination:	Environmental

	Institution	ABET Comparator ²
No. Examinees Taking ¹	1	3
No. Examinees Passing	0	0
Percent Examinees Passing	0%	0%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Water: Basic Principles	4	25.0	25.0	0.0
Water: Wastewater	10	70.0	63.3	0.9
Water: Stormwater	4	100.0	83.3	0.9
Water: Potable Water	10	30.0	50.0	1.4
Water: Water Resources	4	100.0	75.0	0.8
Solid Waste: Basic Principles	3	0.0	22.2	0.5
Solid Waste: Municipal and Industrial Solid Waste	6	66.7	72.2	0.5
Solid Waste: Hazardous Waste	6	66.7	61.1	0.5
Solid Waste: Medical; Radioactive; Other Waste	3	33.3	44.4	0.5
Air: Basic Principles	7	57.1	61.9	1.2
Air: Pollution Control	16	62.5	50.0	1.4
Site Assessment and Remediation: Basic Principles	5	80.0	80.0	0.8
Site Assessment and Remediation: Site Assessment	3	33.3	44.4	0.5
Site Assessment and Remediation: Remediation	4	50.0	58.3	0.5
Environmental Health and Safety: Environmental Health and Safety	8	50.0	66.7	0.9
Associated Engineering Principles: Associated Engineering Principles	7	42.9	66.7	1.2

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

Jame of Institution: University of Kentucky, Lexington			
Major:	Chemical	PE Examination:	Chemical

	Institution	ABET Comparator ²
No. Examinees Taking ¹	1	196
No. Examinees Passing	1	143
Percent Examinees Passing	100%	73%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Mass Energy Balances and Thermodynamics: Mass Balances	7	85.7	68.1	1.5
Mass Energy Balances and Thermodynamics: Energy Balances and Thermodynamics	11	72.7	69.9	2.1
Heat Transfer: Mechanisms	7	57.1	70.5	1.5
Heat Transfer: Applications	6	50.0	70.3	1.4
Kinetics: Reaction Parameters	5	60.0	68.5	1.2
Kinetics: Reactors	4	25.0	46.5	1.1
Fluids: Mechanical-Energy Balance	10	70.0	55.0	1.9
Fluids: Flow and Pressure Measurement Techniques	3	66.7	73.9	0.8
Mass Transfer: Phase Equilibria	4	50.0	61.4	1.0
Mass Transfer: Continuous Vapor-Liquid Contactors	6	83.3	64.2	1.4
Mass Transfer: Miscellaneous Mass Transfer Processes	1	100.0	54.4	0.5
Plant Design and Operation: Economic Considerations	1	100.0	60.6	0.5
Plant Design and Operation: Design	8	50.0	54.0	1.5
Plant Design and Operation: Operation	3	33.3	67.5	0.8
Plant Design and Operation: Safety; Health; and Environment	4	50.0	63.3	1.1

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

Name of Institution:		University of Kentucky, Lexington		
Major:	Civil	PE Examination:	Civil-Construction	

	Institution	ABET Comparator ²
No. Examinees Taking ¹	6	535
No. Examinees Passing	3	308
Percent Examinees Passing	50%	58%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	70.8	79.3	0.9
Means and Methods	3	44.4	54.7	0.9
Soil Mechanics	6	66.7	57.6	1.2
Structural Mechanics	6	55.6	54.6	1.4
Hydraulics and Hydrology	7	61.9	58.4	1.5
Geometrics	3	33.3	59.4	0.9
Materials	6	55.6	61.5	1.3
Site Development	5	56.7	68.8	1.1
Earthwork Construction and Layout	6	80.6	77.0	1.2
Estimating Quantities and Costs	6	63.9	70.5	1.3
Construction Operations and Methods	7	50.0	57.8	1.4
Scheduling	5	66.7	75.7	1.1
Material Quality Control and Production	6	72.2	73.1	1.2
Temporary Structures	7	57.1	54.8	1.5
Construction Health and Safety	3	33.3	67.5	0.9

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Name of Institution: University of Kentucky, Lexington		of Kentucky, Lexington	
Major:	Civil	PE Examination:	Civil-Geotechnical

	Institution	ABET Comparator ²
No. Examinees Taking ¹	2	340
No. Examinees Passing	1	216
Percent Examinees Passing	50%	64%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	62.5	74.7	0.9
Means and Methods	3	83.3	63.4	0.9
Soil Mechanics	6	75.0	72.5	1.2
Structural Mechanics	6	58.3	56.7	1.5
Hydraulics and Hydrology	7	78.6	63.8	1.5
Geometrics	3	50.0	66.6	0.9
Materials	6	66.7	72.5	1.2
Site Development	5	80.0	72.8	1.1
Site Characterization	5	50.0	60.7	1.1
Soil Mechanics Laboratory Testing and Analysis	5	40.0	73.1	1.2
Field Materials Testing; Methods; and Safety	3	50.0	68.2	0.8
Earthquake Engineering and Dynamic Loads	2	75.0	54.3	0.7
Earth Structures	4	75.0	65.0	0.8
Groundwater and Seepage	3	66.7	64.9	0.7
Problematic Soil and Rock Conditions	3	50.0	51.9	0.9
Earth Retaining Structures (ASD or LRFD)	5	70.0	67.2	1.2
Shallow Foundations (ASD or LRFD)	5	70.0	61.5	1.3
Deep Foundations (ASD or LRFD)	5	70.0	65.8	1.1

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Name of Institution:	University of Kentucky, Lexington		
Major:	Civil	PE Examination:	Civil-Structural

	Institution	ABET Comparator ²
No. Examinees Taking ¹	4	901
No. Examinees Passing	3	618
Percent Examinees Passing	75%	69%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	81.3	82.5	0.8
Means and Methods	3	58.3	65.1	0.8
Soil Mechanics	6	62.5	66.1	1.2
Structural Mechanics	6	70.8	79.5	1.3
Hydraulics and Hydrology	7	75.0	66.7	1.5
Geometrics	3	50.0	69.0	0.9
Materials	6	70.8	69.0	1.3
Site Development	5	80.0	66.0	1.2
Analysis of Structures: Loads and load applications	4	75.0	58.7	1.1
Analysis of Structures: Forces and load effects	10	57.5	68.8	2.0
Design and Details of Structures: Materials and material properties	5	70.0	69.7	1.1
Design and Details of Structures: Component design and detailing	15	70.0	69.9	2.4
Codes and Construction: Codes; standards; and guidance documents	4	87.5	74.7	1.0
Codes and Construction: Temporary structures and other topics	2	37.5	48.2	0.7

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Name of Institution: University of Kentucky, L			ucky, Lexington
Major:	lajor: Civil		Civil-Transportation

	Institution	ABET Comparator ²
No. Examinees Taking ¹	7	1,234
No. Examinees Passing	3	858
Percent Examinees Passing	43%	70%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	75.0	74.4	1.0
Means and Methods	3	33.3	53.0	0.9
Soil Mechanics	6	47.6	56.6	1.2
Structural Mechanics	6	45.2	51.3	1.4
Hydraulics and Hydrology	7	55.1	63.7	1.5
Geometrics	3	66.7	75.8	0.8
Materials	6	45.2	60.9	1.3
Site Development	5	57.1	72.4	1.0
Traffic Engineering (Capacity Analysis and Transportation Planning)	11	53.2	58.3	1.9
Horizontal Design	4	35.7	64.0	1.1
Vertical Design	4	67.9	73.7	1.0
Intersection Geometry	4	64.3	66.7	1.0
Roadside and Cross Section Design	4	57.1	63.6	1.0
Signal Design	3	42.9	55.9	0.8
Traffic Control Design	3	81.0	82.5	0.7
Geotechnical and Pavement	4	53.6	61.8	0.9
Drainage	2	57.1	58.2	0.6
Alternatives Analysis	1	57.1	64.3	0.5

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Name of Institution:			University of Kentucky, Lexington	
Major:	Civil	PE Examination:	Civil-Water Resources and Environmental	

	Institution	ABET Comparator ²
No. Examinees Taking ¹	7	1,037
No. Examinees Passing	6	765
Percent Examinees Passing	86%	74%
		ADET

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	82.1	76.5	0.9
Means and Methods	3	76.2	53.2	0.9
Soil Mechanics	6	76.2	60.3	1.2
Structural Mechanics	6	64.3	54.5	1.4
Hydraulics and Hydrology	7	85.7	76.6	1.4
Geometrics	3	71.4	64.6	0.9
Materials	6	59.5	62.3	1.3
Site Development	5	80.0	68.6	1.1
Analysis and Design	4	71.4	78.5	1.0
Hydraulics Closed Conduit	5	68.6	72.4	1.1
Hydraulics Open Channel	5	65.7	57.0	1.3
Hydrology	7	71.4	63.2	1.5
Groundwater and Wells	3	90.5	70.1	0.9
Wastewater Collection and Treatment	6	40.5	50.0	1.4
Water Quality	3	81.0	68.1	0.9
Drinking Water Distribution and Treatment	6	66.7	59.3	1.3
Engineering Economics Analysis	1	57.1	64.2	0.5

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Name of Institution: University of Kentucky, Lexington			Kentucky, Lexington
Major:	Computer	PE Examination:	Electrical and Computer: Power

No. Examinees Taking ¹ No. Examinees Passing Percent Examinees Passing		Institution 1 1 100%	ABET Comparator ² 8 8 100%	
	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
General Power Engineering: Measurement & Instrumentation	6	83.3	89.6	0.7
General Power Engineering: Special Applications	8	100.0	84.4	0.7
General Power Engineering: Codes & Standards	10	70.0	72.5	1.0
Circuit Analysis: Analysis	9	88.9	81.9	1.1
Circuit Analysis: Devices & Power Electronic Circuits	7	85.7	71.4	1.3
Rotating Machines & Electromagnetic Devices: Rotating Machines	10	80.0	80.0	0.5
Rotating Machines & Electromagnetic Devices: Electromagnetic Devices	6	50.0	68.8	0.9
Transmissions & Distribution: System Analysis	10	70.0	75.0	0.9
Transmissions & Distribution: Power System Performance	6	66.7	60.4	1.3
Transmissions & Distribution: Protection	8	87.5	81.3	1.1

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Name of Institution:		University of Kentucky, Lexington		
Major:	Electrical	PE Examination:	Electrical and Computer: Power	

	Institution	ABET Comparator ²
No. Examinees Taking ¹	9	708
No. Examinees Passing	6	463
Percent Examinees Passing	67%	65%
		4057

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
General Power Engineering: Measurement & Instrumentation	6	72.2	72.2	1.2
General Power Engineering: Special Applications	8	72.2	63.6	1.4
General Power Engineering: Codes & Standards	10	67.8	64.2	1.7
Circuit Analysis: Analysis	9	71.6	75.5	1.6
Circuit Analysis: Devices & Power Electronic Circuits	7	73.0	68.3	1.3
Rotating Machines & Electromagnetic Devices: Rotating Machines	10	68.9	64.1	1.8
Rotating Machines & Electromagnetic Devices: Electromagnetic Devices	6	59.3	62.9	1.5
Transmissions & Distribution: System Analysis	10	57.8	61.6	1.8
Transmissions & Distribution: Power System Performance	6	63.0	58.0	1.4
Transmissions & Distribution: Protection	8	63.9	68.7	1.7

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Name of Institution:		University of Kentucky, Lexington		
Major:	Mechanical	PE Examination:	Mechanical-HVAC and Refrigeration	

	Institution	ABET Comparator ²
No. Examinees Taking ¹	2	326
No. Examinees Passing	2	277
Percent Examinees Passing	100%	85%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Basic Engineering Practice: Basic Engineering Practice	12	75.0	77.6	1.7
Mechanical Systems & Materials: Principles	5	40.0	53.6	1.3
Mechanical Systems & Materials: Applications	3	83.3	67.9	0.7
Hydraulic & Fluids: Principles	3	66.7	75.4	0.8
Hydraulic & Fluids: Applications	4	75.0	72.3	1.0
Energy & Power Systems: Principles	3	50.0	58.9	0.9
Energy & Power Systems: Applications	3	33.3	47.1	1.0
HVAC & Refrigeration: Principles	4	75.0	83.1	0.9
HVAC & Refrigeration: Applications	3	83.3	77.6	0.8
Principles: Thermodynamics	3	66.7	72.1	0.8
Principles: Psychrometrics	6	58.3	62.7	1.4
Principles: Heat Transfer	5	60.0	59.5	1.1
Principles: Fluid Mechanics	3	100.0	80.0	0.7
Principles: Compressible Flow	1	100.0	56.1	0.5
Principles: Energy Balances	4	87.5	85.2	0.8
Applications: Equipment and Components	8	50.0	61.4	1.6
Applications: Systems	7	57.1	65.0	1.7
Applications: Supportive Knowledges	3	33.3	71.5	0.8

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Name of Institution:		University of Kentucky, Lexington			
Major:	Mechanical	PE Examination:	Mechanical-Thermal and Fluids Systems		

No. Eventinese Tables 1		Institution	ABET Comparator ² 433	
No. Examinees Taking ¹		2		
No. Examinees Passing		1	321	
Percent Examinees Passing		50%	74%	
	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Basic Engineering Practice: Basic Engineering Practice	12	70.8	78.2	1.8
Mechanical Systems & Materials: Principles	5	60.0	59.4	1.3
Mechanical Systems & Materials: Applications	3	66.7	71.5	0.8
Hydraulic & Fluids: Principles	3	100.0	83.4	0.7
Hydraulic & Fluids: Applications	4	87.5	75.7	1.0
Energy & Power Systems: Principles	3	50.0	57.9	0.9
Energy & Power Systems: Applications	3	50.0	55.2	1.0
HVAC & Refrigeration: Principles	4	75.0	68.8	1.1
HVAC & Refrigeration: Applications	3	33.3	70.5	1.0

Energy & Power Systems: Applications	3	50.0	55.2	1.0
HVAC & Refrigeration: Principles	4	75.0	68.8	1.1
HVAC & Refrigeration: Applications	3	33.3	70.5	1.0
Principles: Materials Properties (density)	2	50.0	61.2	0.8
Principles: Fluid Mechanics	4	50.0	61.3	1.0
Principles: Heat Transfer Principles (convection)	4	62.5	56.5	1.2
Principles: Mass Balance Principles (evaporation)	3	66.7	67.2	0.9
Principles: Thermodynamics	4	50.0	52.1	1.1
Principles: Related Principles	1	50.0	71.1	0.5
Applications: Equipment	7	21.4	61.1	1.7
Applications: Systems	13	38.5	57.6	2.9
Applications: Codes & Standards	2	75.0	86.8	0.5

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

Name of Institution: University of Kentucky, Lexington			ington
Major: Mi	ning/Mineral	PE Examination:	Civil-Transportation

	Institution	ABET Comparator ²
No. Examinees Taking ¹	1	1
No. Examinees Passing	0	0
Percent Examinees Passing	0%	0%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	75.0	75.0	0.0
Means and Methods	3	33.3	33.3	0.0
Soil Mechanics	6	50.0	50.0	0.0
Structural Mechanics	6	0.0	0.0	0.0
Hydraulics and Hydrology	7	42.9	42.9	0.0
Geometrics	3	100.0	100.0	0.0
Materials	6	33.3	33.3	0.0
Site Development	5	60.0	60.0	0.0
Traffic Engineering (Capacity Analysis and Transportation Planning)	11	18.2	18.2	0.0
Horizontal Design	4	25.0	25.0	0.0
Vertical Design	4	25.0	25.0	0.0
Intersection Geometry	4	50.0	50.0	0.0
Roadside and Cross Section Design	4	50.0	50.0	0.0
Signal Design	3	0.0	0.0	0.0
Traffic Control Design	3	33.3	33.3	0.0
Geotechnical and Pavement	4	75.0	75.0	0.0
Drainage	2	0.0	0.0	0.0
Alternatives Analysis	1	0.0	0.0	0.0

1. $\underline{\mathbf{0}}$ examinees have been removed from this data because they were flagged as a random guesser.

2. Comparator includes all examinees from programs accredited by the ABET commission noted.

3. The standard deviation is based on number of questions correct, not percentage of questions correct.

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jul 01—Dec 31, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

Name of Institution:		University of Kentucky, Lexington		
Major:	Mining/Mineral	PE Examination:	Mining and Mineral Processing	

	Institution	ABET Comparator ²
No. Examinees Taking ¹	5	35
No. Examinees Passing	4	24
Percent Examinees Passing	80%	69%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Exploration: Exploration Methods and Techniques	3	73.3	61.0	0.7
Exploration: Site Geologic and Geotechnical Conditions	3	73.3	83.8	0.6
Exploration: Resources and Reserves	4	40.0	42.9	1.1
Mine Planning and Operations: Mining Methods and Layouts	8	65.0	72.5	1.4
Mine Planning and Operations: Mine Equipment; Facilities; and Systems	13	70.8	69.0	1.9
Mine Planning and Operations: Ground Control	5	72.0	68.0	0.8
Mine Planning and Operations: Mine Planning and Systems	5	72.0	59.4	1.0
Mineral Processing: Laboratory and Pilot Testing and Results	4	75.0	65.7	1.0
Mineral Processing: Process Flow Sheets	9	68.9	60.6	1.9
Mineral Processing: Plant Equipment; Facilities; and Systems	7	54.3	54.3	1.5
Mineral Processing: Plants and Facilities	4	75.0	73.6	1.0
Environment and Reclamation: Site; Mining; and Process Environment	4	40.0	58.6	1.0
Environment and Reclamation: Exploration; Mining; and Processing Impacts	5	52.0	54.9	1.0
Environment and Reclamation: Environmental and Reclamation Plan	3	86.7	77.1	0.9
Environment and Reclamation: Reclamation and Postclosure	3	53.3	46.7	0.9

1. $\underline{\mathbf{0}}$ examinees have been removed from this data because they were flagged as a random guesser.

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