

Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator ²
No. Examinees Taking ¹	1	3
No. Examinees Passing	0	1
Percent Examinees Passing	0%	33%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	50.0	75.0	0.8
Means and Methods	3	100.0	88.9	0.5
Soil Mechanics	6	66.7	61.1	0.5
Structural Mechanics	6	50.0	66.7	0.8
Hydraulics and Hydrology	7	85.7	81.0	0.5
Geometrics	3	66.7	55.6	0.5
Materials	6	50.0	61.1	0.9
Site Development	5	100.0	93.3	0.5
Earthwork Construction and Layout	6	50.0	61.1	0.9
Estimating Quantities and Costs	6	66.7	66.7	0.0
Construction Operations and Methods	7	28.6	52.4	1.2
Scheduling	5	60.0	66.7	1.2
Material Quality Control and Production	6	0.0	33.3	1.4
Temporary Structures	7	57.1	57.1	0.8
Construction Health and Safety	3	33.3	66.7	0.8

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.

TERMS AND CONDITIONS OF DATA USE

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

	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	25.0	25.0	0.0
Means and Methods	3	66.7	66.7	0.0
Soil Mechanics	6	66.7	66.7	0.0
Structural Mechanics	6	50.0	50.0	0.0
Hydraulics and Hydrology	7	85.7	85.7	0.0
Geometrics	3	33.3	33.3	0.0
Materials	6	83.3	83.3	0.0
Site Development	5	40.0	40.0	0.0
Site Characterization	5	40.0	40.0	0.0
Soil Mechanics Laboratory Testing and Analysis	5	60.0	60.0	0.0
Field Materials Testing; Methods; and Safety	3	33.3	33.3	0.0
Earthquake Engineering and Dynamic Loads	2	50.0	50.0	0.0
Earth Structures	4	50.0	50.0	0.0
Groundwater and Seepage	3	66.7	66.7	0.0
Problematic Soil and Rock Conditions	3	0.0	0.0	0.0
Earth Retaining Structures (ASD or LRFD)	5	80.0	80.0	0.0
Shallow Foundations (ASD or LRFD)	5	20.0	20.0	0.0
Deep Foundations (ASD or LRFD)	5	0.0	0.0	0.0

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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	11	
No. Examinees Passing	1	6	
Percent Examinees Passing	100%	55%	
		ABET	

	Number of Exam Questions	Institution Average Percent Correct	Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	75.0	61.4	0.7
Means and Methods	3	66.7	81.8	0.5
Soil Mechanics	6	66.7	62.1	1.2
Structural Mechanics	6	33.3	62.1	1.1
Hydraulics and Hydrology	7	85.7	74.0	1.5
Geometrics	3	66.7	66.7	0.9
Materials	6	66.7	59.1	1.4
Site Development	5	60.0	70.9	0.9
Analysis and Design	4	100.0	81.8	0.9
Hydraulics Closed Conduit	5	80.0	58.2	1.1
Hydraulics Open Channel	5	100.0	74.5	1.2
Hydrology	7	85.7	68.8	1.5
Groundwater and Wells	3	33.3	48.5	0.8
Wastewater Collection and Treatment	6	16.7	60.6	1.1
Water Quality	3	100.0	78.8	0.6
Drinking Water Distribution and Treatment	6	83.3	54.5	1.5
Engineering Economics Analysis	1	0.0	54.5	0.5

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

No. Examinees Taking ¹ No. Examinees Passing Percent Examinees Passing	Number of Exam Questions	Institution 1 100% Institution Average Percent Correct	ABET Comparator ² 1 1 100% ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Systems Definition; Analysis; and Design	16	56.3	56.3	0.0
Facilities Engineering and Planning	16	87.5	87.5	0.0
Supply Chain and Logistics	16	93.8	93.8	0.0
Work Design	16	100.0	100.0	0.0
Quality Engineering	16	75.0	75.0	0.0

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Name of Institution:		University of Kentucky, Lexington		
Major:	Agricultural	PE Examination:	Mechanical-Mechanical Systems and Materials	

No. Examinees Taking ¹ No. Examinees Passing Percent Examinees Passing		Institution 1 100% Institution	ABET Comparator ² 2 1 50% ABET	АВЕТ
	Number of Exam Questions	Average Percent Correct	Comparator Average Percent Correct	Comparator Standard Deviation ³
Basic Engineering Practice: Basic Engineering Practice	12	83.3	70.8	1.5
Mechanical Systems & Materials: Principles	5	100.0	60.0	2.0
Mechanical Systems & Materials: Applications	3	66.7	50.0	0.5
Hydraulic & Fluids: Principles	3	0.0	33.3	1.0
Hydraulic & Fluids: Applications	4	50.0	62.5	0.5
Energy & Power Systems: Principles	3	33.3	16.7	0.5
Energy & Power Systems: Applications	3	0.0	50.0	1.5
HVAC & Refrigeration: Principles	5	40.0	50.0	0.5
HVAC & Refrigeration: Applications	2	50.0	75.0	0.5
Principles: Statics (free-body diagrams)	6	16.7	41.7	1.5
Principles: Kinematics (linear & rotational motion)	3	100.0	50.0	1.5
Principles: Dynamics (particle & rigid body)	4	50.0	50.0	0.0
Principles: Materials Properties (physical)	4	75.0	50.0	1.0
Principles: Strength of Materials (stress & strain)	7	57.1	50.0	0.5
Applications: Mechanical Components	4	100.0	87.5	0.5
Applications: Joints & Fasteners	4	75.0	62.5	0.5
Applications: Vibration & Dynamic Analysis	4	50.0	62.5	0.5
Applications: Materials & Process	4	50.0	25.0	1.0

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

	Institution	ABET Comparator ²
No. Examinees Taking ¹	5	578
No. Examinees Passing	3	371
Percent Examinees Passing	60%	64%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	75.0	79.6	0.8
Means and Methods	3	93.3	90.5	0.5
Soil Mechanics	6	66.7	73.1	1.1
Structural Mechanics	6	76.7	68.2	1.2
Hydraulics and Hydrology	7	68.6	77.0	1.4
Geometrics	3	93.3	73.8	0.7
Materials	6	66.7	79.6	1.1
Site Development	5	84.0	80.2	0.9
Earthwork Construction and Layout	6	63.3	71.8	1.3
Estimating Quantities and Costs	6	66.7	66.9	1.4
Construction Operations and Methods	7	37.1	53.7	1.5
Scheduling	5	84.0	77.1	1.0
Material Quality Control and Production	6	63.3	59.3	1.2
Temporary Structures	7	54.3	56.6	1.5
Construction Health and Safety	3	80.0	74.8	0.8

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

	Institution	ABET Comparator ²
No. Examinees Taking ¹	2	327
No. Examinees Passing	1	217
Percent Examinees Passing	50%	66%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	62.5	76.0	0.9
Means and Methods	3	100.0	91.0	0.5
Soil Mechanics	6	91.7	85.6	1.0
Structural Mechanics	6	75.0	74.3	1.2
Hydraulics and Hydrology	7	71.4	78.7	1.4
Geometrics	3	33.3	72.2	0.7
Materials	6	83.3	84.1	0.9
Site Development	5	100.0	80.6	1.0
Site Characterization	5	100.0	86.0	0.9
Soil Mechanics Laboratory Testing and Analysis	5	90.0	80.7	0.9
Field Materials Testing; Methods; and Safety	3	100.0	59.3	0.9
Earthquake Engineering and Dynamic Loads	2	50.0	60.1	0.7
Earth Structures	4	100.0	85.0	0.8
Groundwater and Seepage	3	83.3	69.7	0.8
Problematic Soil and Rock Conditions	3	83.3	57.0	0.8
Earth Retaining Structures (ASD or LRFD)	5	50.0	59.7	1.2
Shallow Foundations (ASD or LRFD)	5	40.0	63.6	1.3
Deep Foundations (ASD or LRFD)	5	50.0	51.9	1.3

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

	Institution	ABET Comparator ²	
No. Examinees Taking ¹	14	1,100	
No. Examinees Passing	9	803	
Percent Examinees Passing	64%	73%	
	Institution	ABET	ABET

	Number of Exam Questions	Institution Average Percent Correct	Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	85.7	70.6	0.9
Means and Methods	3	76.2	87.4	0.6
Soil Mechanics	6	64.3	67.8	1.2
Structural Mechanics	6	72.6	66.2	1.2
Hydraulics and Hydrology	7	80.6	78.1	1.3
Geometrics	3	71.4	78.5	0.7
Materials	6	78.6	75.2	1.2
Site Development	5	80.0	79.9	0.9
Traffic Engineering (Capacity Analysis and Transportation Planning)	11	64.9	63.0	2.0
Horizontal Design	4	64.3	71.9	0.9
Vertical Design	4	73.2	80.4	0.9
Intersection Geometry	4	60.7	63.0	1.1
Roadside and Cross Section Design	4	73.2	73.9	0.9
Signal Design	3	66.7	64.0	0.9
Traffic Control Design	3	71.4	71.0	0.9
Geotechnical and Pavement	4	57.1	62.0	1.0
Drainage	2	75.0	77.5	0.6
Alternatives Analysis	1	28.6	52.1	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	4	824
No. Examinees Passing	3	595
Percent Examinees Passing	75%	72%

	Number of Exam Questions	Institution Average Percent Correct	ABET Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
Project Planning	4	93.8	71.3	0.9
Means and Methods	3	83.3	88.0	0.6
Soil Mechanics	6	62.5	69.5	1.2
Structural Mechanics	6	50.0	66.0	1.2
Hydraulics and Hydrology	7	85.7	85.0	1.1
Geometrics	3	75.0	72.7	0.7
Materials	6	79.2	75.3	1.1
Site Development	5	85.0	80.1	1.0
Analysis and Design	4	68.8	69.9	0.9
Hydraulics Closed Conduit	5	70.0	59.5	1.1
Hydraulics Open Channel	5	90.0	75.7	1.2
Hydrology	7	67.9	75.2	1.3
Groundwater and Wells	3	66.7	65.6	0.8
Wastewater Collection and Treatment	6	75.0	64.8	1.1
Water Quality	3	58.3	70.5	0.8
Drinking Water Distribution and Treatment	6	54.2	52.8	1.4
Engineering Economics Analysis	1	50.0	54.8	0.5

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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	8	507
No. Examinees Passing	4	332
Percent Examinees Passing	50%	65%
		ADET

	Number of Exam Questions	Institution Average Percent Correct	ABE I Comparator Average Percent Correct	ABET Comparator Standard Deviation ³
General Power Engineering: Measurement & Instrumentation	6	68.8	69.2	1.2
General Power Engineering: Special Applications	8	65.6	69.3	1.5
General Power Engineering: Codes & Standards	10	60.0	69.6	1.5
Circuit Analysis: Analysis	9	70.8	72.3	1.8
Circuit Analysis: Devices & Power Electronic Circuits	7	53.6	63.0	1.6
Rotating Machines & Electromagnetic Devices: Rotating Machines	10	67.5	77.3	1.7
Rotating Machines & Electromagnetic Devices: Electromagnetic Devices	6	50.0	58.3	1.2
Transmissions & Distribution: System Analysis	10	70.0	74.1	1.7
Transmissions & Distribution: Power System Performance	6	39.6	60.5	1.4
Transmissions & Distribution: Protection	8	45.3	45.0	1.6

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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	330
No. Examinees Passing	0	253
Percent Examinees Passing	0%	77%

	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	54.2	71.8	1.9
Mechanical Systems & Materials: Principles	5	70.0	58.4	1.2
Mechanical Systems & Materials: Applications	3	0.0	48.4	0.9
Hydraulic & Fluids: Principles	3	66.7	54.6	1.0
Hydraulic & Fluids: Applications	4	62.5	76.8	0.9
Energy & Power Systems: Principles	3	33.3	58.6	1.0
Energy & Power Systems: Applications	3	33.3	60.3	0.9
HVAC & Refrigeration: Principles	5	60.0	83.9	0.9
HVAC & Refrigeration: Applications	2	100.0	87.1	0.5
Principles: Thermodynamics	3	83.3	56.9	0.8
Principles: Psychrometrics	6	41.7	73.9	1.5
Principles: Heat Transfer	5	30.0	72.9	1.1
Principles: Fluid Mechanics	3	50.0	61.7	0.8
Principles: Compressible Flow	1	50.0	34.8	0.5
Principles: Energy Balances	4	37.5	64.4	1.0
Applications: Equipment and Components	8	50.0	70.3	1.4
Applications: Systems	7	50.0	70.0	1.4
Applications: Supportive Knowledges	3	0.0	59.5	0.9

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

	Institution	ABET Comparator ²
No. Examinees Taking ¹	2	322
No. Examinees Passing	2	235
Percent Examinees Passing	100%	73%

	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	72.1	1.9
Mechanical Systems & Materials: Principles	5	70.0	69.5	1.4
Mechanical Systems & Materials: Applications	3	50.0	61.4	0.9
Hydraulic & Fluids: Principles	3	33.3	57.8	0.8
Hydraulic & Fluids: Applications	4	100.0	73.9	0.9
Energy & Power Systems: Principles	3	33.3	55.4	1.0
Energy & Power Systems: Applications	3	83.3	58.5	0.9
HVAC & Refrigeration: Principles	5	90.0	65.3	1.2
HVAC & Refrigeration: Applications	2	75.0	71.7	0.7
Principles: Statics (free-body diagrams)	6	58.3	66.3	1.4
Principles: Kinematics (linear & rotational motion)	3	83.3	52.7	0.9
Principles: Dynamics (particle & rigid body)	4	37.5	53.0	1.1
Principles: Materials Properties (physical)	4	87.5	66.1	1.0
Principles: Strength of Materials (stress & strain)	7	64.3	58.3	1.6
Applications: Mechanical Components	4	75.0	79.1	0.9
Applications: Joints & Fasteners	4	75.0	60.8	1.1
Applications: Vibration & Dynamic Analysis	4	75.0	53.7	1.0
Applications: Materials & Process	4	75.0	71.7	1.0

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Principles and Practice of Engineering (PE) Subject Matter Report by Major and Examination Jan 01—Jun 30, 2016 First-Time Examinees from EAC/ABET-Accredited Engineering Programs

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

	Institution	ABET Comparator ²
No. Examinees Taking ¹	2	360
No. Examinees Passing	1	272
Percent Examinees Passing	50%	76%

	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	66.7	73.3	1.8
Mechanical Systems & Materials: Principles	5	30.0	60.9	1.2
Mechanical Systems & Materials: Applications	3	50.0	53.2	0.9
Hydraulic & Fluids: Principles	3	50.0	66.4	0.9
Hydraulic & Fluids: Applications	4	75.0	82.5	0.8
Energy & Power Systems: Principles	3	66.7	72.9	0.9
Energy & Power Systems: Applications	3	50.0	67.0	0.9
HVAC & Refrigeration: Principles	5	70.0	72.7	1.2
HVAC & Refrigeration: Applications	2	50.0	76.9	0.6
Principles: Materials Properties (density)	2	100.0	73.8	0.6
Principles: Fluid Mechanics	4	50.0	76.0	0.9
Principles: Heat Transfer Principles (convection)	4	25.0	60.4	1.0
Principles: Mass Balance Principles (evaporation)	3	66.7	75.5	0.8
Principles: Thermodynamics	4	25.0	67.1	1.1
Principles: Related Principles	1	0.0	63.1	0.5
Applications: Equipment	7	57.1	58.7	1.6
Applications: Systems	13	69.2	74.3	2.5
Applications: Codes & Standards	2	50.0	78.6	0.6

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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